

Original Research Article

Couples' Sexual Communication. Results from a Questionnaire and Conclusions for School-Based Sex Education

ABSTRACT

Introduction: The aim of this study was to examine the relationship between sexual communication and sexual satisfaction, to analyze details of couples' sexual communication, and to derive implications for school-based sex education.

Method: A sample of 52 students recruited from Ludwigsburg University of Education completed a questionnaire with both quantitative and qualitative items.

Results: Sexual communication correlated strongly ($\rho = 0.51, P < .001$) with overall sexual satisfaction. Respondents' sexual satisfaction did not depend on whether their sexual communication was verbal or non-verbal (during initiating sex, during sex, and after sex). In accordance with gender stereotypes, we found a more frequent use of vulgar phrases by men and of euphemisms by women. Participants with undisclosed sexual fantasies (which they would love to turn into reality) had lower sexual satisfaction rates.

Discussion and Conclusion: Our results confirm, in line with previous research, that sexual satisfaction is highly predictable with sexual communication. Therefore, school-based sex education should prepare students to succeed in sexual communication. A central goal must be that girls and boys can perceive their sexual turn-ons and -offs and disclose them to a partner. This self-disclosure is a crucial factor in developing a positive intimate relationship. As suggested by respondents, role-play scenarios (behavioral skill training) seem to be well suited to learn how to communicate about safe sex practices, sexual wants, and turn-offs.

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Keywords: sexual communication; interpersonal communication; sex education; nonverbal communication; self-disclosure

1. INTRODUCTION

For most people, sex in its most satisfying form is a duet [1]. Playing in a duet requires a partner who – apart from an abusive relationship – can say no. Every duet needs cooperative efforts. Men and women with a preference for partnered sex depend on the approval of their partner. Couple's sexual communication plays a pivotal role in the development and maintenance of an intimate relationship, at least since individualization fosters a longing for new kinds of intimacy. Intra-couple communication about sexual activity includes, inter alia, flirting and initiation of sexual relationship, negotiation of safe sex practices/contraception, self-disclosure of sexual preferences, wants, turn-ons and -offs, mix-up of frequency and type of sex, day-to-day agreement of sexual activity, intra-couple communication during sex, the ritual of inquiring and sharing the emotions and sensations just experienced ('after-sex pillow talk'), and the introduction of novel sexual behaviors. Additionally, sexual communication may include talking about one's sexual values and attitudes, one's porn watching and masturbation habits, sexual dysfunction, or sexual fantasies [3, 4].

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Communication with a sex partner about one's preferences is difficult in the light of one's own vulnerability. On the other hand, the feeling of being close to one's partner is an important outcome of couples' communication [5]. For many people, the most important part of sex is not an orgasm but intimacy, in particular for those who have a long-term relationship.

Men and women tend to relate their sexual performance with their egos. While women worry about their looks, men tend to be anxious about their sexual performance and focus on the quality of their erections. The self-disclosure of sexual likes, dislikes and desires to the partner can be risky. Rejection, shame, embarrassment, or humiliation may occur and may even lead to the end of an intimate relationship. Problems like not agreeing on the type or amount of sex are frequent reasons for couples to enter relationship counseling, and the most common focus of counseling is to enhance sexual communication skills [6]. It is sad, disturbing, and unnecessary when a love relationship runs aground through miscommunication or missed communication about sex [1, 7].

The sexual revolution in the 1960s changed the attitudes toward premarital sex, birth control, and other moral standards, but it has not changed the way talking to our partner in bed [7]. In Western society, there is a lack of modeling on how to communicate effectively about sex (unhealthy sexual conversations can be observed in drama movies). Having good sexual communication skills seems to be unnecessary both in romantic novels and in pornography. While growing up, girls learn from fairy tales that they just have to wait for the prince riding on a white horse who comes to save them. Then, the 'prince' has to find out the woman's pleasure points without any support from the woman [8]. Men and women often falsely believe that their partners' preferences are aligned with their own. The message sent by romance novels is that everyone must search for the one person in the world made for us: the soulmate who is destined to be the perfect sex partner for life [6]. In this romance world, it is unnecessary to disclose sexual wants or to match up sexual preferences. And of course, no one needs to negotiate safe sex practices because this would disturb the mood of the unique romantic moment. In porn, sexual communication between the actors is missing too. The most fitting sex scenes seem to happen without any communication. Usually, sexual action starts quickly without a prolonged period of flirtatious behavior. If we do find conversations in porn, dialogues are cliché, stupid, and far different from conversations in real life.

There is a substantial amount of research that demonstrates that couples' sexual communication is positively intertwined with sexual desire/sex drive ($r = .16$), with sexual arousal ($r = .21$), with men's erectile function ($r = .19$), with women's lubrication ($r = .17$), with orgasm consistency in women ($r = .24$) and in men ($r = .17$), with overall sexual function ($r = .35$), with overall sexual satisfaction ($r = .57$) and with relationship satisfaction ($r = .51$) [9-19]. These findings implicate that one path towards sexual enlightenment and fulfillment is sexual communication. It is assumed that sexual communication facilitates sexual satisfaction firstly because self-disclosure of sexual preferences increases the likelihood to obtain sexual likes from the partner, and secondly because good sexual communication itself enhances intimacy, which in turn heightens sexual satisfaction [15]. The ability to communicate about sexual likes and dislikes, to disclose the own sexual preferences, to perceive the partner's needs, and to respond to disparate preferences might be a vehicle to foster sexual function.

Intra-couple sexual communication includes nonverbal and verbal communication. Nonverbal communication is important in all phases of intimate interactions. In flirting situations, nonverbal signs can be a happy genuine smile, an increase in eye contact, licking the lips, head tilts, twirling one's hair, self-touching behaviors, eye-opening and eyebrow lifting, talking with the hands, stretching out one's hand or touching the other's hand, arm, or face. During sex, many couples feel more comfortable communicating nonverbally. They rely on non-verbal cues during sex with their partner, such as opening of the mouth, groans, purrs, sighs, grunts, mutterings, moaning, breathing heavily, grabbing, touching, fondling, kissing, licking, sucking, and body movements. A very distinct form of nonverbal communication is guiding the partner's finger (or hand) to areas where one wants it to go. So far, almost all research has focused on couples' verbal communication as a predictor of sexual satisfaction. Blunt-Vinti et al. [9] found that during sex both nonverbal and verbal communication contribute to sexual satisfaction. Millman [20] investigated perceptions of a partner's verbal and non-verbal communication during sexual activity. She found a positive association between the perceptions of the partner's non-verbal cues and participants' own and their partner's sexual satisfaction contemporaneously.

1.1 Objectives

Overall, there is a growing body of evidence that indicates that sexual satisfaction is an out-come of good sexual communication within a couple's relational culture. However, there is a dearth of studies that focus on the specific elements that contribute to good sexual communication. What is really important, or even indispensable in couples' sexual communication? If sexual communication is a skill that can be learned, by what means can we foster the learning process? How well did, and how can sex education prepare girls and boys to succeed in sexual communication? The goal of this study was to examine the relationship between sexual communication and sexual satisfaction, analyze couples'

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sexual communication, and understand the benefits of specific forms of sexual communication. Furthermore, we wanted to analyze how school-based sex education [21-22] does or could enhance sexual communication.

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2. METHOD

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2.1 Participants

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The 52 participants were 16 male and 36 female teacher education students recruited through two courses at the Ludwigsburg University of Education. The mean age of students was 26.1 years, with a standard deviation of 4.0 and a range of 22 to 49 years. Students in a stable relationship accounted for 90.4% of the participants; 0% of the participants had a "friends with benefits" relationship, 0% had multiple simultaneous sexual relationships, and 9.6% currently had no partner. Of the 90.4% in a current relationship, the length of their relationship was $M = 45.6$ months with a range of 5 to 268 months ($SD = 44.8$). In regard to sexual orientation, 96% of the participants identified themselves as heterosexual, 2% as homosexual, and 2% as bisexual.

1. Study population: explain why the age group, why the school was chosen justify it
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2.2 Research design and procedure

For this study, we conducted a mixed-methods approach using a questionnaire with both quantitative and qualitative items. Upon consenting to take part in this study, the respondents downloaded our questionnaire and returned it by using temporary anonymous email addresses or by using our university drop box.

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2.3 Instruments

Sexual Communication was measured using the Dyadic Sexual Communication Scale (DSC) [23] which is a 13-item Likert scale assessing respondents' perception of sexual communication quality in their relationship (Cronbach's $\alpha = .81$ [24]; in this study $\alpha = .85$). *Overall Sexual Satisfaction* was measured using the Global Measure of Sexual Satisfaction (GMSEX)[25]. The GMSEX measures sexual satisfaction in response to the root question, "In general, how would you describe your sexual relationship with your partner?" using five 7-point bipolar scales: good-bad, pleasant-unpleasant, positive-negative, satisfying-unsatisfying, and valuable-worthless([26-27]; 5 items; Cronbach's alpha in this study was .85). The qualitative part of our questionnaire consisted of open-ended questions concerning the negotiation of safe sex practices, couples' sexual vocabulary, day-to-day initiation of sexual activity, intra-couple communication during sex, post-sex communication, self-disclosure of sexual fantasies and wants, and communication skills as a subject in school-based sex education.

2.4 Data analysis

Descriptive statistics, group comparisons (t-test, Mann-Whitney's U test, Fisher's Exact Test, chi-square test), and Spearman's rank-order correlation test were performed using IBM SPSS Statistics version 27. Statistical significance was set at the 0.05 probability level. Qualitative content analysis was used for the qualitative part of our questionnaire. Codes and categories were developed both deductive (based on previous research) and inductive (from our data) following the steps suggested by Mayring[28]. The reliability of assignments into categories was checked for the entire material by two independent coders. According to the formula $\kappa = (P - Pe)/(1 - Pe)$ [29] the intercoder reliability was $\kappa = .92$.

3. RESULTS

3.1 Relationship between Sexual Communication and Overall Sexual Satisfaction

At the starting point, we examined sex differences in *Sexual Communication* and *Overall Sexual Satisfaction*. We conducted Mann-Whitney's U test (the data did not met the requirement of t-tests) and found no statistically significant gender difference in *Sexual Communication* ($U = 247.000$, $Z = -.814$, $P = .42$) and *Overall Sexual Satisfaction* ($U = 236.500$, $Z = -.905$, $P = .37$).

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Data for *Overall Sexual Satisfaction* significantly deviated from a normal distribution (nearly all participants achieved high values in sexual satisfaction; Shapiro-Wilk test was below 0.001). Therefore, Spearman's rank-order correlation test had to be selected. *Sexual Communication* correlated strongly ($\rho = 0.51$, $P < .001$) with *Overall Sexual Satisfaction*. This value suggests that 26% of the variance in *Overall Sexual Satisfaction* can be explained by *Sexual Communication*. Participants

engaging in more sexual communication showed higher overall sexual satisfaction. A scatter plot of the data is presented in Figure 1. the author should also substantiate these quantitative findings with qualitative findings.....

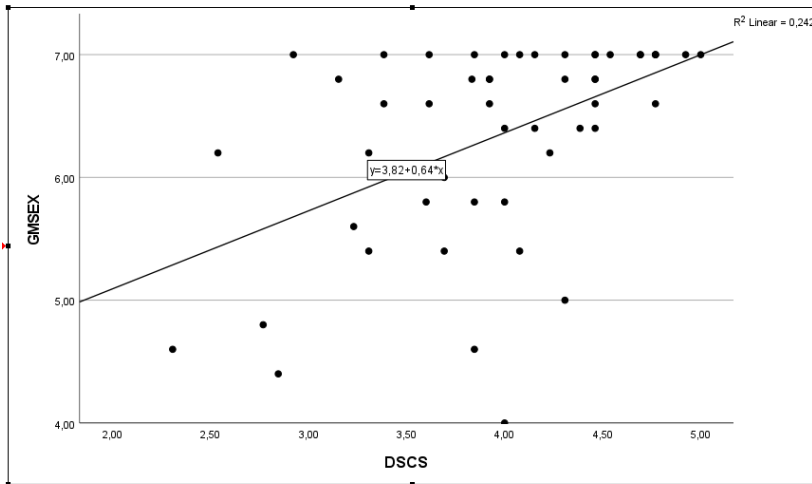


Fig.1.Scatterplot and regression line for correlation between Dyadic Sexual Communication Scale (DSCS) (values from 1 to 5) and Overall Sexual Satisfaction (GMSEX) (values from 1 to 7)

3.2 Negotiation of safe sex practices

Participants were asked the following question: If you do have a new partner and you desire to have sex with him/her, do you talk beforehand about contraception/safe sex and if so, how? Of the participants, 75% talked beforehand about contraception and/or safe sex, 21% did not talk and 4% did not respond to this item. Of the 'talkers', 10% waited with the negotiation of safe sex practices until just before penetration. Only very few of the 'non-talkers' had unprotected sex. Most of them practiced contraception/safe sex by pulling out a condom. For about half of all participants (46%), condom use was self-evident and non-negotiable.

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3.3 Sexual languages

In western society, our sex language is far away from being both understandable and pleasant. According to categorization in research [21-22], we can talk about sex using medical Latin words ('cunnilingus'), euphemisms ('sleeping together'), bureaucratic words ('to have intercourse'), vulgar/obscene/slang words ('cunt'), baby talk/childhood terms ('wee-wee', 'willy'), subculture terms ("BJ", "Dom", "Greek"), and couples' secret phrases (private phrases that make no sense to an eavesdropper; a famous example: In Proust's 'À la recherche du temps perdu' is the expression 'faire cattlesya' the secret code for sexual intercourse between Odette and Swann). In this study, the participants were asked to write down their words for sex organs and sex acts. The most used words for sex organs and sex acts were vulgar words ($M = 2.1$), followed by medical Latin words ($M = 1.9$), euphemisms ($M = 1.1$), bureaucratic words ($M = 0.9$), baby talk ($M = 0.6$), and couples' secret phrases ($M = 0.4$). Subculture terms have not been used. Secret words or phrases like 'big friend' for penis, 'rose' or 'flower' for vagina, 'to talk with little (prename of the woman)' for cunnilingus, 'surprise' for fellatio, or 'to hop' or 'cuddle plus' for intercourse were used by 27% of participants. These participants scored higher in sexual communication (DSC) ($t(50) = 2.36, P = .02$) than the non-users of secret phrases.

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3.4 Day-to-day initiation of sexual activity

Traditional gender role scripts include the expectation of men to be the initiators of sexual activity and of women to restrict sexual activity or control the pace of sexual interaction [4]. In this study, participants were asked to unfold their verbal and/or nonverbal initiations for day-to-day agreement of sexual activity. Based on observation of our data (inductive) and on previous research (deductive), verbal initiations to sex were coded as 'never ever used words', euphemisms (e.g., 'I would like to cuddle', 'shall we go upstairs'), bureaucratic phrases (e.g., 'shall we have sex'), vulgar phrases (e.g., 'I want to fuck you'), secret phrases (e.g., 'give me a little kiss' used as code for fellatio), humorous phrases (e.g., 'let's make babies', 'let's do some sports'), and direct phrases. Direct phrases were straightforward and unambiguous, such as 'I'm horny', 'Can you give me a handjob'. Of the participants, 25% never ever used words to initiate sex. Among participants who sometimes used words to initiate sex, 49% used direct and clear phrases, 39% used euphemisms, 24% used bureaucratic phrases, 10% vulgar phrases, 7% humorous phrases, and 2% secret phrases.

Vulgar phrases to initiate sex were significantly more often used by males (e.g., 'I got a boner'; $t(39) = 2.19, P = .04$) than by females, while euphemisms (e.g., "we could do something nice") were used exclusively by females ($t(39) = 4.31, P < .001$). With regard to overall sexual satisfaction (GMSEX), there was no significant difference between users and non-users of verbal phrases to initiate sex ($t(49) = 1.7, P = .87$). Nonverbal means to initiate sex were: to kiss (85% of respondents mentioned this in response to our open-ended question), petting (different activities like fondling breasts and nipples, dry humping, handjobs, fingering, oral sex; 63%), fondling (48%), cuddle (40%), touch (35%), undress oneself (23%), undress the partner (19%), drew close to the partner (17%), look with an erotic/ambiguous gaze (10%), increase in eye contact (8%), wear sexy lingerie (6%), embrace (6%), run fingers through his/her hair (4%), massage (4%), carry into the bedroom (4%), grab hard (4%), bang her ass, beat one's own ass, devote attention, head movement towards the bedroom, grin, move lasciviously, pull his/her earlobe between the teeth, use a sexy soft voice, spread one's legs wide, push her head towards my penis. Overall, our data reveal a rich array of nonverbal cues to initiate sex.

3.5 Communication during sex

We presented this open-ended question: When you have sex with your partner, how do you communicate with your partner? For nearly all respondents, communication during sex was primarily nonverbal communication. It occurred through nonverbal cues, such as moans (mentioned by 25% of participants in response to our open-ended question), eye contact (15%), gestures (12%), body movements (8%), touch (6%), facial expression (6%), kissing (4%), grin (4%), sighs (2%), clinging (2%), breathing (2%), and fondling (2%). Fairly straight-forward nonverbal 'messages' were guiding the partner's hand (15%), rotating/pushing partner's body (8%), and guiding the partner's head (2%). Of the respondents, 98% additionally used short verbal questions, wants, confirmations, or announcements like 'doggy-style', 'I am wet enough', 'turn around', 'I want to sit on you', 'do it like this', 'please don't stop', 'go on', 'a bit higher/lower', 'less/more pressure', 'I think I can't anymore'.

To talk sexy during intercourse is a particular means to accelerate sexual arousal and to spice up mundane sex life ('dirty talk'). But it can seem daunting, scary, threatening, intimidating, or confusing to males and females, if they fear to appear foolish [7]. We asked participants to think about how they would behave in this situation: "Imagine you are making love right now and you would have the courage to whisper into your partner's ear. What would you like to say?" Of the participants, 40% wrote down possible phrases they thus far had never used (e.g., 'oh god, I want you so bad', 'it feels good having you inside me', 'fuck me really hard', 'it's so horny', 'you're so horny/sexy'), 19% currently use dirty talk (3 of the 36 women, 7 of the 16 men; the association between gender and dirty-talk-use was significant: $P = .006$, two-sided Fisher's Exact Test), 8% declared that they would love to use dirty talk, but they do not dare to do that, and 33% did not answer to this item.

Additionally, we asked: "What would you like to hear from your partner?" While respondents mostly were rather reticent in describing what they would like to say, they found it rather easier to write down what they would like to hear. From their partner, 96% of participants would like to hear phrases like 'none is hotter than you', 'you're so beautiful', 'you're so horny', 'it feels so good', 'I can't get enough of you'.

3.6 Post-sex analysis

In Lifestyle magazines and in scientific research [5, 30], post-sex communication has received attention under terms such as post-sex analysis, after-sex pillow talk, or communication post sex. We posed these four versions of an open-ended question: After sex, did you (your partner) ever mention an exact positive/negative detail that you (he/she) liked/disliked, and if so, what for example? Of the participants, 13% never shared their perception of the sex they just experienced. With regard to overall sexual satisfaction (GMSEX), there was no significant difference between users and non-users of verbal post-sex communication ($t(49) = 0.45, P = .66$). Those who shared their perception and experience wrote down 54 positive and 51 negative details. A chi-square test of independence showed no significant difference in the number of positive or negative feedbacks among gender groups ($X^2(1, N = 105) = 0.48, P = .49$).

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Of the positive feedback, 44% referred to the sex position (new sex position; a particular sex position), and 20% to oral sex. There wasn't any essential difference between men's and women's appreciation of sex positions and of oral sex. Furthermore, men praised their partner for wearing sexy lingerie (4%), for particular hip movements (2%), for the beauty of facial expression and breasts, for the sexiness of her butt, for woman's playing with man's nipples, for her wildness, for her kissing his body, for her touching man's balls and butt, and for woman's taking charge in bed. Women appreciated man's fingering technique (6%), man's way of touching (6%), man's play with woman's breasts, the foreplay, and the intensity of their own orgasm.

Of the negative feedback, 56% referred to experiencing pain during sex. For men, chief among the causes of penile pain was using too much teeth or sucking too hard during blow-jobs. Another cause of penile pain mentioned by men was that the woman's handjob was too rough. Sources of discomfort for men were awkward sex positions, wrong speed during a handjob, an abrupt stop during fellatio, being touched roughly, feeling prickly pubic hair performing cunnilingus, and using a too-tight condom. For women, the most mentioned (8 from 12) source of pain was vaginal intercourse, especially in positions in which the penis penetrated too deeply or in which the penetration angle was uncomfortable. Other sources of pain were too much pressure on the woman's head while giving fellatio, too much pressure during fingering, biting the woman (in a sexual way), and too many repeated penis insertions into the vagina. For women, sources of discomfort were too little time spent on foreplay, high speed during vaginal intercourse, too much pressure on the breasts, or a feeling of too much intensity.

3.7 Self-disclosure of sexual fantasies

Sexual fantasies grow in a both common and hidden area of human life. Some of these fantasies can be shared and may spice up a sexual relationship. Other fantasies contain actions that **we never want to happen in real life** (e.g., rape fantasies). In the latter case, sexual fantasies can be kept private, because privacy and boundaries are important even in an intimate relationship. In this study, **we asked participants to report sexual fantasies they did not disclose to their partner but would love to turn into reality (with their partner)**. Of the participants, 79% did not answer this question. Half of the responding women and one man reported having secret BDSM fantasies (they would like to say: 'tie me to the bed'; 'strangle me'; 'blindfold me'; 'beat my ass'; 'I'd like to tie you to the bed'). Two responding men and one woman reported a threesome fantasy that they did not unveil. Two women reported secret dreams of sex in public or in unusual locations ('sex in the fitting room'), one woman dreamed of receiving stimulation of the anus, and another woman of receiving cunnilingus. Participants with undisclosed sexual fantasies (which they would love to turn into reality) had significantly lower values in Overall Sexual Satisfaction (GMSEX) ($t(49) = 2.08, P = .04$) than the other participants.

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3.8 Communication skills in school-based sex education

We asked participants whether in school-based sex education they had received communication skills. Furthermore, we questioned whether and how participants intend to educate these skills in their future as teachers. Of the participants, 77% claimed that they learned nothing about communication skills but received information about contraception (especially condom use). The other participants received - in addition to information about contraception - the message that they should only ever do things (with regards to sex) that they are comfortable to do, not what they believe is expected of them. Female students in particular had been strongly encouraged that they can tell their boyfriends they are not ready to have sex.

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Of the participants, 54% answered that they intend to facilitate communication skills in school-based sex education. Around half of these participants stated that they intend to convey that communication is important for a partnership and that students should talk openly about what they do want sexually as well as what they don't want. The other half of these participants described concrete teaching methods to facilitate communication skills. Role-play scenarios (mentioned by 17% of all participants), the presentation of explainer videos (4%), the invitation of external experts (4%), and the use of cartoons were among the most mentioned means to facilitate sex communication.

4. DISCUSSION AND CONCLUSION

The present study was performed to analyze the relationship between sexual communication and sexual satisfaction and to examine how school-based sex education does or may enhance sexual communication. **Our data confirm previous research findings that sexual communication does contribute significantly to sexual satisfaction [9-19]. Cohen's [31] widely accepted recommendation is that correlation coefficients of .5 should be interpreted as large. This allows us to consider that overall sexual satisfaction is highly predictable with dyadic sexual communication. *Sexual Communication* accounted**

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for 26% of the variance in *Overall Sexual Satisfaction*. Couples' sexual communication seems to have a significant impact on sexual satisfaction in couples' relationships.

The negotiation of safe sex practices is key to contraception and to the prevention of sexually transmitted diseases. Of the participants, approximately one quarter did not talk about safe sex with a new partner, and some of the 'talkers' waited with the negotiation of safe sex practices until shortly before penetration. This is far too late, firstly because it's possible to contract a sexually transmitted infection before penetration and secondly because the emotional state immediately before penetration is not the proper moment to negotiate safe sex practices. Condom use seems to be well-established in our sample which is a good prerequisite for respondents' later work as sex educators. Nonverbal communication (e.g., putting a condom on without being asked) may be sufficient to prevent sexually transmitted diseases and unintended pregnancy. However, it is worth mentioning that a significant proportion of respondents do have difficulties in speaking directly about safe sex or in choosing the opportune moment for talking. **We** expect that this might be an aggravating factor for the prospective sex education teachers, especially since condom use seems to be self-evident in participants' peer groups but not in the group of boys and girls to be taught later.

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Since detraditionalization, democratization, and individualization of intimacy and sexuality [2], it is inevitable to communicate about desire and lust. It was Wilhelm von Humboldt [32] who first declared that language is an a priori framework of cognition because the diversity of languages is not just one of sounds and signs but one of the views of the world. The use of medical Latin words, euphemisms, bureaucratic phrases, vulgar words, baby talk, or secret phrases corresponds to different views of sexuality. In school-based sex education, it would be awesome to use both clear and pleasant words. If we want to create a sex-positive culture, we should avoid cold, disgusting, or unclear words. One of the challenges of teaching sex education is the lack of appropriate words and phrases to talk about sex. The use of vulgar language is unscientific and flippant, whereas the sole use of medical Latin words is sterile, cold, and incomprehensible, while the use of euphemisms is obfuscating and unclear, thus contradicting the enlightening intention of sex education. There is no perfect solution to this dilemma. The best option in school-based sex education might be, first, to address the different 'languages' of talking about sex itself and, second, to use, at least on some occasions, all 'languages' simultaneously[22], as is practiced in some sex ed books for kids. In our sample, we found - in accordance with gender stereotypes - more frequent use of vulgar phrases (and of 'dirty talk') by men and of euphemisms by women. For school-based sex education it would be useful, if male and female teachers could use all sex 'languages'.

Interestingly, with a view to overall sexual satisfaction as measured by the GMSEX, **we** did not find significant differences between users and non-users of verbal phrases during initiating sex, during sex (in line with previous research findings by Blunt-Vinti et al.[9], and by Millman[20]), and after sex. It is noteworthy that the complete abandonment of post-sex analysis did not have a negative effect on sexual satisfaction. Probably, it can be pretty good after sex to rest quietly and enjoy the unspoken connection with one's partner. Overall, **our** data suggest that the use or non-use of verbal communication during initiating sex, during sex, and after sex has no effect on overall sexual satisfaction. Verbal cues seem to be superfluous if nonverbal cues work the same way. For example, while receiving fingering non-verbal communication by guiding a partner's fingers seems less awkward than verbal instructions. In our sample, the vast array of nonverbal cues both to initiate sex and to communicate during sex may serve as a sign of love and understanding in long-term relationships. The quality of couples' sexual communication did not depend on whether the communication was verbal or non-verbal. However, one exception existed, insofar as participants with undisclosed sexual fantasies (which they would love to turn into reality) had lower sexual satisfaction rates. This may reflect that these participants feared their partner's reaction, perhaps against the background of previous negative experience.

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How can school-based sex education prepare girls and boys to succeed in sexual communication? It is state of the art in health promotion science that knowledge is merely a necessary but not a sufficient condition for appropriate health behavior [33]. Life skills programs can help to bridge the enormous gap between knowledge and actions displayed by girls and boys in their day-to-day lives. Communication skills may take a lifetime to master. School can be a good place for learning communication skills. Of course, facilitating non-verbal communication during initiating sex, during sex, or after sex is not a proper theme for school-based sex education. Useful, however, is to learn to negotiate with a partner about condom use. In addition, it is essential that girls and boys learn to engage only in sexual behavior based on what they really want. They must be able to say no to peer pressure or partner's pressure. Nevertheless, sex education should not be centered on negative outcomes, like sexually transmitted diseases, unwanted pregnancy, sexual violence, harassment, or rape culture. Human sexuality is an integral part of human beings, a source of pleasure, joy, happiness, wellbeing, and encounter. In education, this positive power of human sexuality should be visible [21]. Therefore, a central goal of school-based sex education must be that girls and boys can perceive their sexual wants and turn-ons and disclose them to their partners. This self-disclosure is a crucial factor in developing a positive intimate relationship.

In **our** sample, one of six of the participants mentioned role-play scenarios as means to facilitate sexual communication. Role-play scenarios are indeed excellent for bridging the gap between knowledge and behavior and for learning to deal

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with resistance as well. They are rarely implemented in schools which has to do with the fact that they can only be meaningfully realized in small groups and that these groups need guidance for this [34]. Therefore, it is advisable to train individual students as peer leaders so that then they can implement the training in small groups. Together with these peer leaders, the teacher should prepare a model role-play to demonstrate the goals of behavioral training. Typical scenarios for behavioral training in small groups can be: 'You're dating someone new, and dates are progressing well. You know that your new friend has had many partners. Start a conversation about safe sex' or 'You do love to be kissed on your neck and on your whole back. Overcome your inhibitions and disclose your turn-ons'. It is helpful to offer many role-play situations and ask students to start with simple role-play scenarios first.

The present study must acknowledge several limitations. First, this study was limited to a non-random sample. Therefore, the generalizability of results may be cautiously applied. Second, the homogeneity of our sample in relationship length was low (as can be seen from the high standard deviation). Third, **our** measures were based solely on self-reports and may therefore be flawed by social desirability or self-representation biases. Fourth, our sample size was rather low, which could be an explanation for why we did not find statistically significant gender differences in sexual communication and in overall sexual satisfaction. Nonetheless, the present study has some specific strengths: We could identify the specific verbal and non-verbal elements of a couple's sexual communication, we could analyze the relationship between these specific elements and overall sexual satisfaction, and we could find out that the quality of sexual communication during initiation of sex, during sex, and after sex (post sex communication) did not depend on whether the communication was verbal or non-verbal. Consequences for school-based sex education could be derived from our **data**.

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Comment [U20]: discussion should summarise the findings whilst linking it with the literature review, at the same time, answering the so what question? What recommendations does the author recommends on each item discussed.....

Conclusion

COMPETING INTERESTS

Authors have declared that no competing interests exist.

ETHICAL APPROVAL

This study was conducted in accordance with the Helsinki Declaration of ethical principles for medical research involving human subjects. Participation was strictly optional, and all participants provided informed consent. Anonymity and confidentiality were assured.

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