

Social norms and general sexual satisfaction: The cost of misperceived descriptive norms

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Abstract: Past research has identified important correlates of sexual satisfaction, but more theoretically-driven research is needed to integrate these findings and identify the causes of variance in sexual satisfaction. The purpose of the two exploratory studies presented here was to examine the utility of Social Norms Theory in understanding the impact of misperceived norms on general sexual satisfaction in unmarried college students. The findings of Study 1 indicated that, consistent with previous research, participants overestimated the sexual activity and permissiveness of their peers and thus perceived self-other discrepancies. Overall, larger perceived discrepancies predicted lower general sexual satisfaction. Study 2 showed that a brief educational intervention could alter these misperceived discrepancies such that participants exposed to the intervention showed smaller self-other discrepancies with concomitantly higher levels of general sexual satisfaction. The theoretical implications of the findings are discussed.

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Introduction

Sexual satisfaction is an important component of well-being for most individuals. Studies have linked reported sexual satisfaction to increased self-esteem (Hally & Pollack, 1993), healthy disposition, life satisfaction (Apt, Hulbert, Pierce, & White 1996), “lovability” (Abadjian-Mozian 2006), relationship satisfaction (Byers, 2005), and emotional satisfaction and feelings of general happiness (Laumann, Palk, & Rosen, 1999). While it has proven difficult to determine the directionality of these results (Litzinger & Gordon, 2005), it seems clear that sexual satisfaction is related to overall satisfaction with one’s life.

Given the importance of sexual satisfaction, many researchers have explored factors that account for the variability in reported satisfaction ratings. Research focusing on the interpersonal realm has examined issues such as the quality of communication between relational partners (Lawrance & Byers, 1995) and attachment style (Haig, 2004). While the majority

of this research is relatively atheoretical, Lawrance and Byers have tested a comprehensive theory of sexual satisfaction in relationships based on exchange theory that focuses on factors such as rewards, costs, and comparison levels within romantic relationships to explain variance in sexual satisfaction (Byers, 2006; Lawrance & Byers, 1995).

In contrast to couple-focused research, there have also been a number of survey-based studies conducted to identify individual characteristics and behaviours associated with sexual satisfaction in all individuals (not just those in relationships). Findings in this area include the strong positive correlation between frequency and variety of sexual activity and sexual satisfaction (Haavio-Mannila, 1997; Hally & Pollack, 1993), the link between sexual dysfunction and lower satisfaction (Laumann et al., 1999), and the connections between sexual satisfaction and factors like marital status, age, and masturbatory habits (Barrientos & Páez, 2006).

While it is important to study sexual behaviours within the context of romantic relationships, findings from this second line of research indicate that it may also be useful to understand factors that determine how satisfied a person is with her or his sex life independently (or in the absence) of a current relationship. While theories regarding sexual satisfaction within the context of a relationship have been developed and tested (e.g., Byers, 2006), there is a conspicuous absence of theory in predicting the sexual satisfaction of a person whether or not he or she is in a relationship. Indeed, researchers have recently called for “more theoretically driven research . . . to identify how factors associated with the individual, the relationship, and the environment might interact to affect sexual satisfaction” (Christopher & Sprecher, 2000, p. 1004). While current theories illuminate relational factors, individual factors have not yet received adequate theory-driven testing. Thus, one purpose of the current study was to examine factors related to “general sexual satisfaction,” which we define here as a person’s satisfaction with his/her overall sex life (as opposed to satisfaction with a specific sexual relationship).

The current study seeks to advance our theoretical understanding of the environmental and cognitive factors that may affect general sexual satisfaction in unmarried college students. It employed Social Norms Theory, which posits that behaviour is influenced by an individual’s perceptions of how members of a social group behave (descriptive norms) and how accepting the group members are of such behaviour (injunctive norms). Social norms have long been shown to affect the behaviour of individuals (e.g. Asch, 1955; Cialdini, Reno, & Kallgren, 1990; Festinger, 1954; Reno & Cialdini, 1993) and the theory has been used to study behaviours ranging from the filing of taxes (Wenzel, 2005) to marijuana use (Kilmer et al., 2006). In the current research, we used the theory of normative influence utilized by Cialdini and colleagues (Cialdini, Kallgren, & Reno, 1991).

The first goal of the current studies was to explore whether perceptions of social norms (either descriptive or injunctive) were related to general sexual satisfaction in a population (college students) whose sexual satisfaction may be determined by

factors that are relatively independent of a specific relationship. The second goal was to test whether educational manipulation of these norm perceptions could increase satisfaction ratings in this population.

While this research does not attempt to create a comprehensive theory of general sexual satisfaction, it explores a possible component that may add predictive and explanatory power to current and future theories of both general and relationally-dependent sexual satisfaction.

Sexual norm perceptions

A majority of recent studies have explored sexual norm perceptions by measuring number of sexual partners. They have found that college students tend to believe that their peers, compared to themselves, have more sexual partners, are engaging in more dangerous sexual behaviour (Cohen & Shotland, 1996; Lajoie, 2001; Lopez, 1997; Martens et al., 2006; Scholly, Alan, Gascoigne, & Holck, 2005; Seal & Agostinelli, 1996), and are more accepting of such behaviour (Lambert, Kahn, & Apple, 2003). These perceptions of both behaviour and approval are present across racial and gender lines and are endorsed regardless of personal levels of behaviour (Seal & Agostinelli, 1996). As a result of these norm misperceptions, students tend to see large self-other discrepancies in terms of sexual behaviour (measured as number of partners) and permissiveness, believing they are more different from the norm on average than they actually are.

These perceived self-other discrepancies have also been found for other types of behaviours, most notably alcohol consumption. Researchers have found that college students tend to over-estimate the drinking behaviour of their peers and the acceptance of it by their peers, especially in regards to high-risk binge drinking (Borsari & Carey, 2003; Hines, Saris, & Throckmorton-Belzer, 2002; Perkins & Wechsler, 1996; Suls & Green, 2003). Such perceptions help to normalize dangerous levels of alcohol consumption and increase pressure to consume dangerously large amounts of alcohol. In response, a number of norm-based education campaigns have been undertaken to correct inaccurate norm perceptions and decrease dangerous drinking behaviour. These efforts have met with success in

some cases with students targeted by norm campaigns reporting more accurate perception of peer behaviours and decreased dangerous drinking behaviour (Berkowitz, 2006; Lewis & Neighbors, 2006).

Given these beneficial results, researchers have begun to explore how the same types of campaigns can be applied to other behaviours, including sexual health behaviours (Martens et al., 2006; Scholly et al., 2005). While most of these studies are exploratory and modeled on earlier alcohol research, the hope is that risky sexual behaviours, like drinking behaviours, can be decreased by providing accurate information regarding baseline levels of sexual activity.

Potential emotional consequences

In addition to the behavioural effects of norm misperceptions, researchers have also identified important emotional consequences that result from either deviating from or conforming to descriptive social norms (Claire, 1994). Recent studies employing a “motivational approach to normative behavior” (Christensen, Rothgerber, Wood, & Matz, 2004) have revealed that people feel more positive emotions when conforming to group norms and more negative emotions when deviating from such standards.

Most of these studies have explored simple, discrete choices (such as working on a Rubik’s Cube) and, correspondingly, measured transient emotions such as how participants feel “right now.” We suspect that these emotional effects may be longer lasting and farther reaching for behaviours that are more central to an individual’s sense of self and his/her life satisfaction, such as sexual behaviour and beliefs. More specifically, we expect that, in the realm of sexual behaviour, college students may experience lower sexual satisfaction as a result of perceived self-other discrepancies for sexual behaviour and beliefs. The current research explored this possible relationship. Our working hypothesis was that the greater the discrepancy between a person’s own experience/beliefs and his/her perceptions of prevalent social norms for others, the lower would be the person’s reported satisfaction with his/her sex life.

In keeping with previous work on sexual norms perceptions (e.g. Seal & Agostinelli, 1996), we opted to use number of sexual partners as our measure of

sexual activity. Of course, there are a number of sexual behaviour variables that could be used to study the relationship between self-other discrepancies and sexual satisfaction such as sexual frequency and quality of sexual interactions. Given the exploratory nature of this study, however, and the unique comparison of norms perceptions to satisfaction, we thought it appropriate to begin with a variable for which large self-other discrepancies have already been documented across gender and racial lines (Seal & Agostinelli, 1996). Once the utility of social norms theory in sexuality is more firmly established, it will no doubt be beneficial to explore additional measures of sexual behaviour that have been shown to be linked with satisfaction. Indeed, given the nature of social norms perceptions, large discrepancies in many measures of sexual behaviour should be associated with decreased satisfaction.

Additionally, the use of number of sexual partners as a measure of sexual behaviour can be examined relatively independently of an individual’s current relational status. Social norms theory is best able to explain a person’s perceived relationship to a group of peers as opposed to an individual such as a current relational partner. By focusing on a facet of social comparison that can be measured independently of current relationships, we hoped to touch on an element of “general satisfaction” that is potentially universal, affecting both those involved in a sexual relationship and those who are not, and/or never have been. For example, even young adults who have not yet engaged in intercourse are likely to compare their experiences, or lack thereof, to what they perceive as normative levels of experience (and may be even more likely to do so than someone more experienced).

Relationship status as a possible moderator of perceived sexual norms

We suspect that everyone tends to compare their sexual experiences to perceived sexual norms. However this comparison may be qualitatively different for an individual depending on his/her relationship status, operationally defined as currently being involved in an exclusive romantic relationship or not. Studies have shown that men and women in relationships tend to be more sexually satisfied than those who are not (Laumann, Gagnon, Michael, & Michaels, 1994; Stanley & Markman, 1997),

implying some difference between the two groups. While we are aware of no research examining the role of relationship status in sexual norms perceptions, it would make intuitive sense that those in a romantic relationship would be less concerned about the sexual behaviour and beliefs of others. To test this assumption, we examined relationship status as a moderator between perceived self-other discrepancies and sexual satisfaction, predicting that the effect of discrepancies would be significantly less for individuals currently in a romantic relationship.

Gender as a possible moderator of perceived sexual norms

Past research has documented important gender differences in regards to sexuality. In particular, recent reviews of the literature indicate differences between men and women in terms of masturbatory habits, attitudes towards casual sex, arousal to erotica, orgasm consistency, sex drive, and an emphasis on the relationship as a context for sexual expression (Oliver & Hyde, 1993; Peplau, 2003). While recent studies call the authenticity of some these differences into doubt (e.g. Alexander & Fisher, 2003), there do seem to be important differences between men and women in the sexual realm.

In terms of social norms perceptions and sexual satisfaction there is little consistent evidence from which to make predictions about potential gender differences. However, early studies on sexual norms showed that men may be affected more by these types of perceptions (Seal & Agostinelli, 1996). Researchers have also found that men tend to endorse conformity motives for engaging in sex (e.g., having sex to conform to a peer group) significantly more often than women (Browning, Hatfield, Kessler, & Levine, 2000). Given these findings, we tentatively predicted a gender interaction where the association between perceived self-other discrepancies and satisfaction would be stronger for men than for women.

The hypotheses introduced above were tested in two questionnaire studies on young adult university students. Study 1 had two general goals; first, to verify the expected relationship between self-other sexual discrepancies and general sexual satisfaction and second, to determine whether gender or relationship status moderated this relationship. Study

2 sought to determine whether experimental manipulation of the participants' sexual norm perceptions would have an effect on perceived self-other discrepancies and on reported levels of general sexual satisfaction. The reports for studies 1 and 2 are presented sequentially with a final general discussion.

Study 1: Hypotheses

For Study 1 we used an online survey to assess participants' sexual behaviour and beliefs, as well as their perceptions of peer behaviour and beliefs. We hypothesized that perceived self-other discrepancies found in previous studies would be replicated in our sample; that is, students would see themselves as having had significantly fewer sexual partners and as being less sexually permissive than their peers.

We further hypothesized that the size of these perceived self-other discrepancies would inversely predict reported sexual satisfaction. In other words, greater discrepancies between participants' behaviour and their perception of peer behaviour (descriptive norms) and greater discrepancies between one's own level of acceptance for sexual behaviour and the perceived acceptance shown by one's peers (injunctive norms) would be associated with lower levels of sexual satisfaction.

In addition, tentative predictions were made regarding gender and relational status as moderators. Specifically, we hypothesized that the effect of perceived discrepancies would be a better predictor of satisfaction for men and those currently not in an exclusive romantic relationship as compared to women and those in such a relationship.

Study 1: Methods

Participants

Participants were 152 undergraduate introductory psychology students from a private American university. They were 73% female and 27% male, with a mean age 18.5 years ($SD = .78$). The sample was 69% Caucasian, 15% Asian, 10% Latino, 4% African-American, and 2% other, consistent with the ethnic breakdown of the student body. Thirty-four percent of the participants were currently involved in a romantic relationship and 40% reported no

history of vaginal intercourse. Only 1% of participants identified as homosexual or bisexual. As such, no conclusions could be drawn regarding differences in sexual orientation or self-identification and these participants were excluded from the analyses.

Procedures

Participants filled out online surveys for course credit in an introductory psychology class. The students were provided with unique identification numbers to access the online system for social science surveys and could choose from a list of available studies to fulfill class requirements. Study 1 was labeled "Social Norms and Sexual Satisfaction." Once they had selected the study, participants were directed to an online consent form before filling out five questionnaires, which were presented in a random order. All answers were anonymous with random identifiers used to organize response data. From the total sample, 146 participants (96.1%) completed all required questionnaires (those who dropped out before completion of surveys were not included in the analyses and none of the information they provided was available to the researchers).

Measures

Participants completed five surveys assessing, respectively, (a) sexual behaviour, (b) perceptions of "average" levels of sexual activity, (c) sexual permissiveness, (d) perceptions of "average" levels of sexual permissiveness, and (e) sexual satisfaction. They also provided demographic information on gender and current relationship status.

Sexual behaviour

The comprehensive survey used to assess participant sexual behaviour adopted items modeled on those in Trauger, Schick, Astor-Stetson, & Beck (1998) and included questions regarding vaginal intercourse, oral sex, and petting (also described in the measure as hand-to-genital contact). For each behaviour, participants were asked if they had ever engaged in the behaviour and how old they were when they first engaged in it. They were then asked to report the number of partners they have had in eight different situations (e.g. how many overall lifetime partners, how many partners in monogamous relationships, how many partners in hook-ups, etc.). Reliability was assessed using coefficient alpha. Each of the four

subsections were reliable (coefficient alpha ranged from .84 - .88) as was the full scale (coefficient alpha = .93; CI = .91 - .94). In the current sample, 87 (60%) participants reported having engaged in vaginal intercourse (25% males, 75% females). For males, this is lower than estimates from a national representative sample of people averaging 18.5 years of age (65%; Mosher, Chandra, & Jones, 2002). Of the 59 participants who had not engaged in vaginal intercourse, 38 (64.4%) had engaged in petting (27% males, 73% females), and 22 (37.3%) had engaged in oral sex (32% males, 68% females). Overall, only 21 participants (14%) reported having no sexual experience at all. The current analyses focused on the reported number of lifetime partners for each of the three sexual behaviours and a total sexual experience score, created by summing the reported number of lifetime partners for each of the three sexual behaviours. While this total experience score may count a single partner multiple times (e.g., if an individual reported oral and vaginal sex with one partner, this would result in a total experience score of two), we felt that experiencing different types of sexual behaviour should also be included in the construct of "sexual experience," and thus was worthy of inclusion in analyses.

Sexual permissiveness

The Brief Sexual Attitudes Scale (Hendrick, Hendrick, and Reich, 2006) was used to assess sexual permissiveness. This scale has been shown to be a reliable and valid measure of sexual permissiveness; coefficient alpha was .93 (CI = .91 - .95) in the current Study 1. On this measure, participants rated their agreement with 10 statements (e.g., the best sex is with no strings attached) that tap the construct of sexual permissiveness on a 6-point scale ranging from 1 (strongly disagree) to 6 (strongly agree). Mid-scale items were "disagree somewhat" and "agree somewhat". Total scores were obtained by summing responses (possible range 10-60) with higher scores indicating higher levels of sexual permissiveness. While a scale measuring permissiveness towards the specific activities measured (i.e., oral sex, vaginal intercourse, etc.) would have been informative, no such validated scale was available at this time.

Norm perceptions

Variations of the above scales were used to assess participant perceptions of descriptive and injunctive norms. For both scales, sexual experience and sexual permissiveness, participants were instructed to estimate the “answer given by an average male/female” peer at their college. Given the documented differences between males and females in terms of both sexual activity and permissiveness (e.g., McCabe & Collins, 1984) and to allow for more direct social comparison, participants gave separate estimates for male and female peers. Items in the scales were identical to the sexual activity and sexual permissiveness scales, except for the above instructions and a differing subject (e.g., “How many oral sex partners have you had in your lifetime?” versus “How many oral sex partners has the average [school name] male/female had in his/her lifetime?”).

Self-other discrepancies

To quantify self-other discrepancies for descriptive norms, each participant’s reported number of lifetime partners was subtracted from his/her perceived norms score for lifetime partners for same-gender peers, resulting in a norm discrepancy score that represented the size of the difference between a subject’s personal experience and what he/she perceived as an average level of experience for same-gender peers. This was done for overall sexual experience and separately for each type of behaviour. To quantify self-other discrepancies for injunctive norms, each participant’s total score on the sexual permissiveness scale was subtracted from his/her perceived total score for same-gender peers.

Sexual satisfaction

Most widely used scales of sexual satisfaction tend to assess individual feelings within the context of a current sexual relationship. Given our goal of assessing sexual satisfaction independently of relational status, many of these measures were inappropriate. One that did fit our purpose was the “overall satisfaction” subscale of the Pinney Sexual Satisfaction Inventory (Pinney, 1987). The subscale consists of 14 statements designed to measure sexual satisfaction relatively independently of relational or sexual status, such as “In general I am satisfied with my sex life” and “I feel nothing is lacking in my sex life.” None of the items in this scale directly assessed

number of sexual partners. Participants rated their agreement with these statements on a 6-point scale ranging from 1 (strongly disagree) to 6 (strongly agree). Mid-scale items were “disagree somewhat” and “agree somewhat”. Possible score range was 14-84.

This scale was been shown to be a reliable and valid measure of sexual satisfaction in single women. Though the scale has not been validated on men and has been used less than some more popular scales of sexual satisfaction, we experienced no problems in terms of reliability: coefficient alpha for the measure was .96 (CI = .94 - .97). The lack of a more recent and validated scale for general sexual satisfaction is something future research should address.

Study 1: Results

Self-other discrepancies

The mean, median, and standard deviations for self-reported number of sexual partners for each sexual behaviour and for total sexual experience can be found in Table 1. Differences between sexual experience scores and perceived norm experience scores (norm discrepancies; comparing male participants to average male ratings and female participants to average female ratings) were evaluated using a series of 2 X 2 repeated measures analysis of variance (ANOVAs). Interactions between gender and norm discrepancies were included in the model because of the potential for sex differences in reported behaviour and beliefs (Oliver & Hyde, 1993). The main effects of norm discrepancies and gender and the interaction effects between norm discrepancies and gender can also be found in Table 1. Since a large majority of participants (90% of both males and females) believed they were less sexually experienced than their peers, the sample of those who perceived themselves as having more partners than their peers was too small to allow for meaningful analyses or interpretations.

Using an adjusted *p* value of .01 to protect from Type I error due to multiple tests, statistically significant discrepancies between sexual experience scores and perceived norm experience scores were found for all three sexual behaviours (petting, oral sex, vaginal intercourse) and for total sexual experience. As expected, participants believed that they had lower

Table 1 Descriptive statistics and repeated measures ANOVAs comparing sexual behaviour and perceptions of local peer's sexual behaviour for Study 1.

Number of partners	Self	Others	<i>F</i> Norm Discrepancies	Partial n2	<i>F</i> Gender	Partial n2	<i>F</i> Interaction	Partial n2
Total sexual experience			53.03 ***	.27	2.49	.01	2.49	.02
<i>M</i>	8.4	15.5						
<i>Median</i>	6.0	13.0						
<i>SD</i>	9.2	9.9						
Petting			21.20 ***	.13	1.66	.01	1.44	.01
<i>M</i>	4.5	6.6						
<i>Median</i>	3.0	5.0						
<i>SD</i>	5.0	4.9						
Oral sex			73.84 ***	.34	1.81	.01	6.23	.04
<i>M</i>	2.2	4.7						
<i>Median</i>	1.0	4.0						
<i>SD</i>	2.5	3.4						
Vaginal intercourse			39.28 ***	.21	0.35	.00	0.95	.01
<i>M</i>	1.6	3.2						
<i>Median</i>	1.0	3.0						
<i>SD</i>	2.5	1.8						

** $p < .01$; *** $p < .001$

Note: Ranges of scores below

Total sexual experience	0-50	Total perceived sexual experience	0-60
Petting	0-25	Total perceived petting	0-30
Oral sex	0-15	Total perceived oral sex	0-15
Vaginal intercourse	0-16	Total perceived vaginal intercourse	0-15

than average levels of sexual experience compared to same-gender peers. No main effects were found for gender, indicating that men and women did not vary to a statistically significant degree in their reported behaviour and beliefs.

Similar results were obtained in regards to permissiveness. A 2 X 2 repeated measures analysis of variance was used to evaluate injunctive discrepancies between self-reported permissiveness and participants' perceptions of same-gender peers' permissiveness. The interaction between injunctive discrepancies and gender was included in the model. As expected, participants believed that their peers were statistically significantly more sexually permissive ($M = 28.2$) compared to themselves ($M = 21.58$), $F(1, 144) = 66.9$, $\zeta^2 = .32$, $p < .001$. A statistically significant main effect of gender was also found; men reported significantly higher levels of permissiveness (marginal means for self-report and perceptions of peers were 29.7 and 38.6 respectively) compared to women (marginal means for self-report

and perceptions of peers were 18.6 and 24.4 respectively), $F(1, 144) = 86.8$, $\zeta^2 = .38$, $p < .001$. Possible sexual permissiveness score range was 10-60. The interaction term was not statistically significant, indicating that men and women reported similar discrepancies between their own degree of sexual permissiveness and their perceptions of their same-gender peers' degree of sexual permissiveness. Sexual permissiveness was not significantly correlated with sexual satisfaction, $r = .01$, *ns*.

Self-other discrepancies and sexual satisfaction

Descriptive norms

Hierarchical linear regression analysis was used to determine whether (1) descriptive norm discrepancies predicted sexual satisfaction, (2) gender or relationship status predicted sexual satisfaction and (3) gender or relationship status moderated the effect of descriptive norm discrepancies on sexual satisfaction. Descriptive norm discrepancy variables were centered before creating the interaction terms and the centered variables

were used in the subsequent analyses (Aiken & West, 1991). Descriptive norm discrepancies, a dummy variable representing gender, and relationship status were entered in the first block and the interactions between gender and descriptive norm discrepancies and between relationship status and norm discrepancies were entered in the second block. Four regression analyses were conducted for discrepancy scores for each of the three sexual behaviours and for total sexual experience (see Table 2).

All of the descriptive norm discrepancy variables statistically significantly predicted sexual satisfaction, indicating that higher perceived discrepancies between participants' behaviour and the behaviour of their peers predicted lower levels of sexual satisfaction. In contrast, gender did not predict sexual satisfaction. Relationship status consistently predicted sexual satisfaction, indicating that participants who were currently in an exclusive dating relationship reported higher sexual satisfaction compared to participants who were not in an exclusive dating relationship. There were no statistically significant interactions between descriptive norm discrepancies and gender, or between descriptive norms discrepancies and relationship status in predicting satisfaction.

Injunctive norms

Contrary to our hypotheses, the hierarchical linear regression results indicated that there was no statistically significant relationship between injunctive norm discrepancies and sexual satisfaction, $F(2, 143) = .59$, $\beta = -1.01$, *ns* and gender did not predict sexual satisfaction when entered in the first block with

injunctive norm discrepancies, $\beta = .07$, *ns*. The interaction term was also non-significant, $F(3, 142) = .48$, $\beta = -.09$, *ns*.

Study 1: Discussion

As expected, the results indicated that college students tended to overestimate the sexual behaviour and sexual permissiveness of their peers. Participants in Study 1 did endorse beliefs that their peers had more sexual partners and were more sexually permissive, on average, compared to themselves. These differences were present across gender. The results mirrored the findings of previous research (Seal & Agostinelli, 1996) and thus allowed us to assume with confidence that participants perceived sizeable differences between themselves and their peers in these areas, regardless of gender.

Also consistent with our hypotheses, self-other discrepancies for descriptive norms were found to be related to sexual satisfaction; the larger the difference a participant perceived between him or herself and "average" peers in terms of sexual behaviour, the lower his or her reported satisfaction. This finding is consistent with a motivational approach to normative behaviour (Christensen, et al., 2004) which predicts that people feel increased negative emotion when deviating from peer descriptive norms. Contrary to our hypotheses, the interaction between gender and descriptive norm discrepancies did not predict sexual satisfaction. Although we predicted that norms perceptions would have a stronger effect for men, this hypothesis was based on limited research regarding sexual norms

Table 2 Prediction of individual sexual satisfaction from norm discrepancies, gender and relationship status; Study 1

Predictors	β Discrep.	β Gender	β Rel. status	<i>F</i>	<i>R</i> ²	β Discrep. X gender	β Discrep. X rel. status	<i>F</i> Change	<i>R</i> ² Change
Total sexual experience	-.34 **	-.01	.37 ***	6.8 **	.20	.12	.11	1.40	.02
Petting	-.39 ***	.01	.38 ***	6.6 **	.19	.21	.12	2.40	.03
Oral sex	-.34 **	.01	.38 ***	6.6 **	.19	.15	.13	2.30	.03
Vaginal intercourse	-.34 **	-.01	.36 ***	6.3 **	.18	-.01	.10	.59	.01

* $p < .05$; ** $p < .01$; *** $p < .001$

Discrep. = discrepancies

perceptions. In fact, much of the research on gender's moderating effect on social norms perceptions in general is mixed. While some studies have reported that norms perceptions predicted behaviour more accurately in men, others report that women were more strongly affected (Eleck, Miller-Day, & Hecht, 2006). Thus, our null findings in this regard could have been due to the unique composition of our sample, or could have resulted from our having only a partial understanding of the influence of gender on norms perceptions. Additional research is necessary to replicate these results and test for possible 3-way interactions between gender, norms perceptions, and other variables in determining sexual satisfaction and a wide range of behaviours.

Relationship status, as expected, did predict sexual satisfaction; participants in relationships reported higher sexual satisfaction than participants who were not in exclusive dating relationships. However, there were no statistically significant interactions between descriptive norm discrepancies and relationship status, indicating that norm discrepancies affect sexual satisfaction similarly for those in relationships and those not in relationships. This effect adds support to our conceptualization of general sexual satisfaction and suggests that norms perceptions may play an important role in satisfaction independent of relational status.

Contrary to expectations, no relationship was found between sexual permissiveness discrepancies and sexual satisfaction. The reasons for this null finding are not known. However, recent research on the effect of norms perceptions on drinking behaviours has found that perceived descriptive norms of distal reference groups (e.g., same-gender peers) are related to drinking behaviour whereas perceived injunctive norms of these same groups are not (Neighbors et al., 2008). In fact, only perceived injunctive norms for proximal reference groups (e.g., friends and parents) were related to behaviour. We do not know whether these findings generalize to sexual behaviour, or sexual satisfaction, but one possible explanation of our findings is that our reference group was too distal to allow for the influence of perceived injunctive norms on sexual satisfaction. Given these null findings, we chose to drop injunctive norms as a variable for Study 2.

Strengths and limitations of Study 1

The findings of Study 1 suggest that Social Norms Theory may provide a useful framework for understanding cognitive and social environmental factors that influence sexual satisfaction. Given the finding that perceived self-other discrepancies for descriptive norms predicted satisfaction ratings for men and women across relationship status, the two constructs do seem to be related in some way. However, the fact that injunctive norms discrepancies did not predict satisfaction implies that these types of norms may function differently in determining emotional outcomes.

The primary limitation of Study 1 was that it was correlational, so the exact nature of the relationship between descriptive norm discrepancies and sexual satisfaction remained unclear. While we were able to find a relationship between the two, we could not determine the directionality of the relationship or whether a third variable was affecting both ratings. An experimental study was necessary to address these issues.

Psychologists and communications scholars have suggested multiple ways in which perceptions of sexual norms are formed ranging from peer discussion (Lapinski & Rimal, 2005) to media influences (Chia & Gunther, 2006). In all cases, beliefs regarding norms are based on information gathered from external sources, which means that perceived norms should be malleable if new information is provided.

Study 2: Introduction

Rationale and hypotheses

The first goal of Study 2 was to replicate the findings of Study 1. We again tested for a statistically significant overestimation of peer sexual activity and a statistically significant negative relationship between the size of perceived self-other discrepancies for descriptive norms and sexual satisfaction. Since no statistically significant correlation was found between injunctive norm discrepancies and satisfaction in Study 1, these norms were not included in Study 2. The second, and primary purpose of Study 2 was to determine the directionality of the

relationship between descriptive norm perceptions and satisfaction by manipulating sexual norm perceptions and measuring the effect on reported general sexual satisfaction. Use of this experimental method also offered the opportunity to identify a possible direct relationship between norm perceptions and satisfaction, independent of the influence of third factors like amount of sexual experience.

If we assume that participant misperceptions of sexual norms are based on inaccurate information regarding sexual behaviours, then accurate information should correct these erroneous beliefs, as seen in alcohol consumption studies (e.g., Lewis & Neighbors, 2006). We hypothesized that the provision of accurate normative information about pertinent sexual behaviours would be effective in decreasing perceived self-other discrepancies. If a direct relationship between perceived discrepancies and sexual satisfaction exists, then this intervention would also be expected to result in higher levels of general sexual satisfaction.

Study 2: Methods

Participants

The sample for Study 2 consisted of 119 undergraduate introductory psychology students from the same university as for Study 1. Participants were 82% female and 18% male, with a mean age 18.8 years ($SD = .84$). The sample was 77% Caucasian, 6% Asian, 9% Latino, 2% African-American, and 7% other. Forty-seven percent of the participants were currently involved in a romantic relationship and 37% reported no history of vaginal intercourse.

Measures

Three of the surveys used in Study 1 were included in Study 2. They assessed sexual behaviour (Trauger, Schick, Astor-Stetson, & Beck, 1998), beliefs regarding "average" levels of sexual activity, and sexual satisfaction (Pinney, 1987). Questionnaires were identical to those given in Study 1, except for the fact that they were paper versions instead of online versions.

Descriptive norms educational intervention

We opted for a personalized, local normative

intervention to manipulate norm perceptions based on previous research regarding the effectiveness of this technique (Cho, 2006) and the relative ease of providing the information in a controlled environment. The intervention consisted of a paper handout with a summary of data collected in Study 1 including all three types of sexual behaviours (vaginal intercourse, oral sex, and petting) in three relational contexts: number of lifetime partners, partners in the past year, and number of partners in a "hook-up." We included the mean number of partners for each activity, including bar graphs to optimize understanding for participants who would be better able to access information in this form. Based on past studies on norm interventions (e.g., Cho, 2006), we believed that norms for one's same-gender peers at a private university represented an ideal balance between global norms (which may have little impact due to the absence of a relevant reference group) and overly specific norms (such as a participant's group of friends), to assure maximum impact of the intervention.

Procedure

Students signed up for the study in the same manner used in Study 1 and received course credit in an introductory psychology class for their participation. Those who selected the study were randomly assigned to either the experimental or control condition (based on the last digit of their student ID numbers). Preliminary analyses confirmed no significant differences in gender distribution, dating status, or coital status between the groups. Separate experimental sessions were held in a university classroom: three control sessions and three experimental sessions. All participants were presented with a consent form first.

Participants in the experimental condition next received the handout containing the normative information. They were given approximately 5 minutes to read the handout (specific times varied as participants were instructed to take as long as they needed) before returning it to the experimenter. They did not have the handout while completing the questionnaires. Participants in the control condition received no handout intervention. All participants were then given the three surveys assessing sexual behaviour, perceptions of peer's behaviours, and sexual satisfaction. All answers were anonymous with

random identifiers used to organize response data. From the initial sample, 95.8% completed all required questionnaires (those with missing responses were excluded from corresponding analyses).

Study 2: Results

To verify that the statistically significant overestimation of peer sexual activity found in Study 1 was replicated with the control group in Study 2, a series of paired-sample *t* tests were performed. Gender was not included in these analyses because no gender differences were found between men and women in norm discrepancies in Study 1 and because of the relatively low number of men in the Study 2 sample. The results of these analyses along with the mean, median, and standard deviations for self-reported number of sexual partners for each sexual behaviour and for total sexual experience can be found in Table 3. Consistent with Study 1, statistically significant discrepancies were found for total sexual experience scores, indicating that participants believed that they had significantly fewer sexual partners compared to same-gender peers. Using the adjusted *p* value of .01 to control for Type I error, the discrepancy for oral sex experience was also statistically significant.

Pearson correlation coefficients were used to evaluate the relationship between descriptive norm discrepancy and sexual satisfaction. Consistent with Study 1, a statistically significant negative correlation was found for total sexual experience, $r = -.21, p < .05$, indicating that the larger the size of the self-other discrepancy, the lower the participant’s reported sexual satisfaction. For the specific sexual behaviours, using the adjusted *p* value, a statistically significant negative correlation was found between descriptive norm discrepancies for vaginal intercourse and sexual satisfaction, $r = -.28, p < .01$. The correlations between norm discrepancies and petting (-.15) and oral sex (-.18) were not statistically significant (most likely due to the smaller sample size).

Comparison of experimental and control groups

To determine whether control and experimental groups differed on self-reported sexual experiences and their perceptions of peers’ experience, the two groups were compared on four variables (total sexual experience, petting, oral sex, and vaginal sex) using two one-way analyses of variance. No differences were found between the two groups on reported sexual experiences. In contrast, there were statistically significant differences for all four

Table 3 Descriptive statistics and *t* tests comparing sexual behaviour and perceptions of local peer’s sexual behaviour for Study 2 control group

Number of partners		Self	Others	<i>t</i>
Total sexual experience	<i>M</i>	10.5	14.9	-2.68 **
	<i>Median</i>	7.0	12.0	
	<i>SD</i>	12.0	10.5	
Petting	<i>M</i>	5.3	7.0	-2.31 *
	<i>Median</i>	3.0	5.5	
	<i>SD</i>	6.2	5.3	
Oral sex	<i>M</i>	3.0	4.7	-3.28 **
	<i>Median</i>	2.0	4.0	
	<i>SD</i>	3.8	3.3	
Vaginal intercourse	<i>M</i>	2.1	3.0	-2.1 *
	<i>Median</i>	1.0	3.0	
	<i>SD</i>	2.8	2.4	

* $p < .05$; ** $p < .01$

Note: Ranges of scores below

Total sexual experience	0-68	Total perceived sexual experience	0-35
Petting	0-25	Total perceived petting	0-15
Oral sex	0-20	Total perceived oral sex	0-15
Vaginal intercourse	0-23	Total perceived vaginal intercourse	0-10

variables on perceptions of peers' experiences (see Table 4), with the experimental group providing statistically significantly lower estimates of peers' levels of sexual experience compared to the control group's estimates. Taken together, these findings indicate that the experimental manipulation was effective for the targeted variable (i.e., perceptions of peers' levels of experience).

The effect of the experimental manipulation on general sexual satisfaction was tested using a *t* test to determine whether there was a statistically significant difference in mean sexual satisfaction scores across the two groups. The experimental group reported statistically significantly higher levels of sexual satisfaction ($M = 72.3$) compared to the control group ($M = 64.9$), $t(110) = 2.14$, $p < .05$. The effect size was $d = .48$, which is considered a medium effect size. To ensure that differences in satisfaction were due to the reduction of norm discrepancies in the experimental group rather than some other variable (e.g., demand characteristics) two additional analyses were run. First, an ANOVA was performed using group membership as the independent variable and satisfaction as the dependent variable. Results confirmed that satisfaction was significantly predicted by group membership, $F(1, 109) = 4.3$, $p < .05$. Next, an ANCOVA was performed, using norm discrepancies as a covariate. Results indicated that

when norm discrepancies were controlled for, group differences in sexual satisfaction became non-significant, $F(1, 109) = 1.3$, *ns*, indicating that the differences in norm discrepancies between groups were driving the difference in satisfaction between the two groups.

Study 2: Discussion

As hypothesized, the descriptive norms intervention did appear to affect norm discrepancies, with the experimental group reporting smaller perceived self-other discrepancies compared to the control group. The experimental group also reported statistically significantly higher sexual satisfaction ratings. These findings are important for a number of reasons. First, it does appear that sexual norms perceptions can be manipulated, that is, that providing college students with accurate normative information can provide them with more accurate perceptions of peer behaviour. This result extends the findings of alcohol normative campaigns (Berkowitz, 2006; Lewis & Neighbors, 2006) into the area of sexuality and suggests that the study of sexual behaviours and satisfaction can benefit from similar research.

Even more importantly, the effect of providing an intervention designed to increase the accuracy of sexual norms perceptions resulted in higher self-reported sexual satisfaction in the experimental group

Table 4 Descriptive statistics and *F* values from one-way ANOVAs comparing groups on perceptions of peer sexual behaviour, Study 2

Perceptions of peer behaviour		Control Group	Experimental Group	<i>F</i>
Total Sexual Experience				10.0 **
	<i>M</i>	15.0	10.1	
	<i>SD</i>	10.5	5.1	
Petting				7.7 **
	<i>M</i>	7.0	4.8	
	<i>SD</i>	5.3	3.0	
Oral Sex				10.5 **
	<i>M</i>	4.7	3.1	
	<i>SD</i>	3.3	1.6	
Vaginal Intercourse				7.4 **
	<i>M</i>	3.0	2.0	
	<i>SD</i>	2.4	1.0	

* $p < .05$; ** $p < .01$

than in the control group. In other words, it seems that when accurate sexual norm information was provided to college students, it not only increased the accuracy of their norm perceptions, but also led them to feel more satisfied with their overall sex lives. This result lends support to a motivational approach to normative behaviour (Christensen, et al., 2004), which stipulates that individuals will experience a lower level of negative emotion when conforming to peer norms. Specifically, our results suggest that these emotional consequences may extend to more global assessments of satisfaction in wide behavioural areas. Given the ethical implications of manipulating other factors associated with sexual satisfaction (e.g., relationship quality), this may be one of the few cases where we can establish a link between a cause of satisfaction and satisfaction ratings that does not rely solely on correlational data or the temporal relationships between factors.

General discussion: Overall study

The two exploratory studies presented here suggest the presence of a relationship between the misperception of social norms and general sexual satisfaction in unmarried college students. It seems clear that college students tend to overestimate the sexual experience and sexual permissiveness of their peers, believing that their peers have more sexual partners and are more sexually permissive than they actually are. It also seems that, in terms of number of partners, the more unusual college students perceive themselves to be, the less satisfied they are with their sex lives (and that this is true across gender and relational status). Experimental manipulation suggests that this is a direct relationship; when participants realized that they were more “normal” than they had thought, they reported higher levels of satisfaction.

Limitations: Overall study

Given the exploratory nature of the two studies presented here, it is important to note their limitations. First, both samples were predominantly female and white, compromising the external validity of the findings. Second, approximately 42% of the students we surveyed attended private religious high schools and over 45% identified themselves as Catholic or Roman-Catholic. Given this background, it is not

surprising that participants were generally less sexually experienced and permissive than population norms (Laumann, et al., 1999). For example, 40% of the participants in Study 1 were virgins at the time the study was performed. As noted earlier, given the average participant age of 18.5 years, we should expect a percentage of about 35% based on a representative national sample (Mosher, et al., 2005). Thus, it would appear that our sample had more white students, had a higher percentage of females, was less sexually experienced, and was less sexually permissive than the population in general, all of which may limit the generalizability of our findings.

Additionally, the nature of the experimental manipulation in Study 2 may have affected participant responses. Specifically, participants were provided with normative information before completing questionnaires assessing norm perceptions and satisfaction. As such, participants may have ascertained that the study hypotheses involved the effect of norm perceptions on satisfaction. This, along with the presence of an investigator in the room, may have led to demand characteristics that biased responses. However, it is unlikely that participants in the experimental condition were aware of the specific hypothesis being tested (i.e., the correction of misperceived norms leading to increased satisfaction) and thus were probably not able to answer in such a way as to confirm this hypothesis. A post-experimental questionnaire would have been helpful in assessing the effect of many of these limitations and future research in this area would benefit from the use of such a questionnaire.

A final, and central, consideration is the use of the construct of “general sexual satisfaction.” While we believe that this construct is important for advancing research and theory development in this area, more work is needed to define and predict a person’s satisfaction with his/her sex life independent of a specific romantic relationship. The fact that we were forced to employ a rarely used scale of sexual satisfaction that has not yet been validated in men underscores the need for a better measure of general sexual satisfaction that can be used across relationship statuses.

Theoretical implications and future directions

The aim of this research was to explore a heretofore under-examined influence on sexual satisfaction using an established theoretical framework. Specifically, we asked whether or not subjective feelings of satisfaction with one's own sex life were contingent upon one's perceptions of the sexual behaviours and beliefs of others. Our findings support our hypothesis that perceptions of descriptive sexual norms do play a role in general sexual satisfaction, with perceived deviation from the norm leading to decreased satisfaction ratings. Using both correlational and experimental methods, it appears that a direct relationship exists between the two concepts suggesting that further research on normative perceptions of sexual activity may be important and fruitful.

However, it is important to note that only half of social norms theory was supported in this case; only the perception of social norms (actual behaviour) predicted satisfaction. This is generally in line with recent research on the emotional impact of norm perceptions (Christensen, et al., 2004), which has shown only that deviation from descriptive norms may cause increases in negative emotion. There are a number of possible reasons why perception of injunctive norms was not strongly tied to satisfaction, including the use of a reference group too far removed from the individual (Neighbors, et al., 2008). Alternatively, given that participants in these studies were largely first-year college students, they may not have felt a strong affinity with the selected reference group (same-gendered peers at their university). Research has shown that when people feel a weak affinity to a reference group, social norms for that group have little effect on behaviour (Rimal, 2008). It could be the case that, in the current study, the effect of descriptive norms was strong enough to overcome this weak affinity while that of injunctive norms was not. However, given the absence of measures of group affinity, these explanations are purely speculative.

In terms of descriptive norms, our results suggest that the impact of misperceiving oneself as deviating from normative levels of behaviour may do more than affect transient levels of negative affect. The

misperception of such deviation may, in fact, impact macro-level judgments regarding satisfaction. One possible reason that sexual perceptions may affect these large-scale judgments (where other perceptions may not) is that sexual behaviour involves more "ego involvement" which is defined as the extent to which individuals' self-concept is connected with their position on a particular issue and forms an integral part of how individuals define themselves (Lapinski & Rimal 2005). Given the importance of sexuality to an individual's sense of self and life satisfaction, we would expect norm perceptions to have a relatively larger impact in this area than in, say, solving a Rubik's cube. This assumption has not been tested and future research examining whether the importance or ego involvement of sexual behaviour moderates the relationship between norms perceptions and satisfaction should prove illuminating.

An important next step in expanding the current research is to explore the longevity of the present findings. In other words, how long does the increase in satisfaction last in response to a normative intervention? Given the relatively weak intervention used here (five minutes reading a paper handout) we would assume that the effect is short-lived. But, given the lack of research on sexual norm perceptions, there is little evidence to support this assumption. Another logical extension would be to test other measures of sexual behaviour. Individuals are likely to compare many aspects of their sexual experience to what they perceive as normal levels. These factors include frequency, quality, and diversity of sex. Studies using these variables would help to expand the scope of the social norms framework in relation to sexual satisfaction.

A more general extension of the current research would be to explore the emotional consequences of norm misperceptions as a mediator of the relationship between norms perceptions and behaviour. For example, it may be possible that decreased sexual satisfaction serves as a mechanism through which sexual norms perceptions affect behaviour, with large perceived self-other discrepancies in terms of number of sexual partners leading to decreased sexual satisfaction, which in turn increases one's desire to engage in sex with more partners. Indeed, the literature on social norms includes almost no explanation as to how norms perceptions influence

behaviour (Rimal & Real, 2005), but when possible mediating factors such as outcome expectations are included, the predictive power of models tends to greatly increase. We are aware of no research that has examined the emotional consequences of norm deviation as a possible mediator between perceptions and behaviour, but the findings presented here suggest that such research may lead to a more nuanced understanding of social norms in general.

It should also be noted that the role of descriptive social norms perceptions in predicting sexual satisfaction did not statistically significantly differ based on relationship status. This finding suggests that both the participants in relationships and those not in relationships may have compared their experiences to what they perceived as normal when deciding how satisfied they were with their sex lives. This observation provides some initial support for our conceptualization of general sexual satisfaction and suggests that this concept may be worthy of attention in future research on sexual satisfaction.

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