



Original article

The role of sexual communication in the relationship between emotion regulation and sexual functioning in women: The impact of age and relationship status[☆]

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ABSTRACT

Objective: The aim of this study was to investigate sexual communication as a mechanism involved in the link between emotion regulation and sexual functioning in a sample of adult women, also testing the moderating role of relationship status and age in this association.

Method: 1344 sexually active cisgender women (aged 18–57, $M = 27.34$; $SD = 6.484$) were recruited from March 30, 2021, to April 12, 2021, through an online survey. From the initial sample, 1280 women were retained and included in the analysis. Participants were asked to respond to three self-report questionnaires: the Difficulties in Emotion Regulation Scale (DERS), the *Communication* subscale of the Sexual Satisfaction Scale for Women (SSS-W), and the Female Sexual Function Index (FSFI).

Results: We found that sexual communication mediated the link between emotion regulation abilities and female sexual functioning. Moreover, we found that age, but not relationship status, moderated the association between emotion regulation and sexual communication, so that older women with difficulties in emotion regulation processes showed worse sexual communication abilities as compared to younger women.

Conclusions: According to this study's results, clinicians and sexual therapists should carefully consider emotion regulation abilities and sexual communication as crucial factors in promoting women's sexual well-being.

Introduction

Female sexual experience is a multifaceted phenomenon, characterized by great intra- and inter-individual variability (Panzeri & Fontanesi, 2013), and influenced by many biological, social, and psychological variables, which make the analysis of female sexuality and the generalization of the results quite difficult. In particular, psychological and emotional experiences of desire, excitement, and pleasure have proven to be crucial in the comprehension of female sexual function, as well as in the assessment of sexual difficulties and concerns in clinical settings, as suggested by the circular model of sexual response, developed by Rosemary Basson (2000). In this model, emotional intimacy as well as the ability to communicate with a partner, play an

important role in a satisfactory dyadic sexual experience, the development of positive and healthy sexual functioning, and to increasing self-esteem and to grow a positive sexual self-concept.

An unhealthy sexual function can be expressed through sexual difficulties, which may refer to the absence or alteration of sexual desire or arousal, recurrent difficulty, or inability to reach orgasm, and the presence of pain during sexual activity. According to previous research, these difficulties tend to be higher in older women, with a decline in sexual interest/desire, orgasm frequency, and overall sexual functioning and satisfaction as age increases (Ambler et al., 2012; Wiczorek et al., 2022). However, other studies have provided conflicting results, suggesting stability over time in sexual functioning (Granville & Pregler, 2018; Hayes & Dennerstein, 2005). Conflicting results have also been

[☆] What Women Want (but are not Able to Tell): the Relationship between Emotion Regulation, Sexual Communication, and Sexual Functioning in Women.

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provided regarding variations in sexual functioning related to different relationship types. Specifically, some research suggests that women in committed relationships tend to report higher orgasmic function, sexual satisfaction, and overall sexual functioning as compared to women in casual sex relations, defined as sexual interactions without the expectation of exclusive relationships (Mark et al., 2016; Park & MacDonald, 2022; Wongsomboon et al., 2019). However, variations in relationship status do not determine differences in sexual functioning in all women (Armstrong et al., 2012). Moreover, many women engage in casual sexual activities exclusively to reach sexual pleasure and satisfaction, also experiencing increases in self-esteem, positive affectivity, happiness, and general well-being (Wongsomboon et al., 2021).

These opposite results may be better explained by the female sexual difficulties multifactorial nature, which encompasses not only biological (i.e., age) and relational variables, but also affective, psychological, and sociocultural factors (Fischer et al., 2022). Particularly, some research has underlined the importance of emotion regulation processes and abilities in promoting female sexual health and well-being. In a recent review, Dubè and colleagues highlighted how women's sexual well-being is positively associated with adaptive engagement strategies and negatively associated with disengagement and aversive cognitive perseveration strategies (Dubè et al., 2020). For example, women using avoidance strategies or showing high levels of rumination tend to experience poorer sexual function and satisfaction (Dubè et al., 2020). Moreover, Basson's circular model of sexual response (Basson, 2000) and the Good Enough Sex Model (Metz & McCarthy, 2011) underscore the importance of emotional intimacy and adaptive emotional responses for maintaining sexual satisfaction and promoting a positive sexual function. As well as Rosen and Bergeron's Interpersonal Emotion Regulation Model (Rosen & Bergeron, 2019), according to which challenges in managing negative emotions impact women's sexual response and couples' adjustment to sexual issues. Thus, emotion regulation seems to play a pivotal role in the promotion of women's sexual being and sexual function.

Emotion regulation is a multidimensional construct that refers to the ability to understand and evaluate emotional responses and to adaptively modify their experience and expression (Gross, 2008). Gratz and Roemer (2004) state that emotion regulation involves some specific processes, such as (a) awareness and understanding of emotions, (b) acceptance of emotional responses, (c) ability to control impulsive behaviors and to act in accordance with personal goals when experiencing negative and positive emotions, and (d) ability to adopt appropriate and flexible emotional regulation strategies to achieve personal goals and respond to contextual demands. According to Fonagy et al. (1997), emotion regulation abilities develop through childhood and adolescence, starting with the co-regulation of emotional states played by caregivers. These abilities are shaped by the quality of early parent-child interactions, so an emotionally validating and sensitive family environment represents a prerequisite for effective emotion regulation (Linehan, 1993). Conversely, when children's emotions and needs are repeatedly punished, dismissed, or unseen, this may result in impairments in emotion regulation abilities, which are widely recognized as crucial transdiagnostic vulnerability factors for several psychopathological conditions (Carmassi et al., 2022). Difficulties in these processes tend to be associated with poorer sexual functioning and satisfaction (Fischer et al., 2022; Peixoto & Sousa, 2023; Rellini et al., 2010; Vasconcelos et al., 2020). For example, Rellini et al. (2010) found that emotion regulation difficulties were independent and unique predictors of sexual dissatisfaction, even when controlling for other variables (e.g., negative affectivity). Moreover, Vasconcelos et al. (2020) observed that women with sexual pain and other sexual difficulties reported higher difficulties in accepting their emotional responses and engaging in goal-directed behaviors when faced with negative and intense emotions, as well as a limited use of adaptive emotion regulation strategies. Similarly, Peixoto and Sousa (2023) observed higher emotion regulation difficulties, particularly in goal-directed behaviors, among women with

sexual problems, suggesting that emotionally dysregulated women may feel overwhelmed and distracted by emotional responses evoked by the sexual activity (e.g., anxiety), which may significantly impair the quality of the sexual experience.

Despite previous research that has proven the existence of a relationship between emotion regulation difficulties and sexual problems, the mechanisms explaining this association have been less explored and thus need further empirical attention (Dubè et al., 2020). Specifically, investigating the role of relational variables such as the quality of sexual communication may be a worthwhile endeavor.

Sexual communication refers to one's ability to openly express sexual wishes, preferences, and concerns, as well as to the perception of a partner's willingness to talk about their sexual relationship (Mallory et al., 2019; Velten & Margraf, 2017). The association between emotion regulation and sexual communication has received poor consideration. However, it is known that awareness, clarity, and acceptance of one's own emotional responses are critical for effective couple communications (Falconier et al., 2022; Fischer et al., 2022). Indeed, being able to regulate and manage one's own emotions leads to a reduction of emotional arousal, favoring the actuation of more adaptive interpersonal behaviors, also in sexual contexts (Wang et al., 2022).

In turn, effective sexual communication has positive effects on different dimensions of women's sexual functioning (Rehman et al., 2011). Specifically, in line with previous research, women who are able to openly communicate about their sexual likes and concerns tend to report higher levels of sexual desire, as well as enhanced sexual arousal and more frequent orgasms (Jones et al., 2017; Mallory et al., 2019). Cupach and Metts (1991) proposed two alternative models to explain the effects of communication on sexuality, known as the "instrumental" and the "expressive" pathways. The former suggests that individuals who express their sexual preferences to their partners have more chances of having their sexual needs satisfied, which may result in better sexual outcomes. As an alternative explanation, the expressive pathway assumes that effective sexual communication facilitates a greater couple's intimacy, which in turn has a positive effect on sexual outcomes. Failings in expressing one's sexual needs may interfere with these pathways, leading to increased discrepancies in sexual preferences and/or to lower relational intimacy, potentially resulting in sexual problems. MacNeil and Byers (2005, 2009) found empirical support for both pathways in the association between sexual communication and sexual satisfaction. In a recent meta-analysis, Mallory et al. (2019) proposed that the same pathways may also be involved in the relationship between sexual communication and different aspects of female sexual functioning. For example, effective sexual communication may enhance a couple's intimacy and the feeling of being appreciated and desired, which have been found to have an important impact on women's arousal (Graham et al., 2004). The experience of women's sexual pain may also be influenced by these mechanisms. Indeed, better sexual communication may favor a partner's facilitative and adjustment responses that may reduce women's experience of pain, in line with the instrumental pathway (Rancourt et al., 2016). Alternatively, following the expressive pathway, greater disclosure of one's concerns related to sexual pain may increase emotional intimacy and thus women's perception of being able to cope with this pain, which may result in a more enjoyable sexual experience (Mallory et al., 2019). Moreover, there is agreement considering the ability to express one's sexual preferences as a crucial factor in orgasm attainment for women, as this communicative behavior may heighten the possibility of receiving the needed stimulation to reach orgasm (Jones et al., 2017). Furthermore, these associations may be influenced by the effects of personal variables, such as culture, relationship length, age, and relationship status (Mallory et al., 2019; Mallory, 2022). Age and relationship status (i.e. growing old and dating to married) in particular, may affect the relationship between sexual communication and sexual behavior, satisfaction and functioning, but these associations have been poorly addressed and with mixed results (Mallory et al., 2019; Mallory, 2022).

To the best of our knowledge, there is no research investigating the role of sexual communication in explaining the relationship between emotion regulation abilities and female sexual functioning. This represents an important gap in the extant literature that needs to be addressed for a better comprehension of which processes may be involved in women's sexual difficulties. Moreover, given the complex and multifactorial nature of female sexual functioning, it would also be useful to further evaluate the interaction between individual and relational variables, such as age and relationship status, which to date have provided inconsistent results.

The current study

The present study aimed to contribute to the comprehension of sexual communication as a mechanism involved in the relationship between emotion regulation abilities and female sexual functioning, while investigating the potential interactive effects of individual and relational variables in this association.

Specifically, the first aim was to explore the mediating role of sexual communication in the association between emotion regulation and female sexual functioning, as emotion regulation has been seen to play a key role in the development and maintenance of positive sexual functioning. We expected that sexual communication would mediate the association between emotion regulation and sexual functioning, so that worse emotion regulation would be related to poorer sexual communication, which in turn would be associated with lower sexual functioning (*Hypothesis 1*).

The second aim was to test whether relationship status and age moderated the mediated pathway between emotion regulation abilities and sexual functioning (*Hypotheses 2 and 3*).

Method

Participants and procedures

The Ethical Committee of the Department of Psychological, Health and Territorial Sciences at G. d'Annunzio University of Chieti-Pescara approved the study (protocol number: 21,018) and all procedures were performed in accordance with the ethical principles for psychological research, following the Declaration of Helsinki and its revisions (*World Medical Association 2001*) as well as the ethics guidelines of the *American Psychological Association (2010)*.

A total of 1344 sexually active Italian women (aged 18–57, $M = 27.34$; $SD = 6.484$) participated in the study. Inclusion criteria were being a cisgender female, had sexual intercourse(s) in the last month and have a sexual partner (occasional or stable). Participants were recruited from March 30, 2021, to April 12, 2021, using an online survey, whose link was shared via email and on various platforms such as social media and websites. The first page of the survey included information regarding the research aims, the voluntary nature of the participation, and the anonymity of responses. Consent was requested before proceeding with the data collection. Participants did not receive any form of compensation for their participation.

For the present study a final sample of 1280 women was included in the analysis, after removing incomplete questionnaires and women who reported to be in menopause. As menopause is a condition that significantly impacts female sexual function (*Perez-Herrezuelo et al., 2020*) for the aims of the present research we decided to not include menopausal women responses in the analysis. Socio-demographic characteristics are reported in *Table 1*.

Measures

Sociodemographics. Participants were asked to respond to some questions regarding their age, relationship status (married/cohabitating, engaged, single), and sexual orientation, as well as their educational

Table 1
Socio-demographic Characteristics of the Sample ($N = 1280$).

Variable	n	%
Relationship status		
Single – occasional sex	286	22.40
In a relationship	532	41.50
Married/Cohabitant	462	36.10
Educational Level		
Middle school diploma	63	4.92
High school diploma	568	44.38
Bachelor/Master degree	512	40.00
Post-Lauream	137	10.70
Work Status		
Freelance	114	8.90
Employed	440	34.40
Unoccupied	145	11.30
Student	520	40.70
Other	61	4.80
Sexual Orientation		
Heterosexual	1129	88.2
Lesbian	16	1.30
Bisexual	117	9.10
Pansexual	12	0.9
Other	6	0.04

level and work status.

Emotion regulation. The Italian version of the Difficulties in Emotion Regulation Scale (DERS; *Gratz & Roemer, 2004; Giromini et al., 2012; Sighinolfi et al., 2010*) was used to assess participants' emotion regulation abilities. The DERS is a 36-item self-report instrument that evaluates six facets of emotion regulation: (a) Nonacceptance of emotional responses, (b) Difficulties engaging in goal-directed behaviors, (c) Impulse control difficulties, (d) Lack of emotional awareness, (e) Limited access to emotion regulation strategies, and (f) Lack of emotional clarity. All items are rated on a five-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*). A total DERS score is obtained by summing all the 36 items; higher scores of this global indicator suggest more difficulties in the regulation of one's emotions. This instrument has demonstrated good psychometric properties both in the original (*Gratz & Roemer, 2004*) and the Italian versions (*Giromini et al., 2012; Sighinolfi et al., 2010*), supporting its usage with Italian community and clinical populations.

Sexual communication. To evaluate the quality of women's sexual communication we used the *Communication* subscale of the Sexual Satisfaction Scale for Women (SSS-W; *Meston & Trapnell, 2005*). This subscale is composed of six items assessing the person's ease and comfort discussing sexual and emotional issues. Items are rated on a five-point Likert-scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), so that higher scores indicate higher levels of sexual communication. The SSS-W demonstrated good psychometric properties in its original version (*Meston & Trapnell, 2005*). The Italian adaptation of the SSS-W has not been validated yet, but this instrument has been used in different studies on Italian samples (*Botta et al., 2019; Galizia et al., 2023*).

Female sexual functioning. The Italian adaptation of the Female Sexual Function Index (FSFI; *Filocamo et al., 2014; Rosen et al., 2000*) was used to assess participants' global sexual functioning. This is a multidimensional measure composed of 19 items rated on a Likert scale ranging from 0 or 1 to 5. Items are grouped in six dimensions: (a) desire, (b) arousal, (c) lubrication, (d) orgasm, (e) satisfaction, and (f) pain. A total FSFI score is obtained by summing the scores of each domain. Higher total FSFI scores indicate better female sexual functioning. As suggested by the literature, to the present, the FSFI is defined as the preferred self-report measure for assessing sexual function in women (*Meston et al., 2020*). Also, the Italian validation study (*Filocamo et al., 2014*) has demonstrated its validity and reliability also in the Italian cultural context.

Data analysis

Analyses were computed using IBM SPSS Statistics version 26.0 (IBM, 2019). Before conducting the primary analysis, we scrutinized the data using frequencies and descriptive statistics. The data underwent screening to ensure conformity with parametric assumptions, and it met the criteria without requiring transformation. Preliminary, analysis of variance (ANOVA) was used for evaluating the study variables in between-group comparison of single, in a relationship and married/cohabitant women. Tukey’s post hoc test was used to compare the means of each group to the mean of every other group and is regarded as the most effective approach when confidence intervals are needed or when sample sizes are unequal (Montgomery, 2017). Pearson correlation was used to assess the associations between age, FSFI subscales and total score, DERS total score and the *Communication* subscale of SSS-W. These analyses were helpful to confirm the association between the investigated variables, and they allowed for the creation of moderated mediation models according to the principles of parsimony and non-redundancy.

We employed PROCESS model 4 (Hayes, 2013) in SPSS 26.0 to examine hypothesis 1 and PROCESS model 14 with bias-corrected 95 % confidence intervals, to examine hypothesis 2. To test hypothesis 3 we performed model 59. In model 4, emotion regulation (DERS total score) was the predictor variable, with sexual communication (SSS-W Communication) as the mediator and sexual functioning (FSFI total score) as outcome variable. Hypotheses 2 was tested using a moderate mediation model, where relationship status was proposed as moderator between sexual communication and sexual functioning (Fig. 1). Moderated mediation analysis tests the conditional indirect effect of a moderating variable (i.e., relationship status) on the relationship between a predictor (i.e., emotion regulation) and an outcome variable (i.e., sexual functioning) via potential mediators (i.e., sexual communication). This model explicitly tests the moderating effect on the mediator to outcome path. Hypothesis 3 was tested by a moderated mediated model where age was used as moderator between all the variables in the model (Fig. 2).

Results

Table 2 shows mean, standard deviation and ANOVA differences in the study variables between relationship status groups. ANOVA analyses with Tukey post hoc test produced significant differences between groups. Women who are not in a stable relationship but have only occasional sexual intercourses show lower levels of desire, $F(2, 1277) = 27.83, p < .001$, and arousal, $F(2, 1277) 6.37, p < .01$, than women in a relationship. Married/cohabitant women have lower orgasm quality than participants in the other two group, $F(2, 1277) = 16.87, p < .001$ (Table 1). Married women have poorer sexual communication than singles and women in a relationship, $F(2, 1277) = 20.99, p < .001$. Single participants showed less difficulties in emotion regulation than

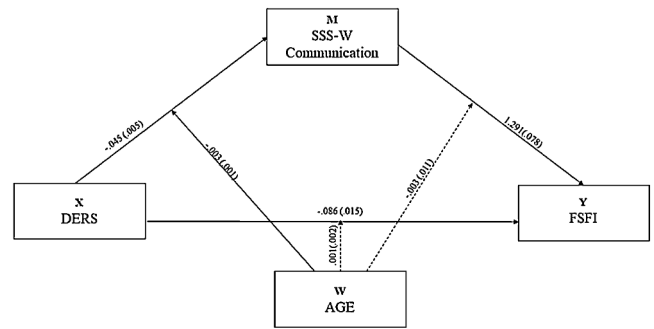


Fig. 2. Moderated Mediation Model with Age Proposed as a Moderator Variable

Note. Values represent standardized coefficient with standardized error in parentheses. Solid lines represent significant paths for $p < .001$, paths indicated with dashed line are not significant. DERS: Emotion regulation; SSS-W Communication: Sexual communication, FSFI: Sexual Functioning.

married/cohabitant and women in a relationship, $F(2, 1277) = 13.74, p < .001$ (Table 2).

Table 3 shows the correlation between age, FSFI subscales and total score, DERS total score and sexual communication subscale from SSS-W. Difficulties in emotion regulation (DERS) is negatively correlated with age, FSFI subscales and total score and sexual communication. Positive significant correlations were found between sexual communication (SSS-W Communication) and all the study variables, in particular sexual arousal ($r = 0.408, p < .01$), sexual satisfaction ($r = 0.560, p < .01$) and the FSFI total score ($r = 0.451, p < .01$).

Hypothesis 1

A simple mediation model was tested to explore the relationship between emotion regulation (X), sexual communication (M), and sexual functioning (Y). The results revealed a significant direct effect of X on Y ($\beta = -0.089, SE = 0.014, 95\% \text{ CI} = -0.117, -0.061, p < .001$), indicating a direct impact of the emotion regulation on the sexual functioning. The total effect of X on Y was significant ($\beta = -0.137, SE = 0.015, 95\% \text{ CI} = -0.167, -0.107, p < .001$) as well the indirect effect of X on Y through sexual communication ($\beta = -0.480, \text{BootSE} = 0.007, 95\% \text{ CI} = -0.064, -0.342$). Additionally, the mediation hypothesis was supported, as the indirect effect of emotion regulation on sexual functioning through sexual communication was statistically significant ($\beta = -0.851, \text{BootSE} = 0.012, 95\% \text{ CI} = -0.110, -0.061$). The model is significant with $R^2 = 0.230, F(2,1277) = 187.26, p < .001$. Therefore, sexual communication partially mediates the relationship between emotion regulation and sexual functioning.

Hypothesis 2

Estimators of moderated mediation model with relationship status proposed as a moderator variable between communication and sexual function are reported in Fig. 1. As the mediation results were already reported, here we directly describe the interaction effects between the variables included in the proposed model. Relationship status does not moderate the relationship between communication and sexual functioning. Even if each level of the moderator variable has a significant indirect effect on the mediation variable (Table 4), the mediation effects of sexual communication were significant on all the levels of the path between M on Y, as suggested by the test of higher order unconditional interaction where the change in R^2 for sexual communication x relationship status is $\Delta R^2 = 0.0001, F(2,1273) = 0.087, p = .917$.

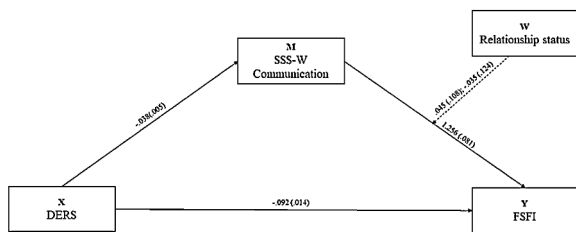


Fig. 1. Moderated Mediation Model with Relationship Status as Proposed Moderator Variable

Note. Values represent standardized coefficient with standardized error in parentheses. Solid lines represent significant paths for $p < .001$, path indicated with dashed line is not significant. DERS: Emotion regulation; SSS-W Communication: Sexual communication, FSFI: Sexual Functioning.

Table 2
Means, Standard Deviation of the Total Sample and ANOVA Results According to Relationship Status.

	Total sample <i>M(SD)</i>	Single <i>M(SD)</i>	In a relationship <i>M(SD)</i>	Married/ Cohabitant <i>M(SD)</i>	<i>F</i>	<i>p</i>	Tukey post hoc test
FSFI							
Desire	7.24(1.84)	6.77(1.91)	7.39(1.70)	7.72(1.80)	27.83	<0.001	A < B < C
Arousal	16.27(3.74)	16.02(3.96)	16.70(3.28)	15.86(4.90)	6.37	<0.01	A < B, B > C
Lubrication	16.81(3.64)	16.65(3.80)	16.98(3.29)	16.74(3.97)	1.05	.351	–
Orgasm	11.10(3.68)	11.45(4.05)	11.38(3.51)	10.00(4.05)	16.87	<0.001	A > C, B > C
Satisfaction	11.66(3.24)	11.48(3.21)	12.49(2.83)	10.38(3.55)	42.70	<0.001	C < A < B
Pain	12.39(3.63)	12.58(3.67)	12.16(3.62)	12.50(3.56)	1.79	.167	–
Total score	75.45(15.56)	74.95(15.40)	77.09(13.07)	73.21(15.48)	7.08	<0.001	B > C
SSS-W Communication	24.06(4.78)	23.91(5.06)	24.93(4.44)	22.71(4.61)	20.99	<0.001	C < A < B
DERS	94.33(26.69)	89.95(24.79)	95.22(25.30)	99.76(26.53)	13.74	<0.001	A < B < C
Total score							

Note. A = Single; B = In a relationship; C = Married/Cohabitant.

Table 3
Pearson Correlations for Study Variables.

	1	2	3	4	5	6	7	8	9
1. Age	–								
2. FSFI desire	–0.116**	–							
3. FSFI arousal	–0.052	.550**	–						
4. FSFI lubrication	–0.006	.364**	.650**	–					
5. FSFI orgasm	.064*	.239**	.622**	.448**	–				
6. FSFI satisfaction	–0.095**	.448**	.697**	.472**	.518**	–			
7. FSFI pain	.099**	.270**	.326**	.406**	.226**	.284**	–		
8. FSFI total score	–0.01	.586**	.883**	.782**	.726**	.778**	.589**	–	
9. DERS total score	–0.177**	–0.078**	–0.192**	–0.196**	–0.164**	–0.190**	–0.199**	–0.242**	–
10. SSS-W Communication	–0.132**	.243**	.408**	.296**	.305**	.560**	.159**	.451**	–0.203**

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

Table 4
Conditional Indirect Effects at Specific Levels of the Moderator (Relationship Status).

Mediator	Moderator levels	Indirect Effect (SE)	BootLL 95 % CI	BootUL 95 % CI
Sexual communication	Single	–0.047 (0.008)	–0.065	–0.032
	In a relationship	–0.049 (0.008)	–0.066	–0.034
	Married/ cohabitant	–0.046 (0.010)	–0.0677	–0.028

Hypothesis 3

Fig. 2 shows the moderated mediation model with age proposed as a moderator variable between emotion regulation, sexual communication, and sexual function. Age did not significantly impact the relationship between sexual communication and sexual function and between emotion regulation and sexual function as well. The only significant moderation path is between emotion regulation and sexual communication; the interaction significantly contributes to an increase in the explained variance ($\Delta R^2 = 0.011$, $F(1,1276) = 14.703$, $p < .001$). Significant and non-significant interactions are reported in Table 5, along with the conditional indirect effect of age on sexual communication. The bootstrapped 95 % confidence interval (CI) confirmed that the indirect effect of the age ranges on the relationship between emotion regulation and sexual communication was significant. More specifically, older women with higher levels of emotion dysregulation scores lower in the sexual communication scale than younger women ($\beta = -0.065$; $SE = 0.008$; $t = -8.606$; 95 % CI: $-0.080, -0.050$), as showed graphically in the slope analysis displayed in Fig. 3.

Discussion

The current study aimed to explore the relationship between emotion

regulation abilities and female sexual functioning, investigating the mediating role of sexual communication in this association.

Consistent with the study’s hypothesis, the results showed a mediating effect of sexual communication in the link between emotion regulation abilities and female sexual functioning. Particularly, we found that poor emotion regulation was associated with a lower quality of sexual communication, which in turn was related to worse general sexual functioning. In line with previous research (Dubé et al., 2020; Fischer et al., 2022; Peixoto & Sousa, 2023; Rellini et al., 2010; Vasconcelos et al., 2020), these findings suggest that women with difficulties managing and regulating their emotions tend to report more alterations in different areas of sexuality. Indeed, sexual activities evoke both positive and negative emotional responses that need to be effectively managed to promote a better sexual experience. When difficulties in emotion regulation processes arise, emotional responses may affect in a dysregulated manner the quality of sexual activity, favoring the onset of a large range of sexual problems (Fischer et al., 2022; Peixoto & Sousa, 2023; Rellini et al., 2010; Vasconcelos et al., 2020). Results indicated that focusing on sexual communication may favor a better comprehension of this process. Specifically, higher levels of emotional distress promoted by deficits in emotion regulation abilities may lead to less effective sexual communication behaviors, as the inability to manage one’s own emotional responses may interfere with the possibility of identifying and express one’s wishes and concerns. In turn, as proposed by other authors (Cupach & Metts, 1991; MacNeil & Byers, 2005, 2009; Mallory et al., 2019), difficulties in sexual communication may affect the quality of sexual functioning in different ways. For example, women who have more difficulties openly communicating their sexual preferences and preoccupations may experience less satisfaction with their sexual needs and consequently lower levels of sexual functioning and well-being. Alternatively, difficulties in communicating about sexual issues may interfere with couple’s intimacy, potentially worsening the quality of sexual experiences. These associations were confirmed in our mediation model, where sexual communication partially mediates the relationship between emotions regulation and sexual functioning.

This study also evaluated whether relationship status and age

Table 5
Moderated Mediation Analysis with Age as Moderated Variable.

Mediator variable model		Outcome variable: Sexual communication		
	β (SE)	<i>t</i>	<i>p</i>	
Emotion regulation	-0.045 (0.005)	-8.857	<0.001	
Age	-0.139 (0.020)	-6.836	<0.001	
Emotion regulation x age	-0.0031(0.001)	-3.834	<0.001	
Dependent variable model		Outcome variable: Sexual functioning		
	β (SE)	<i>t</i>	<i>p</i>	
Emotion regulation	-0.086 (0.015)	-5.858	<0.001	
Sexual communication	1.291(0.078)	16.44	<0.001	
Age	.043 (0.058)	.740	NS	
Emotion regulation x age	.001(0.002)	.2874	NS	
Sexual communication x age	-0.003(0.011)	-0.248	NS	
Conditional indirect effect at specific levels of the moderator				
Mediator	Moderator: Age	Indirect effect (SE)	LL 95 % CI	UL 95 % CI
Sexual Communication	M - 1SD	-0.025(0.007)	-0.040	-0.012
	M	-0.045(0.005)	-0.055	-0.035
	M + 1SD	-0.065(0.008)	-0.080	-0.050

moderated the mediated pathway between emotion regulation and sexual functioning. In the first moderated-mediation model, we tested whether relationship status moderated the association between sexual communication and sexual functioning. Although between-group comparisons showed that single, engaged, and married/cohabitant women differed in many of the study variables (i.e., desire, arousal, orgasm quality, etc.), we found that relationship status had no moderating effects, so that sexual communication mediated the association between emotion regulation and sexual functioning regardless of relationship type, as seen by Mallory in 2022 (Mallory, 2022).

This result suggests that sexual communication plays a crucial role in creating a positive and satisfying sexual experience for women in different relational contexts. In committed relationships, a good quality of sexual communication would be needed to encounter new sexual preferences and desires that may appear over time, which is a necessary aspect for better sexual functioning and satisfaction (Mallory et al., 2019). On the other hand, the ability to openly express one's own sexual needs may also be essential for single women having occasional sexual intercourses, as the absence of mutual knowledge and emotional intimacy strongly requires informing the sexual partner about one's sexual preferences. However, this is a speculation that warrants further investigation, as no previous studies have focused on the importance of sexual communication in single women.

In the second moderated-mediation model, instead, we found that age moderated the association between emotion regulation abilities and sexual communication. Particularly, older women with difficulties in emotion regulation processes show worse sexual communication abilities as compared to younger women. This is an interesting result that may be understood, considering different factors. For example, as research has suggested that older women show more conservative attitudes towards several areas of values (i.e., religiosity, political orientation, etc.; Fitzpatrick Bettencourt et al., 2011), it is possible that these women will encounter more difficulties than younger women in openly communicating about sexual issues, due to feelings of guilt and shame fueled by traditionalist visions. It is also possible that older women with emotion regulation difficulties show worse sexual communication as compared to younger women due to the exacerbation over time of emotion dysregulation. Indeed, as demonstrated by previous research (Stepp et al., 2014), the chronicity of emotion regulation deficits predicts increases in psychopathology over time. However, no previous research has specifically focused on the effects of age on the association between emotion regulation, sexual communication, and sexual functioning in women, so this aspect needs to be further explored in future

studies.

Limitations

A number of study limitations need to be noted. First, the cross-sectional nature of this research does not allow us to examine causal relationships among study variables. Future research would benefit from a longitudinal design to determine whether changes in sexual communication quality and female sexual functioning are affected by emotional regulation abilities, and whether age and relationship status buffer this association. Second, we only administered self-report questionnaires, which may be sensitive to social desirability bias, possibly inflating some of the associations among variables. Future research should use a multi-method approach, including qualitative interviews. Third, it is worth noting that the study's participants were recruited during the COVID-19 pandemic. Considering the potential effects of the pandemic on several areas of individuals' well-being, we cannot exclude that this could have interfered with our results. Fourth, we found that age moderated the association between emotion regulation abilities and sexual communication, but we did not control for the length of romantic relationships, which could represent a confounding variable. Indeed, it is possible that older women have longer-lasting relationships as compared to younger women; so, we cannot exclude that relationship duration, more than age per se, is involved in this association. Future studies should control the

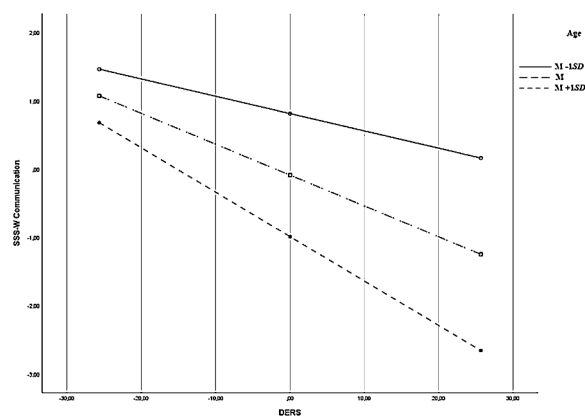


Fig. 3. The Conditional Effect between DERS and SSS-W Communication
Note. DERS: Emotion regulation; SSS-W Communication: Sexual communication.

effects of this variable when testing the relationship between emotion regulation and outcomes related to female sexuality. Fifth, we did not consider potential differences in the assessed variables related to participants' sexual orientation. Future research should examine this aspect in order to comprehend whether heterosexual and non-heterosexual women show differences in the relationship between emotion regulation abilities, sexual communication, and sexual functioning. Moreover, we focused only on cisgender females, future studies should also include non-cisgender women (i.e. transgender women). Finally, the present study only addressed the women perspective, future research also should focus on the male perspective and the couple's experiences through dyadic studies involving both partners.

Strengths and implications

Despite the above-mentioned limitations, this is the first study exploring the mediating role of sexual communication in the association between emotion regulation difficulties and female sexual functioning, also focusing on the effects of age and relationship status in this association. Moreover, this is a study with a high sample size ($N = 1280$) that comprises women from different Italian regions and sociocultural backgrounds. It is thus a heterogeneous sample that supports the generalization of the study's results to the general population.

Findings from this study may also have significant clinical implications. Results suggest the importance of focusing on sexual communication and emotion regulation abilities in the psychological assessment and treatment of women reporting sexual functioning difficulties. In fact, our results are in line with Basson's circular model of sexual response (2000), confirming the extent to which a positive female sexual experience is linked to emotional aspects, intimacy, and openness towards a partner, whether casual or long-term. Furthermore, our data show that experience of being in a long-term stable relationship with one's partner does not improve the communication of one's needs or desires. On the contrary, sexual satisfaction and a positive sexual experience may depend on a woman's ability to manage her emotions and her ability to communicate what she really feels and wants in the sexual sphere. Clinical intervention should be aimed at strengthening patients' ability to openly express to their partners their own wishes, concerns, and desires related to sexual experiences. Clinicians should also work with their patients on the ability to recognize, accept, and adequately express their emotions, which has been proven to be crucial for the promotion of sexual functioning and well-being.

Conclusions

Taken together, results suggest the important role of emotion regulation and sexual communication in promoting a better sexual functioning for women. Sexual communication plays a crucial role in the development of a positive sexual experience, both in single women and those in stable relationships and, according to our results, if there is a basic inability to regulate one's emotions, maturity and experience do not improve this association. Both sexual therapists and clinicians should consider the relationship between emotions and sexual life, as sexual function is one of the aspects most negatively affected by psycho-emotional problems.

CRedit authorship contribution statement

Giorgio Falgares: Writing – review & editing, Conceptualization, Data curation, Writing – original draft, Visualization, Supervision. **Giulia Costanzo:** Writing – review & editing, Conceptualization, Investigation, Data curation, Writing – original draft, Visualization, Project administration. **Lilybeth Fontanesi:** Writing – review & editing, Conceptualization, Formal analysis, Methodology, Data curation, Writing – original draft. **Maria Cristina Verrocchio:** Writing – review & editing, Conceptualization, Methodology, Writing – original draft.

Franco Bin: Writing – review & editing, Conceptualization, Data curation, Formal analysis, Writing – original draft. **Daniela Marchetti:** Writing – review & editing, Conceptualization, Methodology, Formal analysis, Data curation, Writing – original draft, Supervision.

Declaration of competing interest

The authors have no conflict of interests to declare.

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Availability of data and material

The datasets generated and analyzed during the current study are available from the corresponding author on reasonable request.

Ethics approval

Approval was obtained from the Ethical Committee of the Department of Psychological, Health and Territorial Sciences at G. d'Annunzio University of Chieti-Pescara (protocol number 21018). The procedures used in this study adhere to the tenets of the Declaration of Helsinki.

Consent to participate

Informed consent was obtained from all individual participants included in the study and from their parents.

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