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Conscious Regulation of Sexual Arousal in Men

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The goals of this study were to examine the effectiveness of emotional reappraisal in regulating male sexual arousal and to investigate a set of variables theoretically linked to sexual arousal regulation success. Participants first completed a series of online sexuality questionnaires. Subsequently, they were assessed for their success in regulating sexual arousal in the laboratory. Results showed that the ability to regulate emotion may cross emotional domains; those men best able to regulate sexual arousal were also the most skilled at regulating their level of amusement to humorous stimuli. Participants, on average, were somewhat able to regulate their physiological and cognitive sexual arousal, although there was a wide range of regulation success. Whereas some men were very adept at regulating their sexual arousal, others became more sexually aroused while trying to regulate. Age, sexual experience, and sexual compulsivity were unrelated to sexual arousal regulation. Conversely, sexual excitation, inhibition, and desire correlated with sexual arousal regulation success. Increased sexual excitation and desire were associated with poorer regulatory performance, whereas a propensity for sexual inhibition due to fear of performance consequences was related to regulatory success.

A small body of research indicates that men have some voluntary control over sexual arousal, as assessed using penile plethysmography (PPG; Abel, Blanchard, & Barlow, 1981; Adams, Motsinger, McAnulty, & Moore, 1992; Freund, 1963, 1965, 1967; Golde, Strassberg, & Turner, 2000; Henson & Rubin, 1971; Laws & Rubin, 1969; Mahoney & Strassberg, 1991; McAnulty & Adams, 1991; Quinsey & Bergersen, 1976; Quinsey & Carrigan, 1978). This research was largely motivated by concern among forensic practitioners that sexual preference testing using PPG may be vulnerable to faking by some sexual offenders. Sexual preference testing for sexual offenders is an essential component of comprehensive offender management, as inappropriate sexual preference (i.e., preference for sexual violence or underage targets) is a strong predictor of risk for reoffence (e.g., Hanson & Morton-Bourgon, 2004). The PPG, which is applied on the assumption that degree of erection is a valid peripheral indicator of central sexual arousal (e.g., Geer & Head, 1990), is currently the best measure of inappropriate sexual preference.

In past PPG faking studies, participants were asked to either suppress penile responses to preferred stimuli, maximize responses to non-preferred stimuli, or both. Early evidence showed that arousal could be suppressed (Abel, Blanchard, & Barlow, 1981; Freund, 1963, 1965, 1967; Quinsey & Bergersen, 1976; Quinsey & Carrigan, 1978). However, sample sizes were very small, and no techniques were used to control for distraction. It was quite possible that, when instructed to try to suppress arousal, participants merely distracted themselves from the stimuli by looking away from them, closing their eyes, or focusing on sexually repulsive thoughts. This oversight was corrected in later, well-controlled studies (Henson & Rubin, 1971; Laws & Rubin, 1969; Mahoney & Strassberg, 1991; McAnulty & Adams, 1991). Various techniques were used to ensure that participants focused on the sexual stimuli presented. Such techniques included embedded signal detection tasks (e.g., button pressing in response to an embedded flashing dot), tests for stimulus content memory, and ongoing descriptions of sexual stimuli during presentation.

Findings from those studies revealed that men can suppress physiological and self-reported sexual arousal to preferred stimuli but are unable to enhance arousal to non-preferred stimuli. Average suppression rates range from 26% to 38% maximum erection, with some men able to entirely suppress their sexual arousal and others unable to suppress whatsoever (Adams et al., 1992; Golde et al., 2000; Mahoney & Strassberg, 1991; McAnulty & Adams, 1991). According to results reported by McAnulty and Adams, men are more successful at suppressing

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cognitive than physiological arousal. McAnulty and Adams proposed that this was the result of "emotional distancing" (p. 574), and that participants processed the stimuli as cognitively arousing but were able to suppress physiological arousal. Similarly, they in the study performed by Adams et al. claimed that, although they were unable to control cognitive arousal, they did experience a sense of control over penile response. During debriefing, participants in the Mahoney and Strassberg study were asked to describe techniques they used to suppress, and most indicated that they tried to view the stimuli in as detached a way as possible.

From these comments, it seems that the tactic most effectively used to minimize physiological sexual arousal is emotional detachment (Mahoney & Strassberg, 1991; McAnulty & Adams, 1991). This is not surprising, as emotional detachment is fundamental to emotion regulation (Gross, 1998a, 1998b, 1999, 2002; Ochsner & Gross, 2005), and various researchers and theorists have suggested that sexual arousal can be best understood within the rubric of emotional function (Everaerd, 1989; Everaerd, Laan, Both, & Spiering, 2001; Frijda, 1986; Geer, Lapour, & Jackson, 1993; Janssen & Everaerd, 1993; Janssen, Everaerd, Spiering, & Janssen, 2000; Lambie & Marcel, 2002; Rosen & Beck, 1988). Emotions are distinct from moods in that they are incited by specific triggers. They are characterized by experiential, behavioral, and physiological changes (Cacioppo, Berntson, Larsen, Poehlmann, & Ito, 2000). They may be unlearned responses to stimuli with intrinsic emotional value or learned responses to stimuli with acquired emotional significance. Multiple appraisal processes can be involved in determining the reward value of emotion-inducing stimuli (Scherer, Schorr, & Johnstone, 2001). Sexual arousal appears to meet these criteria.

According to Gross (1998b), emotion regulation is the means by which individuals can influence their emotional responses. Through emotion regulation, individuals are able to exert control on which emotions they have and how they experience and express those emotions. Emotion regulation can be automatic or controlled and conscious or unconscious, and can occur during processing of emotional cues or after responses are activated. Gross (2002) suggested that two distinct processes may be at play: reappraisal and suppression. He defined reappraisal as the process by which a potentially emotion-eliciting situation is reframed in non-emotional terms. This can be accomplished by detaching oneself from, or reappraising the meaning of, an emotion-eliciting stimulus. Lambie and Marcel (2002) described a similar process whereby an individual can regulate his or her emotional response to an emotion-evoking stimulus by taking an objective perspective.

Emotional suppression, on the other hand, does not change the emotional experience, but does affect its expression (Gross, 2002). The behavior that would normally follow the emotional experience is inhibited. Suppression is more cognitively taxing than reappraisal, as the expressive behavior must be muted while the emotional experience remains unchanged. Although laboratory studies have shown that both reappraisal (Beauregard, Lévesque, & Bourgouin, 2001; Jackson, Malmstadt, Larson, & Davidson, 2000; Lévesque et al., 2003; Ochsner, Bunge, Gross, & Gabrieli, 2002; Ochsner et al., 2004) and suppression (Colby, Lanzetta, & Kleck, 1977; Gross, 1998a; Gross & Levenson, 1993, 1997) are effective in regulating emotional response, reappraisal appears to be a far more robust strategy in reducing emotional experience.

In the decade preceding the emergence of emotion regulation in the literature, Everaerd (1989) suggested a similar regulatory process with respect to sexual arousal. He proposed that voluntary control of sexual arousal is achievable when an individual can subdue emotional responses to sexual stimuli while still cognitively attending to them. In the only study to address this proposition directly, participants either attempted to inhibit sexual responses by detaching or distancing themselves from the sexual stimuli (i.e., reappraisal) or made no attempt to inhibit their sexual responses (Beauregard et al., 2001). Subsequently, participants were asked to self-report their sexual arousal. During stimulus presentation, functional MRI identified regions of the brain implicated in regulation of sexual arousal. Participants self-reported 60% less sexual arousal when they attempted to inhibit sexual responses, and inhibition of sexual arousal was associated with increased activation in cortical regions that have been associated with regulation of other emotions (Lévesque et al., 2003; Ochsner et al., 2002; Ochsner et al., 2004). Beauregard et al. did not include a physiological measure of sexual arousal, so it is unclear how penile response was affected by sexual arousal regulation.

Although it has been established in the research literature that men, on average, have some voluntary control over their physiological sexual arousal, and that the tactic used most successfully to regulate arousal appears to be reappraisal (i.e., emotional detachment), no previous studies have provided participants with reappraisal strategy instructions while also including measures of both self-reported and physiological sexual arousal. One of the goals of our study was to address this issue. Because there appear to be individual differences in the ability to regulate other emotions (e.g., Jackson et al., 2000; Lévesque et al., 2003; Ochsner et al., 2004), we predicted that men would also vary in their capacity to regulate sexual arousal. We hypothesized that men's abilities to regulate sexual arousal would be related to their general emotion regulation capability. In other words, those men best able to regulate sexual arousal would be most adept at regulating other emotions. Given that self-reported sexual arousal correlates

reasonably well with physiological arousal (Haywood, Grossman, & Cavanaugh, 1990; Sakheim, Barlow, Beck, & Abrahamson, 1985), we expected that the two measures would remain related when men attempted to regulate sexual arousal. This would provide evidence that sexual arousal regulation, as an application of emotion regulation, can affect both cognitive and physiological sexual response.

We also predicted that other factors associated with sexual responding might influence a man's ability to regulate his sexual arousal. Bancroft and Janssen (2000) proposed that sexual response is controlled by two independent neurophysiological systems: sexual excitation and sexual inhibition. Together, they modulate the affective, physiological, and behavioral experiences that accompany sexual arousal. A strong sexual excitation system would contribute to robust sexual responding, whereas a strong sexual inhibition system would reduce sexual response. Janssen, Bancroft, and their colleagues constructed the Sexual Inhibition and Sexual Excitation Scales (SIS/SES) to measure the strength of the sexual excitation and inhibition systems (Janssen, Vorst, Finn, & Bancroft, 2002a,b). Items were created to describe situations that would increase or decrease sexual arousal and penile response. Those items clustered to form three subscales: (a) propensity for sexual excitation, (b) propensity for sexual inhibition due to threat of performance failure (i.e., erectile failure), and (c) propensity for sexual inhibition due to threat of performance consequences (i.e., risk of sexually transmitted infections, pregnancy, or legal repercussions). Research has shown that sexual excitation is associated with increased sexual responsivity in the laboratory, a greater frequency of sexual behaviors, and increased partnered and solitary sexual desire (SSD; Bancroft & Vukadinovic, 2004; Janssen et al., 2002a,b; Winters, Christoff, & Gorzalka, 2008). Sexual inhibition due to threat of performance consequences is inversely related to frequency of unprotected intercourse and partnered and SSD, and is positively associated with sexual restrictiveness. Based on these associations, we predicted that increased sexual excitation and decreased sexual inhibition would be related to poorer sexual arousal regulation performance. Similarly, we hypothesized that heightened dyadic sexual desire (DSD) would also be related to decreased regulation success. An increased appetitive sexual drive and propensity for sexual excitation, in conjunction with muted sexual inhibition, should theoretically make it more difficult to regulate sexual arousal when one is confronted with sexually arousing stimuli.

Another factor that we hypothesized should be related to sexual arousal regulation is sexual compulsivity. Sexual compulsivity, or compulsive sexual behavior, is characterized by disinhibited or undercontrolled sexual thoughts, feelings, and behaviors, as identified by the individual (Coleman, 2003; Kalichman & Cain, 2004). This may culminate in distress sufficient to instigate treatment-seeking behavior, as personal, social, or occupational life is negatively affected. Research has linked sexual compulsivity with sexual behavior that is illegal (e.g., Bradford, 2001; Kafka, 2003) or carries an increased risk for sexually transmitted infections (Benotsch, Kalichman, & Kelly, 1999; Benotsch, Kalichman, & Pinkerton, 2001; Dodge, Reece, Cole, & Sandfort, 2004; Kalichman & Cain, 2004; Kalichman, Greenberg, & Abel, 1997a,b; Semple, Zians, Grant, & Patterson, 2006). Although we were unable to distinguish sexual compulsivity from sexual desire in a previous study (Winters et al., in press), it is possible that sexual compulsivity is related to a deficit in sexual arousal regulation.

Anecdotal evidence suggests that as men get older and gain sexual experience, they become better able to control their sexual response. For this reason, we measured sexual experience and age as variables that may relate to sexual arousal regulation.

Based on the research reviewed and the resulting predictions, we formulated four hypotheses:

H1: Self-reported sexual arousal will correlate with physiological sexual arousal, as measured by PPG, when sexual arousal is both unregulated and regulated.
H2: Men will exhibit a range of physiological and self-reported sexual arousal regulation success.
H3: Sexual arousal regulation success will correlate positively with age, sexual experience, and sexual inhibition and negatively with sexual excitation, sexual desire, and sexual compulsivity.
H4: Those men who are best at regulating their sexual arousal will also be the best at regulating another emotional response, amusement.

To test these hypotheses, we designed a two-part study. Men first completed a series of sexuality questionnaires that measure the factors of interest described earlier. The questionnaires were completed online, as online surveys are more convenient and may result in increased disclosure (Schroder, Carey, & Vanable, 2003). Online measures appear to be as valid as, and can perform in a similar manner to, traditional pencil-and-paper measures (Dixon & Turner, 2007; Meyerson & Tryon, 2003; Roberts, 2007). Participants were subsequently assessed for arousal regulation success in the laboratory. Regulation instructions obtained from the emotion regulation literature were provided. Two stimulus conditions, erotic and humorous, were crossed with two instruction conditions, experience or regulate, to produce four possible trial types. Psychophysiological and self-reported arousal across the trial types were compared and correlated with scores on the survey measures.

Method

Participants

Forty-nine sexually functional men who were free of medication that may affect sexual response participated in the study. Their average age was 27.7 ($SD = 10.1$) and ranged from 18 to 67. Their median and modal age was 24. Sixty-five percent of the participants were Caucasian, 20% were East Asian, 4% were South Asian, 4% were Latin American, and 6% were of another ethnicity. The majority of participants identified as heterosexual ($n = 44$; 90%), although there was a small group of men who identified as bisexual ($n = 5$; 10%). More than one half of the participants were in exclusive sexual relationships ($n = 28$; 57%); the rest were in non-exclusive sexual relationships ($n = 4$; 8%) or were not in a sexual relationship at the time of the study ($n = 17$; 35%). Most participants were single ($n = 35$; 71%). Others were cohabiting ($n = 3$; 6%), married ($n = 6$; 12%), or separated or divorced ($n = 5$; 10%). Slightly less than one half the sample was comprised of undergraduate students (47%).

All participants except one reported masturbating at least once per week. The sample's average weekly masturbation frequency over the preceding 3 months was 6.0 ($SD = 6.9$). The majority (87.7%) of the sample reported viewing pornography on at least a weekly basis. The average amount of time devoted to viewing pornography per week over the preceding 3 months was 2.4 hr ($SD = 2.0$). A small minority of the sample ($n = 4$; 8.2%) had never experienced any partnered sexual activity, although three of those participants viewed pornography and masturbated at least once per week.

Procedure

Participants were recruited by three means. A link provided at the end of the online survey used in Winters et al. (in press) briefly described the study and provided contact information for those interested in participating. We also posted a study advertisement on the University of British Columbia (UBC) Department of Psychology Subject Pool Psychology Research Participation System. As a final means of recruitment, advertisements were posted around Vancouver and the UBC campus. Participants were given $30 remuneration upon completion of the entire study. Undergraduate students who were eligible for course credit were offered a choice of either two course credits or the $30 remuneration; only 1 chose the credits.

Both the online survey and the laboratory testing were approved by the UBC Behavioural Research Ethics Board. The online survey included an online consent form, a demographics and general information questionnaire, four sexuality measures, and a results and debriefing page. With the exception of the Demographics and General Information Form (DGIF), which always appeared first, the survey measures were randomly presented. The set of questionnaires took approximately 45 min to complete. A more detailed description of the survey procedure can be found in Winters et al. (in press).

The second part of the study was conducted at a UBC laboratory. Upon participants' arrival at the laboratory, the procedures and instructions were explained in detail by the research technician, and participants were given the opportunity to examine the PPG apparatus and ask questions. Before testing began, participants were required to sign a consent form. They were also asked to provide basic demographic information (age, ethnic identity, English as first language, city of birth, and undergraduate student status) so that each participant's survey data could be linked with his laboratory data.

In the laboratory, we set up a private testing room with a lounge chair placed 4 feet back from the video presentation television. Headphones for audio stimuli and a numeric keypad for self-report responses were connected to the testing laptop, located outside the testing room. Two clean towels were provided for each participant, one to sit on and the other to be placed over his lap. An inflatable seat pad, connected to the data acquisition laptop, allowed us to monitor participants' movements during data acquisition. Participant movement can tug the strain gauge lead creating spikes in the PPG penile circumference data. During post processing, data spikes that were artefacts of participant movement were removed.

After written informed consent was obtained, participants were asked to enter the PPG testing room, pull their pants down around their ankles, be seated, fit the gauge, cover themselves with a towel, and put on the headphones. For each participant, the technician visually inspected the incoming pre-testing PPG data to insure that the gauge was seated properly.

Participants viewed 16 randomly ordered video clips: 8 erotic and 8 humorous (control). Before each of the clips was presented, either "Experience" or "Regulate" was displayed on the television screen. These acted as task cues, corresponding to instructions borrowed from the emotion regulation literature (Beauregard et al., 2001; Gross, 2002; Jackson et al., 2000; Lévesque et al., 2003). For experience trials, participants were instructed to become immersed in the video stimuli as they normally would. For the erotic and humorous regulate trials, participants were instructed to detach or disengage themselves from the stimuli by taking a distanced or objective point of view. The instruction cues were randomly ordered; however, they were balanced across stimulus conditions so that one half of both the erotic and humorous clips were experience and the other half were regulate. To insure that participants did not manipulate their responses during the regulate trials by closing their eyes, looking away, or imagining something

that would reduce their responses, they were told that they would be asked to recount various aspects of the video scenarios.

At the end of each trial, participants were instructed, by text messaging on the television screen, to self-report maximum level of sexual arousal (SRMA), erection (SRME), and amusement (SRA). Responses for sexual arousal ranged from 0 (*not sexually aroused at all*) to 9 (*maximally sexually aroused*). Responses for degree of erection ranged from 0 (*no erection at all*) to 9 (*maximally erect*). Responses for amusement ranged from 0 (*not at all amused*) to 8 (*maximally amused*). After each erotic trial, time was given for penile tumescence to return to baseline before the next trial began. Once testing was complete, participants were debriefed and given a chance to ask questions about the study.

Stimuli

We used a two-stage process to select the erotic video clips. First, we had 75 male volunteers select their top 10 preferences from a list of 41 sexual behaviors and actor traits (e.g., attractiveness of face and physique, breast size, etc.) that are typical of commercial pornography. We summed those preferences and then used the 7 most-frequently endorsed to guide selection of erotic videos. Those 7 preferences were attractiveness of the female actor (body), attractiveness of the female actor (face), female actor exhibiting sexual pleasure, vaginal sex (female on hands and knees; i.e., ''doggy style''), oral sex (male recipient), male ejaculating on the female's face (i.e., ''facial cum shot''), and vaginal sex (female on top facing male; i.e., ''cowgirl''). Over 200 videos were downloaded from an online commercial pornography links site. The videos were vetted for content and quality. Eighteen were selected, based on the 7 preferences, to be edited into 3-min clips. The amount of time devoted to each type of sexual behavior was balanced across the 18 video clips. The video clips were dispersed as randomly ordered sets, saved onto two CDs, to 20 male volunteers. Volunteers rated each video clip on a scale from 1 (*not at all arousing*) to 9 (*maximally arousing*) and then returned their ratings to our laboratory by mail, in self-addressed envelopes that were provided. We averaged ratings for each video clip across volunteers and then used repeated-measures analysis of variance (ANOVA) to determine which 8 video clips would be used for the experiment. The ratings for the 8 video clips that were chosen did not differ significantly from each other. Comedy clips were selected in a similar fashion. We perused various Internet comedy sites and noted names of stand-up comics that were rated most amusing. Video clips of those performers were screened for content. A comedian named Mitch Hedberg was chosen for two reasons. First, his jokes do not contain any sexual content, which was a necessary criterion for the control condition stimuli. Second, his jokes are short, making it easy to edit 3-min clips from his performances. As with the erotic clips, CD compilations of 12 Mitch Hedberg clips were distributed to 20 volunteers who rated each clip on a scale ranging from 1 (*not at all amusing*) to 9 (*maximally amusing*). Based on the ratings, 8 clips were selected that did not significantly differ from each other.

Measures

DGIF. The DGIF was based on measures used in online sexuality studies at Indiana University's Kinsey Institute (http://www.kinseyinstitute.org/research/surveylinks.html). Although it is comprised of 22 items, data from only 8 items were of interest for the purposes of this study. Those items assessed age, gender, language, ethnicity, sexual experience, sexual identity, relationship status, and undergraduate status.

Sexual compulsivity scale (SCS). The SCS (Kalichman et al., 1994; Kalichman & Rompa, 1995, 2001) is a 10-item measure of sexual compulsivity. The SCS items (e.g., ''I sometimes get so horny I could lose control,'' ''I feel that sexual thoughts and feelings are stronger than I am,'' and ''I have to struggle to control my sexual thoughts and behavior'') capture sexual preoccupations and undercontrolled sexual thoughts and feelings that are core to the current understanding of sexual compulsivity. The responses for each item, ranging from 1 (*not at all like me*) to 4 (*very much like me*), are summed and divided by 10 to give an overall sexual compulsivity score. The SCS has good internal consistency, with Cronbach's alpha coefficients ranging from .82 to .95, and is the only measure of sexual compulsivity that has been both well-validated and widely used in previous research (Dodge et al., 2004; Kalichman et al., 1994; Kalichman & Rompa, 1995, 2001).

SIS/SES. The SIS/SES (Janssen et al., 2002a,b) is a 45-item measure designed to assess the strength of the sexual excitation and inhibition systems under various circumstances. Responses for each SIS/SES item range from 1 (*strongly agree*) to 4 (*strongly disagree*) and, after reverse keying some items, responses are summed to form three subscale scores: (a) propensity for sexual excitation (SES; range = 20–80), (b) propensity for sexual inhibition due to threat of performance failure (SIS1; range = 14–56), and (c) propensity for sexual inhibition due to threat of performance consequences (SIS2; range = 11–44). Internal consistency for the three subscales is good (Cronbach's αs = .88, .82, and .66, respectively; Janssen et al., 2002a). Scores on the scales appear to be stable over time and normally distributed (to date, over 2,500 men have been tested; Bancroft & Vukadinovic, 2004).

During analysis, we included scores from the SES and SIS2 only because inhibition due to fear of performance failure, as captured by SIS1, measures sexual dysfunction, which was not related to any of our hypotheses.

Sexual Desire inventory–2 (SDI–2). The SDI–2 (Spector, Carey, & Steinberg, 1996) is a 14-item, self-report test of interest in partnered sexual activity (e.g., "How strong is your desire to engage in sexual activity with a partner?") and solitary sexual activity (e.g., "How important is it for you to fulfill your desires to behave sexually by yourself?"). Each item is scored on a 9-point scale, and responses are summed to produce an overall score ranging from 0 to 112. Scoring the SDI–2 also produces two subscale scores: DSD and SSD. Cronbach's alphas for the two factors are .86 and .96, respectively. As there is no theoretical reason to believe that SSD is related to sexual arousal regulation, we included only DSD in analyses.

Derogatis Sexual Functioning Inventory–sexual Experiences Subtest (DSFI–SE). The DSFI–SE is one of 10 self-report subtests of the DSFI (Derogatis & Melisaratos, 1979). It lists 24 sexual behaviors (e.g., deep kissing, oral stimulation of your partner's genitals, and intercourse—you in superior position), and the individual being assessed indicates which of those he or she has experienced ever, and experienced in the preceding 60 days. Items endorsed for each period are summed to create 2 scores out of 24. Internal consistency for the DSFI–SE is excellent (Cronbach's $\alpha = .97$; Derogatis & Melisaratos, 1979).

PPG. Physiological sexual arousal was measured with a PPG purchased from Limestone Technologies (Kingston, Ontario). The PPG assesses the change in penile tumescence, which corresponds to the degree to which a man is sexually aroused. Penile circumference is measured using a mercury-in-rubber strain gauge placed two thirds of the way down the shaft of the penis. As tumescence increases, the mercury column in the strain gauge is stretched thinner, changing its cross-sectional circumference. Electrical resistance of mercury is directly related to its cross-sectional area; therefore, any change in tumescence results in a concomitant change in electrical resistance. The mercury-in-rubber PPG strain gauge is calibrated for precise measurement before each use, and small changes in resistance can be translated into millimeter changes in penile circumference. Data from the strain gauge are relayed, via a transducer, to a testing laptop computer. Limestone provided us with software that displays, records, and tabulates the incoming time-sequenced PPG data. Peak minus baseline (peak-base [PB]) scores were used to determine maximum millimeter changes in circumference during each trial (Abel, Blanchard, Murphy, Becker, & Djenderedjian, 1981; Kuban, Barbaree, & Blanchard, 1999). Based on the recommendation of Kuban et al., we used a threshold of 3-mm changes to signify interpretable arousal.

Data Analysis

Physiological and self-report responses were averaged over trials of the same type (i.e., erotic experience, erotic regulate, humorous experience, and humorous regulate). For the erotic stimuli, the two instruction conditions (i.e., experience and regulate) were crossed with the three possible responses (PB, SRMA, and SRME) to produce six outcome variables. For the humorous stimuli, the two instruction conditions were crossed with self-reported amusement (SRA) to produce two outcome variables. Paired-samples t tests were conducted to determine differences in outcome variables between the instruction conditions. Small, medium, and large effect sizes were interpreted according to Cohen's recommended cutoffs of 0.2, 0.5, and 0.8, respectively (Cohen, 1992). To determine if sexual arousal regulation improved, became worse, or remained stable over time, a repeated-measures ANOVA was used to assess change in PB PPG scores and self-reported sexual arousal across the four individual sexual arousal regulation trials. The same procedure was used for amusement regulation across amusement regulation trials.

Regulation indexes were calculated by dividing average response during regulate trials by average response during experience trials. The resulting values were each multiplied by 100 to create four percentage regulation success indexes: sexual arousal regulation success index–PPG peak-base (SAI–PB), SAI–self-reported maximum arousal (SAI–SRMA), SAI–self-reported maximum erection (SAI–SRME), and amusement regulation success index–self-reported amusement (AMI–SRA).

To address H3 and H4, we calculated Pearson correlation coefficients for the variables of interest. To interpret the strength of those correlations, we adhered to Cohen's (1992) suggestion that coefficients of 0.1, 0.3, and 0.5 indicate the lower bounds of small, medium, and large correlation effect sizes, respectively. After correlation coefficients had been calculated for the variables of interest, we partialled out the effects of sexual desire and sexual excitation from the correlations between sexual compulsivity and the three SAIs to insure that sexual desire and sexual excitation were not accounting for any possible relation between sexual compulsivity and sexual arousal regulation success.

Results

All participants exhibited increased penile tumescence (i.e., greater than 3-mm changes in penile

Table 1. *Survey Measure Descriptive Statistics*

Variable	M	SD	Range
SCS	1.7	0.6	1–3.8
SES	58.7	6.5	42–70
SIS2	28.2	5.2	17.5–39
SDI–2—DSD	43.4	7.5	21–62
DSFI—Sexual experiences	19.6	6.2	0–24
DSFI—Sexual experiences past 60 days	14.3	8.7	0–24

Note. SCS = Sexual Compulsivity Scale; SES = Sexual Excitation Scale; SIS2 = Sexual Inhibition Scale, due to fear of performance consequences; SDI–2 = Sexual Desire Inventory–2; DSD = dyadic sexual desire; DSFI = Derogatis Sexual Functioning Inventory.

Table 3. *Descriptive Statistics for Regulation Success Indexes (percentage Regulation Success)*

Index	M	SD	Minimum	Maximum
SAI-PB	75.2	25.4	17.6	118.6
SAI-SRMA	79.2	19.5	45.5	133.3
SAI-SRME	78.1	26.0	38.5	180.0
AMI-SRA	83.6	26.2	33.3	200.0

Note. SAI–PB = sexual arousal regulation success index–penile plethysmograph peak-base; SAI–SRMA = sexual arousal regulation success index–self-reported maximum arousal; SAI–SRME = sexual arousal regulation success index–self-reported maximum erection; AMI–SRA = amusement regulation success index–self-reported amusement.

circumference) to the erotic stimuli and no sexual response to the humor stimuli. Therefore, all assessments were deemed valid, and data from the 49 participants were included in analyses. Descriptive statistics for the survey measures are presented in Table 1. The results of paired-samples *t* tests, with corresponding effect sizes, for regulate versus experience trials can be found in Table 2.

Participants, on average, were able to regulate their sexual arousal according to all three outcomes (i.e., PB, SRMA, and SRME). On average, they were also able to regulate their amusement during humor-regulate trials. The effect sizes for PB, SRME, and SRA paired-samples *t* tests were moderate, whereas that for the SRMA regulation comparison was large.

When responses were compared across the four individual sexual arousal regulation trials, there were no statistically significant differences in PB PPG scores, $F(1, 47) = 1.01$, $p = .32$; or SRMA, $F(1, 47) = 0.44$, $p = .73$. In other words, SRMA regulation did not change (i.e., improve or become worse) as testing progressed. The same was true for SRA across amusement-regulate trials, $F(1, 47) = 1.94$, $p = .17$.

Descriptive statistics for the regulation success indexes can be found in Table 3. Lower index values indicate increased regulation success. The mean regulation indexes scores did not differ significantly from each other, $F(1) = 1.69$, $p = .20$. There was a large variation in all four regulation index scores. The lowest PB regulation index score was 17.6%, indicating that the participant who was best able to regulate his physiological response exhibited an 82.4% decrease in erectile response during erotic-regulate trials. The lowest regulation index scores for SRMA, SRME, and SRA were 45.5%, 38.5%, and 33.3%, respectively. No single participant scored highest on more than one index.

Despite the fact that, on average, participants were able to regulate their arousal, some participants reported and demonstrated increased sexual arousal during erotic-regulate trials. The penile responses of 8 participants (16.3%) were greater during erotic-regulate trials than during erotic-experience trials. The least successful regulator was, on average, 18.6% more responsive during regulate trials. The self-reported sexual arousal responses for 5 participants (10.2%) were greater during erotic-regulate trials than during erotic-experience trials, with the lowest scoring participant reporting 33.3% more sexual arousal in the regulate condition. The self-reported maximum erection responses for 6 participants (12.2%) were greater during erotic-regulate trials than during erotic-experience trials. Similarly, the least successful regulator self-reported 80.0% greater

Table 2. *Descriptive Statistics and Paired-samples t Tests for Experience Versus Regulate Trials*

Outcome Variable	M	SD	Minimum	Maximum	t(48)	p	Cohen's d
EE–PB	27.7	12.2	4.67	55.4	5.39	<.001	0.55
ER–PB	21.0	12.3	2.79	49.9			
EE–SRMA	5.6	1.7	2.3	8.5	7.33	<.001	0.81
ER–SRMA	4.3	1.5	1.3	7.0			
EE–SRME	5.5	2.1	1.3	8.5	6.46	<.001	0.73
ER–SRME	4.1	1.7	1.3	8.3			
HE–SRA	5.0	1.6	1.8	7.5	5.99	<.001	0.67
HR–SRA	4.0	1.4	1.5	7.5			

Note. EE–PB = erotic experience–penile plethysmograph (PPG) peak-base millimeters circumference change; ER–PB = erotic regulate–PPG peak-base millimeters circumference change; EE–SRMA = erotic experience–self-reported maximum arousal; ER–SRSA = erotic regulate–self-reported maximum arousal; EE–SRME = erotic experience–self-reported maximum erection; ER–SRME = erotic regulate–self-reported maximum erection; HE–SRA = humourous experience–self-reported amusement; HR–SRA = humourous regulate–self-reported amusement.

Table 4. *Correlation Coefficients for Erotic Experience Sexual Arousal Responses*

Variable	EE–PB	EE–SRMA
EE–SRMA	.562*	—
EE–SRME	.604*	.923*

Note. EE–PB = erotic experience penile plethysmograph (PPG) peak-base millimeters circumference change; EE–SRMA = erotic experience–self-reported maximum arousal; EE–SRME = erotic experience–self-reported maximum erection.

Table 5. *Correlation Coefficients for Erotic Regulate Sexual Arousal Responses*

Variable	ER–PB	ER–SRMA
ER–SRMA	.598*	—
ER–SRME	.685*	.873*

Note. ER–PB = erotic regulate–penile plethysmograph (PPG) peak-base millimeters circumference change; ER–SRMA = erotic regulate–self-reported maximum arousal; ER–SRME = erotic regulate–self-reported maximum erection.
*$p < .001$.

Table 6. *Correlation Coefficients for Regulation Success Indexes*

Variable	SAI–PB	SAI–SRMA	SAI–SRME
SAI–SRMA	.515	—	—
	$p < .001$		
SAI–SRME	.515	.846	—
	$p < .001$	$p < .001$	
AMI–SRA	.226	.368	.329
	$p = .119$	$p = .010$	$p = .022$

Note. SAI–PB = sexual arousal regulation success index–penile plethysmograph peak-base; SAI–SRMA = sexual arousal regulation success index–self-reported maximum arousal; SAI–SRME = sexual arousal regulation success index–self-reported maximum erection; AMI–SRA = amusement regulation success index–self-reported amusement.

erectile response during the regulate trials. A similar pattern was evident for the humor condition. Seven (14.3%) participants reported more amusement, on average, during the humor-regulate trials than during the humor-experience trials. The participant least able to regulate reported 100% more amusement in the regulate condition.

Across both erotic-experience and erotic-regulate conditions, PB, SRMA, and SRME were all significantly and positively intercorrelated (see Tables 4 and 5). The effect sizes for all correlations were large.

As is shown in Table 6, the SAI–PB correlated with both the SAI–SRMA and the SAI–SRME. Those correlations were of large effect size. SRMA and SRME indexes also correlated very strongly with each other. The PB index did not correlate with the SRA index; however, the AMI index correlated with both SRMA and SRME indexes. These correlations were of a medium effect size.

Table 7. *Correlation Coefficients for Survey Measures and Regulation Success Indexes*

Variable	SAI–PB	SAI–SRMA	SAI–SRME	AMI–SRA
Age	.077	.217	.254	.047
	$p = .600$	$p = .139$	$p = .081$	$p = .747$
DSFI–SE	.153	.118	.245	.023
	$p = .294$	$p = .425$	$p = .093$	$p = .876$
DSFI–SE60	−.021	−.094	.120	−.110
	$p = .888$	$p = .524$	$p = .418$	$p = .451$
SDI–2—DSD	.091	.332*	.375**	.245
	$p = .533$	$p = .021$	$p = .009$	$p = .089$
SES	.253	.289*	.301*	−.047
	$p = .079$	$p = .047$	$p = .037$	$p = .748$
SIS2	−.506**	−.273	−.205	−.175
	$p < .001$	$p = .061$	$p = .161$	$p = .230$
SCS	.132	.216	.326*	.143
	$p = .367$	$p = .140$	$p = .024$	$p = .328$

Note. SAI–PB = sexual arousal regulation success index–penile plethysmograph peak-base; SAI–SRMA = sexual arousal regulation success index–self-reported maximum arousal; SAI–SRME = sexual arousal regulation success index–self-reported maximum erection; AMI–SRA = amusement regulation success index–self-reported amusement; DSFI–SE = Derogatis Sexual Functioning Inventory–Sexual Experiences subtest; DSFI–SE60 = Derogatis Sexual Functioning Inventory–Sexual Experiences past 60 days; SDI–2 = Sexual Desire Inventory–2; DSD = dyadic sexual desire; SES = Sexual Excitation Scale; SIS2 = Sexual Inhibition Scale, due to fear of performance consequences; SCS = Sexual Compulsivity Scale.
*$p < .05$. **$p < .01$.

The correlation results for the survey measures and regulation success indexes are presented in Table 7. The PB index correlated negatively with sexual inhibition due to fear of performance consequences. The correlation coefficient was of a large effect size. There was a trend toward significance for the correlations between sexual inhibition and both the SAI–SRMA and the SAI–SRME. The SAI–PB did not significantly correlate with any other variables of interest. The

Table 8. *Zero-order and Partial Correlation Coefficients for Sexual Compulsivity and Sexual Arousal Regulation Success Indexes*

Variable	SAI–PB	SAI–SRMA	SAI–SRME
SCS[a]	.132[a]	.216[a]	.326[a]
	$p = .367$	$p = .140$	$p = .024$
SCS[b]	.087[b]	.069[b]	.183[b]
	$p = .564$	$p = .648$	$p = .224$

Note. SAI–PB = sexual arousal regulation success index–penile plethysmograph peak-base; SAI–SRMA = sexual arousal regulation success index–self-reported maximum arousal; SAI–SRME = sexual arousal regulation success index–self-reported maximum erection; SCS = Sexual Compulsivity Scale.
[a]Zero-order correlation coefficients.
[b]Partial correlation coefficients controlling for the effects of sexual desire and sexual excitation.

SAI–SRMA and the SAI–SRME correlated with DSD and sexual excitation; these correlations were all of a moderate effect size. The AMI–SRA did not correlate with any of the sexuality variables. Age and sexual experiences did not correlate with any of the regulation success indexes.

Only the SAI–SRME correlated with sexual compulsivity. The correlations for sexual compulsivity with the other two SAIs did not reach statistical significance but were in the predicted direction. When we partialled out the effects of sexual desire and sexual excitation, the strength of the correlations all considerably decreased (see Table 8), and the correlation between the SAI–SRME and sexual compulsivity dropped below statistical significance.

Discussion

The overall purpose of this study was to examine the effectiveness of emotional reappraisal in regulating male sexual arousal. Results showed that men, on average, were somewhat able to regulate their physiological and cognitive sexual arousal, although there was a wide range of regulation success. Whereas some men were very adept at regulating their sexual arousal, others became more sexually aroused while trying to regulate. Further, the results indicate that the ability to regulate emotion may cross emotional domains; those men best able to regulate sexual arousal were also the most skilled at regulating amusement. Age, sexual experience, and sexual compulsivity were unrelated to sexual arousal regulation. Conversely, sexual excitation, inhibition, and desire correlated with sexual arousal regulation success. Increased sexual excitation and desire were associated with poorer regulatory performance, whereas a propensity for sexual inhibition due to fear of performance consequences was related to regulatory success.

As hypothesized, the regulation success indexes for both self-reported sexual arousal and perceived degree of erection were positively associated with amusement regulation success. This finding suggests that the ability to regulate emotion is generalized across emotional domains. To the best of our knowledge, this has not been tested before. That emotion regulation ability appears to cross emotional domains is consistent with emotion regulation theory, as well as findings from neurophysiological emotion regulation research (Ochsner & Gross, 2005). Functional brain imaging studies have consistently identified a single emotion regulatory system that is implicated in the regulation of the various emotions tested (e.g., Beauregard et al., 2001; Lévesque et al., 2003; Ochsner et al., 2002; Ochsner et al., 2004). Although we only examined the association between the regulation of two positively valenced emotions, we would expect that regulation ability for other emotions, including those that are negatively valenced (e.g., sadness, anger, etc.), would be similarly related.

Unlike the correlations between the two self-report sexual arousal measures and amusement regulation success, the correlation between the SAI–PB and the AMI–SRA did not reach statistical significance. This is likely due to imperfect concordance between cognitive and physiological sexual arousal. Previous research has shown that concordance between self-reported sexual arousal and penile response is good, at best (Haywood et al., 1990; Sakheim et al., 1985).

Men in our sample were, on average, able to regulate their physiological sexual arousal when instructed to do so. During erotic-regulate trials, they exhibited a 25% reduction in erectile response. This is consistent with success rates from previous, well-controlled PPG faking studies in which success rates range from 26% to 38% (Adams et al., 1992; Golde et al., 2000; Mahoney & Strassberg, 1991; McAnulty & Adams, 1991). Some men in the two studies performed by McAnulty, Adams, and their colleagues were able to wholly suppress their penile response, whereas all of the participants in our study and the study by Mahoney and Strassberg exhibited some physiological arousal during regulate trials. We suspect that stimulus modality may account for this discrepancy. McAnulty, Adams, and their colleagues used slides and accompanying audio vignettes, whereas both we and Mahoney and Strassberg used video stimuli. Video stimuli are more arousing than slides or audio stimuli (Abel, Blanchard, & Barlow, 1981; Julien & Over, 1988; Sakheim et al., 1985), likely increasing the difficulty of sexual arousal regulation.

Participants in our study self-reported 21% less sexual arousal and 22% less perceived erectile response during erotic-regulate trials. These results are also within the range of results reported in previous PPG studies. However, they are substantially different from those described by Beauregard et al. (2001). Their sample self-reported a 60% reduction in sexual arousal during regulate trials, despite the fact that video stimuli were utilized. This disparity may reflect the different testing environments, as participants were lying inside the bore of an MRI scanner. The scanner environment is quite uncomfortable, and the considerable noise during scanning, which can reach 130 to 140 decibels, is distracting, even with hearing protection. Discomfort and distraction may have made it easier to regulate arousal.

Men in our sample exhibited a very wide range of regulation success across all four response types: physiological sexual response, self-reported sexual arousal, perceived degree of erection, and amusement. Surprisingly, some men self-reported and exhibited increased sexual arousal and penile response during the regulate trials. The same was true for SRA during humor-regulate trials. We considered two possible explanations for this increased responding: regulatory depletion and anxiety's potentially augmenting effect on sexual arousal.

Our stimuli, which were each 3-min long to allow for full sexual response, were of substantially longer duration than those used in previous emotion regulation research (e.g., Beauregard et al., 2001; Jackson et al., 2000; Ochsner et al., 2002; Ochsner et al., 2004). It is possible that emotion regulation, for some individuals, is only effective over a short period of time, after which emotion regulation resources become depleted. The results from a study of sexual self-restraint and regulatory depletion by Gailliot and Baumeister (2007) provide some support for this explanation. They found that participants had more difficulty with sexual restraint (i.e., inhibiting sexual thoughts and behaviors) following regulatory tasks compared to control tasks. Our results, however, did not support the regulatory depletion explanation. Penile responses and self-reported sexual arousal during sexual arousal regulation trials remained stable as testing progressed. If regulatory depletion was happening, sexual arousal responses would have increased. Depletion of regulatory resources also does not explain why, for some men, responses were greater during regulate trials when compared to experience trials.

Some of the men who exhibited increased responding in the regulate condition reported that they became more enmeshed in the stimuli while trying to regulate. This suggested that something other than regulatory depletion was happening. The other possible explanation for increased responding is based on findings from research on emotional control and thought suppression. In one of the first studies of thought suppression, Wegner, Schneider, Carter, and White (1987) instructed participants not to think of a white bear and then monitored their thoughts over the following 5 min. Initially, all participants were unable to rid their minds of a white bear. As the trial proceeded, however, some participants were able to stop the thoughts, whereas others were not. In a follow-up study, participants were asked to try not to think of emotionally charged sexual thoughts (Wegner, Shortt, Blake, & Page, 1990). They found that attempted thought suppression and intrusive sexual thoughts, arising after initial thought suppression success, increased sympathetic arousal. Based on their findings, they concluded that ''suppression of exciting thoughts can undermine the process of emotional control'' (Wegner et al., 1990, p. 415). They posited that the mere act of trying to suppress exciting thoughts increases excitement, which then intensifies the initial emotional response. The cycle of attempted suppression, increased emotional response, followed by more attempts at suppression causes the emotional response to become more robust. Thus, attempted control has the exact opposite effect than intended. For a small minority of our participants, being attuned to and attempting to regulate sexual arousal and humor actually increased responses.

This type of response amplification may be related to the well-established link between sympathetic arousal and increased sexual interest and response (Bancroft, Janssen, Strong, Carnes, et al., 2003; Bancroft, Janssen, Strong, & Vukadinovic, 2003; Barlow, Sakheim, & Beck, 1983; Dutton & Aron, 1974; Extona et al., 2000; Heiman & Rowland, 1983; Krüger et al., 1998; Krüger et al., 2006; Meston & Gorzalka, 1995, 1996; Meston & Heiman, 1998; Palace & Gorzalka, 1990; Wolchik et al., 1980). Increased anxiety can have an augmenting effect, via the sympathetic nervous system, on sexual response, particularly for women. In men, results are more mixed (Barlow et al., 1983; Farkas, Sine, & Evans, 1979; Hale & Strassberg, 1990; Heiman & Rowland, 1983; Lange, Wincze, Zwick, Feldman, & Hughes, 1981), with some men exhibiting increased sexual responses when anxious, specifically those with a strong propensity for sexual excitation and a low propensity for sexual inhibition (Bancroft, Janssen, Strong, Carnes, et al., 2003; Bancroft, Janssen, Strong, & Vukadinovic, 2003).

Bancroft and colleagues (Bancroft, Janssen, Strong, Carnes, et al., 2003; Bancroft, Janssen, Strong, & Vukadinovic, 2003) suggested that transference of arousal (more generally known as excitation transference; Zillmann, 1983), arising from anxiety and the concomitant increase in autonomic arousal, could augment sexual response, particularly in those individuals with a strong propensity for sexual excitation and low propensity for sexual inhibition. In our study, participants may have experienced some anxiety while trying to perform the regulation task. If attempted regulation can actually increase emotional response, especially when regulation fails (Wegner et al., 1990), and if perceived poor performance heightens anxiety and general autonomic arousal, increased arousal may explain why some individuals responded more strongly while trying to regulate. In future work, measures of state and trait anxiety may help clarify the possible relation among anxiety, sexual arousal, and sexual arousal regulation.

Based on previous research (McAnulty & Adams, 1991; Nobre et al., 2004; Rosen & Beck, 1988), we had predicted that there would be good concordance between physiological sexual arousal and both self-reported sexual arousal and perceived degree of erection during erotic-experience trials. We also expected concordance to be good during regulate trials, as emotion regulation appears to modulate the cognitive, affective, and physiological changes that accompany an emotional response (Jackson et al., 2000). Results confirmed our predictions: Correlations among the PPG and two self-reports within each instruction condition were all strong. In addition, the correlations among the three SAIs were all statistically significant. These results indicate that sexual arousal regulation, when effective, seems to affect cognitive, affective, and physiological aspects of sexual response in an equivalent manner.

We also noted very strong correlations between self-reported sexual arousal and self-reported degree of erection during both experience and regulate trials ($r > .8$). Although previous research has utilized both self-report measures (e.g., Nobre et al., 2004), no studies that we know of have examined the relation between the two. Given the strength of the correlations between self-reported sexual arousal and self-reported degree of erection, and the weaker relation between self-report degree of erection and physiological sexual arousal (i.e., PPG scores), it may be that men are basing their perceptions of physiological arousal on the cognitive experience of sexual arousal rather than accurately identifying degree of erection.

We hypothesized that age and sexual experiences would be related to sexual arousal regulation success. Theoretically, as men get older and gain more sexual experience, sexual stimuli become less novel and sexual regulation, through practice, improves. The results did not support our prediction; the SAIs did not correlate with age or sexual experiences. It seems, therefore, that age and sexual experience are unrelated to regulation success. This may explain why premature ejaculation, a disorder of sexual dyscontrol (American Psychiatric Association, 2000), can be a lifelong problem (e.g., Laumann, Paik, & Rosen, 1999; Rowland et al., 2004).

Based on Bancroft and Janssen's (2000) dual-control model of sexual response, we predicted that increased sexual excitation and decreased sexual inhibition would be related to poorer sexual arousal regulation performance. According to the model, men with weak basal sexual inhibitory tone and strong basal sexual excitatory tone will respond more robustly to sexual stimuli and will have more difficulty controlling that response. Although sexual excitation was inversely related to self-reported sexual arousal and perceived erectile response regulation success, it was not correlated with physiological arousal regulation success. Similarly, sexual inhibition due to threat of performance consequences was associated with greater physiological arousal regulation success, but was not related to the self-report indexes. The correlations for sexual excitation with physiological arousal regulation, and sexual inhibition with the self-report regulation indexes, all exhibited a trend toward significance. That they did not reach statistical significance can likely be attributed to the imperfect concordance rates among self-reported arousal, perceived erection and penile response, and the relatively small sample size.

As predicted, DSD inversely correlated with self-reported sexual arousal and perceived penile response regulation. However, it did not correlate with physiological sexual arousal regulation. This may be because the items of the SDI–2, the measure of DSD, capture the motivational and cognitive aspects of sexual desire rather than physiological sexual drive (Levine, 1987, 2003). Examples of SDI–2 items are, "When you are in romantic situations (such as a candle lit dinner, a walk on the beach, etc.), how strong is your sexual desire?," and "How important is it for you to fulfill your sexual desire through activity with a partner?" The measure has little to do with physiological sexual response, unlike the measure of sexual excitation and sexual inhibition, which did correlate with physiological sexual arousal regulation.

Given that sexual compulsivity is characterized by sexual thoughts, fantasies, and desires that are intense, recurrent, distressing, and that interfere with daily functioning (Coleman, 1991, 2003; Tepper, Owens, Coleman, & Carnes, 2007), it was expected to be strongly associated with sexual arousal regulation. Although the correlations were in the predicted direction, with increased sexual compulsivity associated very weakly with poor sexual arousal regulation, only the relation between sexual compulsivity and perceived penile response regulation reached statistical significance. Partialling out the effects of sexual desire and sexual excitation substantially decreased the strength of all three correlation coefficients. It appears, therefore, that sexual compulsivity may be unrelated to sexual arousal regulation in the laboratory. Previously, we reported that sexual compulsivity was indistinguishable from measures of sexual desire (Winters et al., in press). We argued that sexual compulsivity may simply be a marker of heightened sexual desire and the distress associated with managing a high degree of sexual thoughts, feelings, and needs. These results are consistent with this proposition. Sexual desire and sexual excitation could almost entirely account for the weak relations between sexual compulsivity and the SAIs.

There were three important methodological limitations to our study. First, the sample was not representative of the general male population. Men who are willing to participate in sex research, especially that which requires intrusive testing, such as PPG, are probably different than those who are not. Second, participants were relatively young. A sample with a more normal distribution of ages may have produced somewhat different results, despite age seemingly being unrelated to sexual arousal regulation success. Third, the sample was only of moderate size. A larger sample would have increased statistical power, in which case some of the correlations among regulation success indexes and other variables of interest may have reached statistical significance.

In terms of PPG sexual preference testing for sexual offenders, our results imply that most offenders, especially those who exhibit heightened sexual drive and sexual self-regulation failure, should not be able to substantially minimize their sexual responses to preferred stimuli. The PPG, in other words, should be resistant to faking of sexual preference when video stimuli and methodology designed to curb cognitive distraction are used. However, due to ethical and legal restrictions on video and photographic sexual stimuli depicting

children, most laboratories present audio stimuli. It may be that emotion reappraisal is more effective when audio stimuli, rather than video, are presented. This hypothesis warrants further investigation.

The next logical step in sexual arousal regulation research is to examine the relation between regulation performance in the laboratory and sexual arousal regulation in the context of day-to-day life. Men who have difficulty regulating in the laboratory may also have trouble controlling sexual thoughts, feelings, and behaviors outside of the laboratory. This may manifest itself in various ways including sexual behaviors that are risky, compulsive, or illegal. If so, treatments and psychoeducational programs that target sexual arousal dysregulation may become increasingly important when addressing sexuality that is considered undercontrolled. This may be especially important for sexual offenders because dysregulated sexuality appears to play an important role in sexual reoffence (Hanson & Morton-Bourgon, 2004).

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