



Moderators of Sexual Interest in Opposite-sex Friends

Aleksandra Szymkow  and Natalia Frankowska

Abstract

The fact that men and women experience sexual attraction toward their opposite-sex friends has been evidenced in various studies. It has also been shown that there is a close parallel between preferences for opposite-sex friends and mate preferences, i.e., that men prioritize physical attractiveness of their OSFs, while women prioritize their male friends' ability to provide protection and economic resources. Although this *mating activation hypothesis* has been validated to an extent, there is hardly any research that points to moderating factors which would define the boundary conditions for these effects. We present two studies that involved heterosexual participants who were in a committed relationship and at the same time had a heterosexual opposite-sex friend. We investigated how both the qualities of one's current partner and the qualities of one's opposite-sex friend shape sexual interest in opposite-sex friends for men and women. Results mostly support the *mating activation hypothesis*. We show that within actual cross-sex friendships: 1) physical attractiveness of opposite-sex friends predicts sexual interest toward them, and this effect is stronger for men than women, 2) current partner's attractiveness, provided support, and relationship satisfaction moderate this effect only for women, and not men, 3) perceived financial resources of opposite-sex friends predict sexual interest toward them for highly sexually unrestricted women, and, surprisingly, for those who are in committed relationships with high-income men. The results reaffirm previous evidence indicating that perceptions of opposite-sex friends can be viewed as a manifestation of evolved human mating strategies.

Keywords

opposite-sex friends, sexual interest, mate-switching, back-up mates, evolutionary psychology

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Opposite-sex friendships (OSF) play an important role both in women's and men's lives. On the one hand, opposite-sex friends can be our great companions allowing for a substantial level of intimacy (Monseur, 1992). Indeed, both men and women highly value good conversation and kindness between them and their opposite-sex friends (Bleske-Rechek & Buss, 2001). But an OSF can also serve as a medium by which we may seek and initiate both short-term and long-term romantic relationships (Bleske-Rechek & Buss, 2001; Lewis et al., 2011). Thus, it can be an adaptive strategy to start and maintain such relations, as they can potentially turn into meaningful romantic relationships, leading to reproductive success in the future (Bleske & Buss, 2000; Koenig et al., 2007). In a similar evolutionary vein, it has been suggested that women's and men's perceptions of their opposite-sex friends can be viewed as a manifestation of evolved human mating strategies that operate in the modern environment (Bleske-Rechek et al.,

2012; Lewis et al., 2011, 2012). In this context, the evolved desires and strategies which are automatically activated when being around a genetically unrelated member of the opposite sex should also be salient in OSFs. As such, both these approaches lay the foundations for the hypothesis that men and women should experience attraction toward their cross-sex friends, as has been consequently evidenced in various studies

Center for Research on Biological Basis of Social Behavior, SWPS University of Social Sciences and Humanities, Poland

Corresponding author:

Aleksandra Szymkow, Center for Research on Biological Basis of Social Behavior, SWPS University of Social Sciences and Humanities, Chodakowska 19/31, 03-815, Warsaw, Poland.
 Email: aszymkow-sudziarska@swps.edu.pl



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(Afifi & Faulkner, 2000; Bleske & Buss, 2000; Kaplan & Keys, 1997; O'Meara, 1989; Reeder, 2000; Rose, 1985; Swain, 1992).

The idea that mating psychology may drive OSF preferences has been advanced by Lewis et al. (2011, 2012) who have provided empirical evidence for the *mating activation hypothesis* (Lewis et al., 2012). Indeed, they showed that there is a close parallel between OSF preferences and mate preferences, as men prioritized physical attractiveness of their OSFs, while women prioritized their male friends' ability to provide protection and economic resources (Lewis et al., 2011; see Walter et al., 2020). Having these results replicated, the authors also pointed to the importance of the interaction between sex, personality characteristics, and relationship status in shaping OSF preferences (Lewis et al., 2012). Specifically, they showed that OSF preferences vary as a function of sociosexual orientation and relationship status for men and women.

Our studies expand on previous research by further validating the *mating activation hypothesis*. We focus merely on individuals in committed heterosexual relationships and investigate how both the qualities of one's partner and the qualities of one's opposite-sex friend shape sexual interest in one's OSF. We also investigate the role of relationship satisfaction in predicting sexual interest in an OSF.

The Nature of the Opposite-Sex Friendship

OSF provide companionship and intimacy both for men and women (Monseur, 1992). Both sexes agree that such characteristics as honesty, humour, and dependability are among the most desirable qualities in an OSF, while distrust and betrayal are mostly undesirable (Bleske-Rechek & Buss, 2001). However, if natural selection has shaped psychological mechanisms that motivate individuals to seek friendships, then we should expect a strategic search for specific friends, which additionally should be different for women and men. Indeed, studies indicate that forming an OSF can be a strategy to gain short-term sexual access to the opposite sex, to gain protection, as well as to gain long-term mates, or back-up mates (Bleske & Buss, 2000; Bleske-Rechek et al., 2012; Bleske-Rechek & Buss, 2001; Buss & Schmitt, 1993; Lewis et al., 2011, 2012).

Both men and women point to the fact of being sexually attracted to their OSFs, and this is not a rare issue (Bleske-Rechek et al., 2012; Bleske-Rechek & Buss, 2001; Kaplan & Keys, 1997; Lewis et al., 2011, 2012; O'Meara, 1989). It is an important declarative reason (although not the most important) to initiate a friendship relation with an opposite-sex individual, especially for men (Bleske-Rechek & Buss, 2001). In accordance with men's greater interest in short-term mating relative to women's, men more than women appear to be motivated by the potential for sex with their opposite-sex friends, regardless of whether they are single or not (Bleske-Rechek & Buss, 2001). Consistently, men also reported higher levels of sexual attraction toward their opposite-sex friend than did women, independently of whether they were in a current relationship or not (Bleske-Rechek & Buss, 2001; for similar findings see also Bleske-Rechek et al., 2012).

Interestingly, some data indicated that when men were asked to rate their most serious opposite-sex relationship in terms of its centrality to their lives, both romantic relationships and OSF were rated as equally central (Lin & Rusbult, 1995).

The romantic potential of OSF and a desire to form a committed relationship with an opposite-sex friend are also highlighted as reasons for initiating and maintaining OSFs, and again, overall, men judge these reasons as more important than women do (Bleske-Rechek & Buss, 2001). Additionally, some studies suggest that a substantial number of OSF end because of failed attempts at romance (Werking, 1994). For women, as historically they faced the adaptive problem of securing protection for their offspring and themselves, physical protection is a more important reason for initiating OSF, and physical strength is a more desirable quality in OSF than it is for men (Bleske-Rechek & Buss, 2001; Lewis et al., 2011).

Evolutionary theorists claim that attraction and gender-specific preferences in OSF have functional underpinnings (Bleske & Buss, 2000; Bleske-Rechek et al., 2012; Koenig et al., 2007; Lewis et al., 2011). On the one side, it could be that selection has sculpted psychological mechanisms designed for men and women to seek specific OSFs, and then maintain or terminate such relationships (Bleske-Rechek et al., 2012). Such a view presupposes that our human ancestors engaged recurrently in OSFs, and that those relationships played a significant role in solving adaptive problems concerning survival and/or reproduction. But there is also another possibility, that men's and women's preferences for their OSFs are a manifestation of evolved human mating adaptations, which operate in a modern social context (Bleske-Rechek et al., 2012). Indeed, empirical data concerning the qualities of OSF that men and women desire (Lewis et al., 2011, 2012), as well as reported benefits that they believe OSF provides (Bleske & Buss, 2000; Bleske-Rechek et al., 2012; Bleske-Rechek & Buss, 2001) both suggest that psychological mechanisms underlying OSF may closely overlap with mating adaptations (see Buss & Schmitt, 1993, 2016). These have all laid the foundations for the *mating activation hypothesis* (Lewis et al., 2011, 2012).

The Mating Activation Hypothesis

Despite the fact that men and women may seek OSF to serve as general functions of companionship, there are good reasons to expect that under some circumstances, they may seek OSF to find a short-term or a long-term mate (Lewis et al., 2011). Firstly, according to the back-up mate hypothesis (Duntley, 2007), people would have benefited from cultivating potential replacement mates, as they could have been a solution for several adaptive problems, such as a decline in the current partner's value or an increase in his or her own mate value (see Buss et al., 2017; Buss & Schmitt, 1993). And it seems that this could be more crucial for women than men. For ancestral women, lacking a back-up mate could have meant lacking protection, mate investment, and resources for their children (see also Buss et al., 2017). Secondly, along with the mate-switching hypothesis (Buss et al., 2017), people have psychological

adaptations designed to detect and abandon costly mates in order to switch to more beneficial ones. Cultivating OSF may help serve this potential need, as opposite-sex friends can provide a kind of ‘mate insurance’ (Duntley, 2007).

The prediction that the psychology behind OSF is closely tied to human mating psychology has been tested by Lewis et al. (2011, 2012), who confirmed a close parallel between OSF preferences and mate preferences. In the forced trade-off task, they asked their participants to allocate limited budgets to different categories of characteristics to design their ideal OSF (Lewis et al., 2011). The results indicated that men gave priority to different categories than women, along with the notion that OSF preferences are strategic, and are consequences of facing different sex-linked adaptive problems. Specifically, men prioritized physical attractiveness of their OSFs, while altruistic, cooperative, and agreeable personality was treated as a luxury. Women, on the other hand, prioritized the ability of their OSFs to provide physical protection and economic resources (Lewis et al., 2011; see Walter et al., 2020). Importantly, in the follow-up to their study, the researchers showed that these preferences are conditional, and they vary as a function of sociosexual orientation and relationship status (Lewis et al., 2012). For example, unrestricted sociosexual orientation predicted giving greater priority to physical prowess among women but not men, while being mated predicted giving higher priority to economic resources of OSF among women and lower among men (Lewis et al., 2012). Such flexibility in preferences proves their adaptive capacity, as adaptive mechanisms operate according to specific environmental and intrapersonal inputs in producing problem-solving responses (Gangestad & Simpson, 2000; Tooby & Cosmides, 1992). The conditional nature of evolved psychological mechanisms (e.g., Gangestad and Simpson, 2000) makes it necessary to investigate the moderating factors, which in the case of OSF would determine whether or not an individual becomes sexually attracted to his or her opposite-sex friend. Following this evolutionary logic, sexual interest in OSF should be considered as an adaptive response to specific cues (emerging from the environment and personal qualities), designed to solve some adaptive problems (e.g., of finding an attractive mate or of providing resources).

Moderators of the OSF Preferences

To date, not much attention has been paid to potential moderators of attraction in cross-sex friendships. It was demonstrated that relationship status does significantly change the way cross-sex friends perceive each other in terms of potential sexual partners but only for women (Bleske-Rechek et al., 2012; Bleske-Rechek & Buss, 2001; Lewis et al., 2012). When being involved, women report a lower level of attraction to their opposite-sex friend comparing to single women. The same pattern emerges for treating sexual attraction as an important reason for initiating an opposite-sex friendship (Bleske-Rechek & Buss, 2001).

As mentioned earlier, when being in a relationship, opposite-sex friends can constitute potential back-up mates. Thus, we

could expect that the interest in an OSF should increase with the increase of dissatisfaction with the current relationship. Indeed, relationship dissatisfaction is an important predictor of women’s (but not men’s) actual infidelity (Glass & Wright, 1992), and relationship dissatisfaction predicts women’s sexual interest in other men (Gangestad, Thornhill, & Garver-Apgar, 2005; see also Gangestad & Dinh, 2021). Women also declare that what would incline them toward infidelity includes prominently the failure of a current partner, like problems with holding a job or meeting someone more successful than their current partner (Greiling & Buss, 2000; see also Buss & Schmitt, 2019). Thus, as Buss et al. (2017) point out, the probability of motivation to change a current partner should be sensitive to changes in this partner’s mate value. Indeed, there is evidence indicating that women tend to track their partner’s mate value and use this information to decide whether to further pursue the relationship or not (Buss & Shackelford, 1997). Also, during high fertility, women with less sexually desirable partners experience greater sexual attraction toward other men and a decrease in attraction toward their current partner (Larson et al., 2012). Similarly, the mate value of a current partner should moderate the cultivation of relationships with specific OSFs (Conroy-Beam et al., 2016).

Although the effects mentioned are more robust for women, perhaps due to the reason that lacking a mate was associated with significantly higher costs for women than for men, we argue that we can also expect some variance in sexual interest in men’s OSFs depending on the mate value of their current partners. As the value of having a long-term partner is considerably high for men (e.g., Stewart-Williams and Thomas, 2013), taking the risk of losing them by engaging in a sexual relationship with an OSF may not be beneficial, at least in a case when the current partner is a highly attractive person.

The Present Studies

We present two studies investigating how both the qualities of one’s current partner and the qualities of one’s opposite-sex friend shape sexual interest in OSF for men and women. Specifically, for the goal of validating further the *mating activation hypothesis* (Lewis et al., 2011, 2012), we tested whether physical attractiveness of OSFs, as well as their financial resources, predict sexual interest toward them. Based on earlier studies (Lewis et al., 2011, 2012; Walter et al., 2020), we predicted the association between physical attractiveness of an OSF and sexual interest toward him or her to be stronger for men than women, and the reverse to be true for the association between financial resources and sexual interest in the OSF. We also checked how the support provided by one’s OSF predicted sexual interest, expecting stronger (if any) results for women than men. Most importantly, however, we introduced a number of moderators related to the current partner’s mate value. We investigated how physical attractiveness of current partners, their financial resources, and the support that they provide moderate the predicted associations between OSFs’ physical attractiveness (or financial resources) and sexual interest toward

them. Additionally, we traced how the level of relationship satisfaction moderated these expected effects.

In both our studies we recruited exclusively participants in committed heterosexual relationships, who at the same time cultivated a friendship with an opposite-sex person.

Study 1

Method

Participants. Data were collected from participants who were invited to take part in a study on opposite-sex friendship. Participants were 205 cross-sex couples of friends in committed heterosexual relationships with either a man or a woman. One hundred and forty-six (71.21%) participants declared their orientation as heterosexual, 25 (12.19%) bisexual, 17 (8.29%) homosexual, 8 (3.92%) "other", and 9 (4.39%) refused to answer. Thus, 59 participants who declared other than heterosexual orientation were excluded from further analysis. Finally, we run all analyses on 146 (73 heterosexual friends cross-sex couples) sample (73 males and 73 females, M age = 24.63 years, SD = 8.38). To recruit participants, we posted several announcements with the study details and requirements at the university campus and on the Internet. In the requirements we have indicated that students of both sexes are wanted, who are currently in a committed long-term heterosexual relationship, and maintain friendship with a person of the opposite sex to theirs, who is also heterosexual, and who is also in a committed long-term heterosexual relationship. We highlighted that we are interested in opposite-sex friendship and that only friends couples can take part in the study. Therefore, the condition for participation were voluntary consents from both participant and his or her opposite-sex friend (OSF). Students who decided to participate in the study were instructed on how to contact the researcher to collect sealed survey files for themselves and their OSF. After collecting these, the researcher instructed them on how to return survey files within a maximum of two weeks. All participants were compensated with bookstore gift cards. The study procedure was approved by the SWPS University, Institutional Ethical Review Board.

Outcome variables. The dependent variable in the study was sexual attraction toward an OSF. Participants were asked to think of their closest OSF who is taking part in the study, who is not their romantic partner, and with whom they do not (nor did not) have a sexual relation (e.g., Bleske and Buss, 2000). They were asked to imagine the person vividly, to recall how she or he looks and afterwards were asked to answer a list of questions. We measured cognitive and affective aspects of sexual interest, as well as declared behavioural intentions of sexual interest.

In order to assess for the cognitive aspects of sexual interest we asked participants to indicate to what extent they agreed with the following statements: "I have sexual fantasies about my friend" (1 = *never*, 7 = *very often*), "I imagine we have sex together" (1 = *never*, 7 = *very often*), "I have sex dreams

about my friend" (1 = *never*, 7 = *very often*). The index for cognitive sexual interest was computed by averaging the ratings for three items (Cronbach's α = .87). In order to assess the affective aspects of sexual interest we asked the participants to answer the following questions: "Are you sexually attracted to your friend?" (1 = *never*, 7 = *very often*), "Do you feel sexual tension between you and your friend?" (1 = *never*, 7 = *very often*), "Do you become sexually aroused when with your friend?" (1 = *never*, 7 = *very often*). The index for affective sexual interest was computed by averaging the ratings for three items (Cronbach's α = .83). We also assessed declarations of behavioural intentions by asking participants the following questions: "If your friend offered a one-night-stand with you, would you agree?", "If your friend wanted to have a friends-with-benefits relation with you, would you agree?", "Have you ever been close to asking your friend to have sex together?" (all on a scale: 1 = *definitely not*, 7 = *definitely yes*) and "Have you ever sent sexual signals to your friend (like making long eye contact, etc.?)" (1 = *never*, 7 = *very often*). The index for behavioural intent was computed by averaging the ratings for four items (Cronbach's α = .91).

As all three categories of questions (cognitive, affective, and intentions of behaviour) were highly correlated with each other (see Table 1), we averaged these to create the *general sexual interest* variable (Cronbach's α = .94).

Predictor Variables

The predictor variables in the study were current partner's as well as OSF's physical attractiveness, resources, and support given. We also measured the level of overall satisfaction with the romantic relationship and the length of both the romantic relationship and the friendship (in months)¹.

Physical attractiveness. To measure the partner's and OSF's physical attractiveness we used 22 items of the Estimating Physical Attractiveness Scale (Swami et al., 2009)². This tool provides participants with a guide to rate attractiveness, such that each score on this instrument is compared to the normal distribution which has a Mean (M) of 100 and a Standard Deviation (SD) of 15. Based on this guide a rating of 55 is considered very unattractive, 70 unattractive, 85 low average, 100 average, 115 high average, 130 attractive, and 145 as very attractive. Mean *partner's attractiveness* (Cronbach's α = .79) as well as mean *OSF's attractiveness* (Cronbach's α = .97) were calculated by averaging answers to all 22 questions.

Financial resources. To measure resources, we used three items designed to assess a perceived partner's and OSF's possible resources: "He/She has steady income", "He/She has qualities that enable him/her to have high incomes in the future", "He/She is successful at work/university" (1 = *definitely not agree*, 7 = *definitely agree*). All answers were averaged as: *partner's resources* (Cronbach's α = .66) and *OSF's resources* (Cronbach's α = .61).

Support. To measure participants' perceived support received from a partner and an OSF, we used four items

Table 1. Zero-Order Correlations among all Independent and Dependent Variables in Analyses in Study 1, Conducted Separately for Females and Males.

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
Females	1.59	1.05	-												
1. Cognitive sexual interest															
2. Affective sexual interest	1.84	1.24	.88***	-											
3. Behavioural sexual interest	1.79	1.06	.83***	.80***	-										
4. General sexual interest	1.75	1.05	.95***	.95***	.94**	-									
5. Partner's attractiveness	126.52	11.50	-.49***	-.43***	-.36**	-.44***	-								
6. OSF's attractiveness	108.40	16.87	.28*	.35**	.20	.29*	-.06	-							
7. Partner's resources	5.53	1.14	-.30**	-.31**	-.29*	-.32*	.12	.10	-						
8. OSF's resources	5.06	1.11	.14	.10	.03	.09	-.07	.17	.17	-					
9. Partner's support	5.91	1.12	-.54***	-.49***	-.46***	-.52***	.42***	-.08	.17	-.07	-				
10. OSF's support	5.27	.80	.01	-.02	.08	.03	.04	.10	.17	.07	.04	-			
11. Satisfaction	6.00	1.29	-.55***	-.45***	-.38**	-.48***	.57***	-.01	.19	-.15	.74	.14	-		
12. Length of the relationship	47.27	70.27	.07	-.00	-.08	-.02	-.01	.21	.14	.14	-.12	-.09	-.07	-	
13. Length of the friendship	77.21	86.74	-.11	-.16	-.19	-.17	.04	.12	.25*	.04	.15	-.02	.10	.55***	-
Males	2.63	1.51	-												
1. Cognitive sexual interest															
2. Affective sexual interest	2.77	1.64	.89***	-											
3. Behavioural sexual interest	3.02	1.76	.81***	.85***	-										
4. General sexual interest	2.83	1.56	.93***	.96***	.95***	-									
5. Partner's attractiveness	126.61	13.65	.01	.03	-.06	-.02	-								
6. OSF's attractiveness	120.36	14.11	.52***	.44***	.43***	.48***	.08	-							
7. Partner's resources	4.90	1.12	-.15	-.07	-.10	-.11	.17	-.08	-						
8. OSF's resources	5.16	1.20	.18	.10	.10	.13	.14	.26*	.05	-					
9. Partner's support	5.80	.86	-.14	-.12	-.12	-.14	.31*	-.00	.24*	.13	-				
10. OSF's support	5.21	.98	-.09	-.01	-.10	-.10	.19	.11	.04	.35**	.19	-			
11. Satisfaction	5.78	1.24	-.26*	-.17	-.25*	-.24**	.49***	-.34**	.29*	-.12	.50***	-.04	-		
12. Length of the relationship	39.64	54.86	-.05	-.06	-.16	-.10	.02	-.06	.03	.39**	.09	.10	.15	-	
13. Length of the friendship	76.62	76.95	-.19	-.21	-.23*	-.23	-.13	-.12	-.03	.20	-.04	.15	.06	.67***	-

Note. Cell entries are zero-order Pearson correlation coefficients, * $p < .05$, ** $p < .01$, *** $p < .001$.

designed to assess a wide variety of perceived psychological support: "I may always rely on him/her", "He/She gives me time", "He/She gives me an attention", "He/She is a great support for me" (1 = *definitely not agree*, 7 = *definitely agree*). All answers were averaged as: *partner's support* (Cronbach's $\alpha = .89$) and *OSF's support* (Cronbach's $\alpha = .78$).

Satisfaction with the romantic relationship. The overall satisfaction with the romantic relationship was measured by one question: "Are you happy in your current romantic relationship?" (1 = *definitely no*, 7 = *definitely yes*).

Results

Initial analyses. First, we used *t*-test for independent samples to evaluate sex differences in three categories of sexual attraction toward the OSF. Descriptive and *t*-tests statistics are presented in Table 2. Results of *t*-tests showed that males compared to females declared higher cognitive ($t(144) = -4.84$, $p < .001$, $d = .80$), affective ($t(144) = -3.87$, $p < .001$, $d = .64$), and declared behavioural sexual interest ($t(144) = -5.12$, $p < .001$, $d = .85$) in their OSF. Averaged general sexual interest ($t(144) = -4.92$, $p < .001$, $d = .81$), as well as ratings of OSF's

attractiveness ($t(144) = -4.65$, $p < .001$, $d = .78$), were also higher in the male sample than in the female sample, and these effects are strong. Clearly, men declared higher sexual interest in their OSFs than did women. Females in turn rated partner's resources as greater than males did ($t(144) = 3.37$, $p < .001$, $d = .56$). We found no sex difference in participant's age ($p = .45$), nor partner's attractiveness ($p = .96$), nor partner's support ($p = .53$). The analysis of simple correlation conducted separately for females and males is presented in Table 1.

Regression analyses. We conducted multiple linear regression analysis (MLR) with general sexual interest in the OSF as the outcome, and OSF's: attractiveness, resources, and support as predictor variables separately for females and males.

OSF's attractiveness, resources, and support as predictors of females' general sexual interest. The MLR for female participants showed that the model was not significant: $F(3, 69) = 2.09$, $p = 0.11$, $R^2 = 0.08$ (see Table 3). Thus, we have also checked for the results of simple linear regression models run separately for each predictor. The only significant effect showed a weak association between OSF's

Table 2. Descriptive Statistics and Independent Samples t-Tests for Mean Difference on all Measures from Study 1 in Females and Males.

	Females (N = 73)		Males (N = 73)		t	d	95% CI
	M	SD	M	SD			
1. Age	24.09	8.22	25.15	8.57	-7.57	0.23	(-3.85, 1.72)
2. Cognitive sexual interest	1.59	1.05	2.63	1.51	-4.84**	0.80	(-1.46, -.61)
3. Affective sexual interest	1.84	1.24	2.77	1.64	-3.87**	0.64	(-1.41, -.46)
4. Behavioural sexual interest	1.79	1.06	3.02	1.76	-5.12**	0.85	(-1.70, -.75)
5. General sexual interest	1.75	1.05	2.83	1.56	-4.92**	0.81	(-1.52, -.65)
5. Partner's attractiveness	126.52	11.50	126.61	13.65	-.42	0.01	(-4.22, 4.04)
6. OSF's attractiveness	108.40	16.87	120.36	14.11	-4.65**	0.78	(-17.05, -6.87)
7. Partner's resources	5.53	1.14	4.90	1.12	3.37*	0.56	(.26, 1.00)
8. OSF's resources	5.06	1.11	5.16	1.20	-.48	0.09	(-.47, .29)
9. Partner's support	5.91	1.12	5.80	.86	.63	0.11	(-.22, .43)
10. OSF's support	5.27	.80	5.21	.98	.43	0.07	(-.23, .36)
11. Length of the relationship	47.26	70.26	39.63	54.86	.70	0.12	(-13.89, 29.15)
12. Length of the friendship	77.21	86.73	76.61	76.95	.04	0.01	(-26.70, 27.89)

Note. * $p < .01$, ** $p < .001$.

attractiveness and general sexual interest: $\beta = 0.286$, $t = 2.51$, $p = .014$ (see Figure 1).

OSF's attractiveness, resources, and support as predictors of males' general sexual interest. The MLR for male participants showed that the model was significant: $F(3, 69) = 7.51$, $p < .001$, $R^2 = 0.25$. Regression coefficients indicated only one significant predictor in the model - a positive linear relationship between OSF's attractiveness and general sexual interest: $\beta = 0.053$, $t = 4.47$, $p < .001$. OSF's resources and OSF's support did not predict sexual interest in the OSF (see Table 3)³. Thus, we conducted a simple linear regression model with the general sexual interest in the OSF as the outcome, and OSF's attractiveness as a predictor. The analysis showed a significant and moderately strong association between these two: $\beta = 0.483$, $t = 4.65$, $p < .001$ (see Figure 1).

These analyses conducted separately for both sexes showed that whereas OSF's resources and OSF's support are not, the OSF's attractiveness is a good predictor of the declared sexual motives toward the OSF. In line with expectations, this effect was clearly stronger for male than female participants, and in their case significant even when controlling for OSF's resources and OSF's support. Taking into account the fact that all participants were involved in long-term romantic

relationships, we analysed how and to what extent the variables related to one's romantic partner's quality moderate the relation between OSF's attractiveness and sexual interest toward the OSF. Thus, in the next step, we conducted multiple moderation analyses with OSF's attractiveness as a predictor of general sexual interest toward him or her and partner's: attractiveness, resources, support, and satisfaction with the relationship as separate moderators. All moderation analyses were conducted separately for females and males using Model 1 PROCESS (Hayes, 2013) with participant's age, the length of romantic relationship, and the length of friendship as controlled variables⁴. We calculated those as continuous variables. The indirect effects were tested with bias-corrected bootstrapping ($n = 5,000$) and 95% confidence intervals (CI) for the indices. When a 95% bootstrapped CI does not include zero, it indicates the parameter is statistically significant, that is the effect is present.

Moderators of relationship between OSF's attractiveness and general sexual interest for females. Partner's attractiveness as a moderator. In the first analysis, we introduced OSF's attractiveness as a predictor, general sexual interest as the outcome variable, and current partner's attractiveness as the moderating variable. The model was significant, $F(6, 59) = 6.52$, $p < .001$,

Table 3. The Results of Multiple Linear Regression (MLR) Analyses Conducted Separately among Females and Males for the Relationship Between General Sexual Interest and OSF's Attractiveness, Resources, and Support (Study 1, N = 146).

Outcome	Predictor	B	SE	β	t	p
	Regression model: $F(3, 69) = 2.09$, $p = 0.11$, $R^2 = 0.08$, $f^2 = 0.09$					
Female's general sexual interest	OSF's attractiveness	.02	0.01	.28	2.38	.020
	OSF's resources	.04	0.11	.04	0.35	.728
	OSF's support	-.00	-0.02	-.00	0.23	.987
	Regression model $F(3, 69) = 7.51$, $p < 0.001$, $R^2 = 0.25$, $f^2 = 0.33$					
Male's general sexual interest	OSF's attractiveness	.05	0.01	.48	4.47	.000
	OSF's resources	.06	0.15	.05	0.41	.681
	OSF's support	-.19	0.18	-.12	-1.06	.291

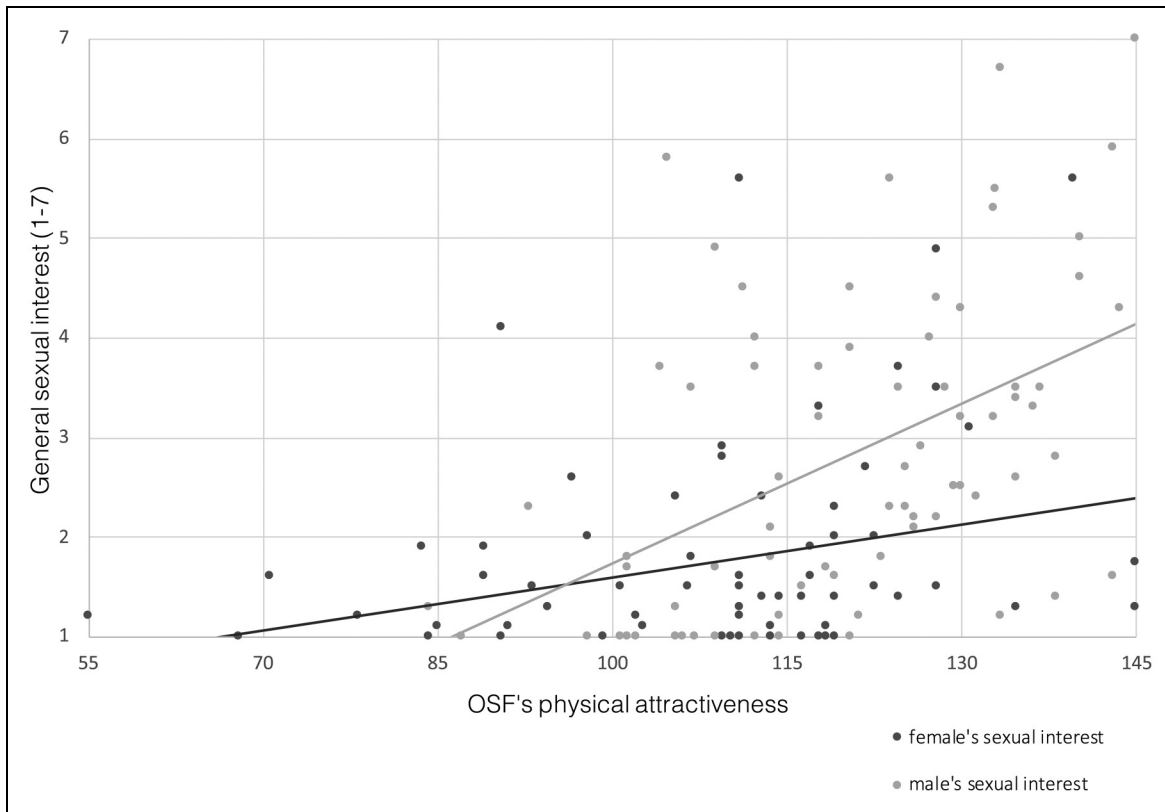


Figure 1. Relationship between the general sexual interest and ratings of OSF's physical attractiveness separately for females and males. Points represent residual scores. Females: $N = 73$, partial $r = .29$, $p = .012$; Males: $N = 73$, partial $r = .48$, $p < .001$.

$R^2 = 0.40$, just as the expected moderation was: $b = -0.00$; 95% $CI = [-0.002, -0.005]$. We probed this interaction by using the Johnson-Neyman technique (Hayes & Matthes, 2009), which allowed us to identify the regions of significance for the conditional effect of general sexual interest. When partner's attractiveness was higher than 133.55, the predicted relation between OSF's attractiveness and general sexual interest toward him was not salient. However, starting from the 133.55 point, the lower the partner's attractiveness level, the stronger the relation between OSF's attractiveness and general sexual interest toward him, which is consistent with our hypotheses. As shown in Table 4, the simple slopes analysis revealed that at the low and moderate values of partner's attractiveness, the OSF's physical attractiveness positively predicted general sexual interest in the OSF for female participants, but the effect was absent at the high level of partner's attractiveness: the coefficient on 1 SD below the mean was $b = 0.04$; 95% $CI = [0.017, 0.054]$, on the mean was $b = 0.02$; 95% $CI = [0.007, 0.033]$, and on 1 SD above the mean was $b = 0.00$; 95% $CI = [-0.012, 0.420]$. Detailed results are presented in Supplementary Table 1.

Partner's resources as a moderator. The complementary analysis for general sexual interest as the outcome variable, OSF's attractiveness as a predictor, and partner's resources as the moderating variable, revealed that the model was significant, $F(6, 59) = 5.14$, $p < .001$, $R^2 = 0.34$. However, the moderation effect was not, $b = -0.01$; 95% $CI = [-0.026, 0.026]$.

Partner's resource levels did not moderate the relationship between OSF's attractiveness and general sexual interest for female participants. Detailed results are presented in Supplementary Table 1.

Partner's support as a moderator. Moderation analysis for general sexual interest as the outcome variable, OSF's attractiveness as a predictor, and partner's resources as the moderating variable, revealed that the model was significant, $F(6, 59) = 6.30$, $p < .001$, $R^2 = 0.39$, and so was the moderation effect, $b = 0.01$; 95% $CI = [-0.016, -0.001]$. When partner's support was higher than 6.25 points, the predicted relation between OSF's attractiveness and general sexual interest toward him was not salient. However, starting from the 6.00 point, the lower the partner's support level, the stronger the relation between OSF's attractiveness and general sexual interest toward him. As shown in Table 4, the simple slopes analysis revealed that at the low and moderate values of partner's support, the OSF's physical attractiveness positively predicted general sexual interest in the OSF for female participants, but the effect was absent at the high level of partner's support: the coefficient on 1 SD below the mean was $b = 0.02$; 95% $CI = [0.011, 0.038]$, on the mean was $b = 0.01$; 95% $CI = [0.001, 0.029]$, and on 1 SD above the mean was $b = 0.01$; 95% $CI = [-0.013, 0.025]$. Detailed results are presented in Supplementary Table 1.

Satisfaction with the romantic relationship as a moderator. The final analysis among the female sample was for general sexual

Table 4. Conditional Effects of the OSF's Attractiveness on General Sexual Interest at Values of the Moderators: Partner's Attractiveness, Partner's Support, and Satisfaction with the Relationship (Study 1, $N = 66$ Females).

Moderator name	Moderator value	General sexual interest					95 CI*	
		<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>LLCI</i>	<i>ULCI</i>	
Partner's attractiveness	115.40	0.035	0.001	3.93	.000	0.017	0.053	
	126.52	0.020	0.007	2.97	.004	0.007	0.033	
	137.66	0.004	0.008	0.51	.609	-0.012	0.020	
Partner's support	4.79	0.021	0.007	3.56	.001	0.011	0.038	
	5.92	0.015	0.007	2.13	.037	0.001	0.029	
	7.00	0.006	0.009	0.62	.541	-0.013	0.025	
Satisfaction with the romantic relationship	4.75	0.029	0.008	3.80	.000	0.014	0.045	
	5.98	0.016	0.007	2.28	.026	0.002	0.030	
	7.00	0.005	0.009	0.56	.577	-0.014	0.024	

*95% CI is presented as bias-corrected and accelerated 5,000 bootstrapping. Control variables: participant's age, length of romantic relationship, and length of friendship.

interest as the outcome variable, OSF's attractiveness as a predictor, and satisfaction with the relationship as the moderating variable. The analysis revealed that the model was significant, $F(6, 59) = 5.39$, $p < .001$, $R^2 = 0.35$, as was the moderation effect, $b = -0.01$; 95% CI = $[-0.020, -0.002]$. When satisfaction was higher than 6.25 points, the predicted relation between OSF's attractiveness and general sexual interest toward him was not salient. However, starting from the 6.13 point, the lower the satisfaction level, the stronger the relation between OSF's attractiveness and general sexual interest toward him. As shown in Table 4, the simple slopes analysis revealed that at the low and moderate values of satisfaction with the relationship, OSF's physical attractiveness positively predicted general sexual interest in the OSF for female participants, but the effect was absent at the high level of relationship satisfaction: the coefficient on 1 *SD* below the mean was $b = 0.03$; 95% CI = $[0.014, 0.045]$, on the mean was $b = 0.02$; 95% CI = $[0.002, 0.020]$, and on 1 *SD* above the mean was $b = 0.01$; 95% CI = $[-0.014, 0.024]$. Detailed results are presented in Supplementary Table 1.

Moderators of relationship between OSF's attractiveness and general sexual interest for males. Another set of analogical moderation analyses was conducted for males. Again, all presented moderation analyses were conducted with age, romantic relationship's length, and friendship's length as controlled variables.

Partner's attractiveness as a moderator. The first analysis for general sexual interest as the outcome variable, OSF's attractiveness as a predictor, and partner's attractiveness as the moderating variable, revealed that the model was significant, $F(6, 57) = 3.94$, $p < .01$, $R^2 = 0.29$. However, the moderation effect was not, $b = 0.00$; 95% CI = $[-0.002, 0.003]$. Partner's attractiveness levels did not moderate the relationship between OSF's attractiveness and general sexual interest for male participants. Detailed results are presented in Supplementary Table 2.

Partner's resources as a moderator. The complementary analysis for general sexual interest as the outcome variable,

OSF's attractiveness as a predictor, and partner's resources as the moderating variable, revealed that the model was significant, $F(6, 57) = 4.02$, $p < .01$, $R^2 = 0.30$. However, the moderation effect was not, $b = -0.00$; 95% CI = $[-0.022, 0.020]$. This means that partner's resources did not moderate the relationship between OSF's attractiveness and general sexual interest for male participants. Detailed results are presented in Supplementary Table 2.

Partner's support as a moderator. The complementary analysis for general sexual interest as the outcome variable, OSF's attractiveness as a predictor, and partner's resources as the moderating variable, revealed that the model was significant, $F(6, 57) = 4.21$, $p < .001$, $R^2 = 0.31$. However, the moderation effect was not, $b = 0.01$; 95% CI = $[-0.024, 0.037]$. This means that satisfaction with the relationship level did not moderate the relationship between OSF's attractiveness and general sexual interest for male participants. Detailed results are presented in Supplementary Table 2.

Satisfaction with the relationship as a moderator. The final analysis for general sexual interest as the outcome variable, OSF's attractiveness as a predictor, and satisfaction with the results as the moderating variable, revealed that the model was significant, $F(6, 57) = 3.92$, $p < .01$, $R^2 = 0.29$. However, the moderation effect was not, $b = 0.00$; 95% CI = $[-0.027, 0.034]$. This indicates that satisfaction with the relationship level did not moderate the relationship between OSF's attractiveness and general sexual interest for male participants. Detailed results are presented in Supplementary Table 2.

Discussion

The first goal of Study 1 was to investigate how the qualities of one's OSF, namely his or her physical attractiveness, financial resources, as well as the support they provide, predict general sexual interest toward him or her. Our results partially supported our predictions. Physical attractiveness of opposite-sex

friends significantly predicted sexual interest toward them for both sexes, and the effect was much stronger for men than women, along with our expectations. However, neither the financial resources nor the support provided by OSF predicted sexual interest toward them, and this was true for men and women. The second goal of Study 1 was to investigate the moderating role of qualities related to current partner's mate value, namely his or her physical attractiveness, financial resources, and support, as well as the participant's satisfaction with this romantic relationship. The results indicated a significant moderating role of current partner's physical attractiveness, financial resources, and relationship satisfaction, but only for females. Physical attractiveness of OSF predicted sexual interest in him but not when the current partner was highly attractive. The lower the physical attractiveness of the current partner, the stronger the relation between OSF's physical attractiveness and sexual interest toward him. The same logic applied to the moderating role of current partner's support and relationship satisfaction. If women perceived their partner's support as high (or if they were highly satisfied with their romantic relationship), physical attractiveness of their OSF did not translate into sexual interest toward them. However, at the mean or low level of support provided by their partners (or at the mean or low levels of relationship satisfaction), the association between OSF's physical attractiveness and sexual interest toward them became significant. Partner's financial resources did not moderate the relation between OSF's physical attractiveness and sexual interest toward them.

These results, although not particularly strong, nicely correspond with the assumptions of the mate-switching hypothesis, at least for women. For men, none of the moderators tested changed the relationship between OSF's physical attractiveness and sexual interest toward them. We considered the possibility that although men consistently showed sexual interest toward their OSFs arising along with the rising levels of OSF's attractiveness, it does not preclude that they would turn this interest into behaviour. However, even accounting for the declarative behavioural level of sexual interest alone, we did not spot any moderation. It resonates with the study by Glass and Wright (1992) who showed that for men, sexual excitement was a more compelling justification for an extramarital affair than for women, while for women it was love.

In Study 2 we focused merely on women and investigated further the relation between financial resources of OSF and sexual interest toward them. We decided to use a more subjective evaluation of one's financial resources, as we believe that the lack of significant results in Study 1 may be due to the way we asked about these resources. The fact that someone has a steady income does not mean that it is satisfactory, thus in Study 2 we asked our female participants directly how high they perceived the financial resources of their current partner and of their OSF. We tested the moderating role of the current partner's financial resources, relationship satisfaction with the use of a standardized measure, and sociosexual orientation. The *mating activation hypothesis* predicts that unrestricted individuals should experience greater mating activation

in the context of OSF than restricted individuals (Lewis et al., 2012). Thus, we predicted that the expected relation between OSF's financial resources and sexual interest toward them would be mostly evident for highly unrestricted women.

Study 2

Method

Participants. As in Study 1, data were collected from participants who were invited to take part in a study on opposite-sex friendship. However, in Study 2 we invited only female heterosexual participants who are in committed romantic relationships and maintain a friendship with a heterosexual man. One hundred ninety-nine females ($N=199$) participated in the Study. We excluded from analyses 20 (10,5%) females who declared other than heterosexual orientation and 18 (9,04%) who declared homosexual orientation of their OSF. The final sample consisted of 161 females (M age = 27.05 years, $SD = 7.82$). Participants completed the questionnaire study on the Profitest.pl online server and if they were students, they received partial course credit for their participation. The study procedure was approved by the SWPS University, Institutional Ethical Review Board.

Outcome variables. Analogically to Study 1, the dependent variable in the study was sexual attraction toward an OSF. We used identical 10 items from Study 1, and as in Study 1, all these three categories of questions (cognitive, affective, and declared intentions of behaviour) were highly correlated (see Table 5). We analogically averaged these to create the general sexual interest variable (Cronbach's $\alpha = .94$).

Predictor Variables

The predictor variable in the study were OSF's financial resources. We also measured the level of overall satisfaction with the romantic relationship, the length of both romantic relationship and friendship (in months), and the participants' sociosexual orientation⁵.

Financial resources. To measure resources, we used one item designed to assess a perceived partner's and OSF's actual resources: "How would you rate your partner's/friend's earnings?" (1 = *definitely low*, 7 = *definitely high*). All answers were averaged as: *partner's resources* and *OSF's resources*.

Satisfaction with the romantic relationship. To measure overall satisfaction with the romantic relationship, participants completed the Relationship Assessment Scale (RAS; Hendrick, 1988). The RAS is a brief measure of global relationship satisfaction. It consists of seven items. Sample items include: "In general, how satisfied are you with your relationship?" and "How well does your partner meet your needs?". Items were scored on a five-point scale and summed to form a general satisfaction score (Cronbach's $\alpha = .90$). Higher satisfaction scores reflect a greater contentment with the current romantic relationship.

Table 5. Zero-Order Correlations and Descriptive Statistics among all Independent and Dependent Variables in Analyses in Study 2 (N = 161 females).

Variables	M	SD	1	2	3	4	5	6	7	8	9	10
1. Cognitive sexual interest	1.53	1.07	-									
2. Affective sexual interest	1.50	1.06	.87***	-								
3. Behavioural sexual interest	1.53	1.09	.85***	.83***	-							
4. General sexual interest	1.52	1.02	.95***	.94***	.95***	-						
5. Partner's resources	4.65	1.38	.05	.06	.05	.06	-					
6. OSF's resources	4.52	1.10	.31***	.32***	.28***	.32***	.24**	-				
7. Satisfaction	4.12	.73	-.13	-.19*	-.13	-.15*	.01	.07	-			
8. Sociosexual orientation	2.90	.79	.46***	.42***	.51***	.49***	.05	.29***	-.13	-		
9. Length of the relationship	83.58	39.00	-.05	-.04	-.06	-.05	.10	.14	.05	-.07	-	
10. Length of the friendship	92.30	241.14	-.09	-.10	-.09	-.10	.10	.12	.05	-.08	.96***	-

Note. Cell entries are zero-order Pearson correlation coefficients, * $p < .05$, ** $p < .01$, *** $p < .001$.

Sociosexual orientation. In this study, we also measured participants' sociosexual orientation. To measure this, the participants completed the Revised Sociosexuality Orientation Inventory (SOI-R, Penke and Asendorpf, 2008). The SOI-R is a nine-item questionnaire assessing participants' attitudes about, history of, and desire for commitment-free sex. Sample items include: "I can imagine myself being comfortable and enjoying 'casual' sex with different partners" or "Sex without love is OK". Nine items were scored on a five-point scale and summed to form a general sociosexual orientation score (Cronbach's $\alpha = .84$). Higher sociosexual orientation scores reflect a more sexually unrestricted orientation.

Results

First, we conducted the analysis of simple correlation, which showed that general sexual interest in OSF was positively and weakly correlated with OSF's resources ($r = .32$) moderately with sociosexual orientation ($r = .49$), and negatively weakly correlated with satisfaction with the romantic relationship ($r = -.15$). Details of these correlations and descriptive statistics are presented in Table 5. As the expected association between OSF's financial resources and sexual interest toward them was significant, we conducted a series of analyses that tested

the moderators of this relationship. We tested the following moderators: partner's resources, satisfaction with the romantic relationship, and sociosexual orientation using Model 1 PROCESS (Hayes, 2013) with participant's age, length of romantic relationship, and length of friendship as controlled variables. We again calculated those as continuous variables.

Moderators of relationship between OSF's financial resources and general sexual interest. Partner's resources as a moderator.

In the first analysis, we introduced OSF's resources as a predictor, general sexual interest as the outcome variable, and partner's resources as the moderating variable. The model was significant, $F(6, 153) = 5.49$, $p < .001$, $R^2 = 0.18$, just as the expected moderation was: $b = 0.11$; 95% $CI = [0.017, 0.208]$. When partner's resources were lower than 3.29, the predicted relation between OSF's resources and general sexual interest toward him was not salient. However, starting from the 3.29 point, the higher the partner's resources level, the stronger the relation between OSF's resources and general sexual interest toward him. As shown in Table 6, the simple slopes analysis revealed that at the high and moderate values of partner's resources, the OSF's resources positively predicted general sexual interest in the OSF, but the effect was absent at the low level of partner's resources: the coefficient on the mean

Table 6. Conditional effects of the OSF's resources on general sexual interest at values of the moderators: partner's resources and sociosexual orientation (Study 2, N = 160 females).

Moderator name	Moderator value	General sexual interest				95% CI*	
		b	SE	t	p	LLCI	ULCI
Partner's resources	3.26	0.187	0.097	1.92	.056	-0.005	0.379
	4.64	0.342	0.074	4.65	.000	0.197	0.487
	6.02	0.497	0.102	4.90	.000	0.297	0.698
Sociosexual orientation	2.11	-0.07	0.079	-0.85	.397	-0.222	0.088
	2.90	0.21	0.063	3.33	.001	0.086	.336
	3.69	0.49	0.080	6.11	.000	0.330	.646

*95% CI is presented as bias-corrected and accelerated 5,000 bootstrapping. Control variables: participant's age, length of romantic relationship, and length of friendship.

was $b = 0.34$; 95% $CI = [0.197, 0.487]$, on 1 SD above the mean was $b = 0.50$; 95% $CI = [0.297, 0.698]$, and on 1 SD below the mean was $b = 0.17$; 95% $CI = [-0.005, 0.379]$. Detailed results are presented in Supplementary Table 3.

Satisfaction with the relationship as a moderator. In the subsequent analysis we introduced OSF's resources as a predictor, general sexual interest as the outcome variable, and satisfaction with the relationship as the moderating variable. The model was significant, $F(6, 153) = 6.04$, $p < .001$, $R^2 = 0.19$, but the moderation effect was not: $b = -0.07$; 95% $CI = [-0.277, 0.129]$, which means that satisfaction with the romantic relationship did not moderate the relationship between OSF's resources and general sexual interest in him. Detailed results of the analysis are presented in Supplementary Table 3.

Sociosexual orientation as a moderator. In the last analysis we introduced OSF's resources as a predictor, general sexual interest as the outcome variable, and participant's sociosexual orientation as the moderating variable. The model was significant, $F(6, 153) = 19.32$, $p < .001$, $R^2 = 0.43$, as was the moderation effect: $b = 0.35$; 95% $CI = [0.232, 0.470]$. When sociosexual orientation was lower than 2.67, the predicted relation between OSF's resources and general sexual interest toward him was not salient. However, starting from the 2.67 point, the higher the sociosexual orientation level, the stronger the relation between OSF's resources and general sexual interest toward him. As shown in Table 6, simple slopes analysis revealed that at the high and moderate values of sociosexual orientation, OSF's resources positively predicted general sexual interest in the OSF, but the effect was absent at the low level of sociosexual orientation: the coefficient on the mean was $b = 0.21$; 95% $CI = [0.001, 0.086]$, on 1 SD above the mean $b = 0.49$; 95% $CI = [0.330, 0.646]$, and on 1 SD below the mean was $b = -0.07$; 95% $CI = [-0.222, 0.088]$. Detailed results are presented in Supplementary Table 3.

Discussion

In Study 2 we investigated whether the expected positive relation between OSF's financial resources and sexual interest toward them would occur due to a change in the way resources were measured. Indeed, among participating women, perceived financial resources of their male friends positively predicted sexual interest toward them. This effect was stronger for highly sexually unrestricted women and disappeared for those being highly restricted. Satisfaction with the current romantic relation did not moderate this effect, but instead it was moderated by partner's financial resources. Interestingly, OSF's resources predicted sexual interest in OSF not for those women who evaluated their partner's resources as very low (which was expected according to mate-switching hypothesis), but for those who evaluated these resources as moderate or high. Apparently, those who are in committed relationships with a low-income man do not find financial resources sexually attractive in their OSF. On the other hand, those women who are in committed relationships with high-income men, tend to be sexually attracted by the high financial resources of their OSF.

General Discussion

It has been suggested that men's and women's preferences of their OSFs are a manifestation of evolved human mating adaptations, which operate in a modern social context (Bleske-Rechek et al., 2012). This *mating activation hypothesis* has already received some empirical attention, and indeed, there are reasons to claim that men and women may seek OSFs to secure a short-term or a long-term mate (Buss et al., 2017; Duntley, 2007; Lewis et al., 2011, 2012). As has been shown by Lewis et al. (2011), for both men and women, OSF preferences exhibited patterns consistent with mate preferences. Men prioritize physical attractiveness of their OSFs, while women place a greater premium than men on qualities that contribute to protection and safety. It has also been demonstrated that OSF preferences are shaped by interactions between sex, sociosexual orientation, and relationship status (Lewis et al., 2012).

Our studies were designed to further validate the *mating activation hypothesis*. In particular, we aimed at investigating the moderating role of one's current partner's qualities, as well as OSF's qualities in shaping sexual interest in OSFs. Importantly, participants in our study were actual pairs of opposite-sex friends who at the same time were both in committed heterosexual relationships with another man or a woman. This let us test how the interplay between the qualities of one's current partner and one's OSF shapes sexual interest in the OSF.

Results mostly provide support for the *mating activation hypothesis*. Specifically, physical attractiveness of OSFs positively predicted sexual interest in OSF, and this effect was much stronger for men than women. And while it was stable for men (i.e., not moderated by any of current partner's qualities), for women it showed flexibility depending on current partner's characteristics. OSF's physical attractiveness stopped predicting sexual interest toward OSF when a woman's current partner was highly attractive, or provided high level of support, or when she was highly satisfied with their romantic relationship. This is in line with the mate-switching hypothesis (Buss et al., 2017; Greiling & Buss, 2000), which states that people have psychological adaptations designed to detect and abandon costly mates in order to switch to more beneficial ones. Apparently, OSFs serve as potential back-up mates (Duntley, 2007). It also resonates with studies indicating that women who engage in extramarital affairs are significantly less happy with their marriages than women who do not have affairs (e.g., Glass and Wright, 1985).

The fact that these moderating effects were evident for women but not for men is not all that surprising. Securing a mate could have been more crucial for ancestral women than for men, as living without a partner implied less safety and lack of resources for the woman herself, as well as for her children (see also Buss et al., 2017). For men this has not been the case. Moreover, considering the tremendous reproductive benefits to men of short-term mating over evolutionary time (e.g., Buss & Schmitt, 1993; Kenrick et al., 1990; Symons, 1979; Walter et al., 2020), as well as their desire for sexual variety

(Buss, 1994; Symons, 1979), it becomes more understandable why the relation between OSF's physical attractiveness and sexual interest toward the OSF is not so easily stopped. Future research examining this hypothesis should include the mate value of participants. As short-term mating strategy is not universally best for all men (e.g., Stewart-Williams and Thomas, 2013), it is plausible that men in committed relationships who perceive themselves as having low mate value would not be sexually attracted to their OSFs, at least in the case of having a highly attractive romantic partner.

Results investigating the association between OSF's financial resources and sexual interest toward them were not so clear-cut. In Study 1 we found no effects neither for men nor women. In Study 2 we changed the way resources were measured to a more subjective evaluation of the level of OSF's and current partner's earnings. We argue that questions used in Study 1 concerning the stability of one's income, future earnings perspectives, as well as successes at work/university could not effectively cover what we actually meant to, that is subjective satisfaction with one's resources. This change has yielded the expected positive relationship between OSFs' resources and sexual interest toward OSFs for participating women in Study 2. It suggests that financial resources of OSFs are tracked by women, and the higher the resources, the more sexually interested women are in their OSFs. This effect resonates with the findings by Lewis et al. (2011, 2012) who showed that women prioritized their male friends' ability to provide protection and economic resources.

This effect was further moderated by women's current partner's financial resources in a very interesting way. Specifically, OSF's resources predicted sexual interest in the OSF not for those women who evaluated their partner's resources as very low, but for those who evaluated these resources as moderate or high. At first glance, this result contradicts the mate-switching hypothesis, which would predict that the association between OSF's financial resources and sexual interest should be especially evident for those women whose current partner is a low-income man. However, it is possible that there is a specific type of women who get involved with men of low income (e.g., low-attractive women), and who cannot compete for high-status men. Our study cannot settle this dispute, but as mentioned earlier, future research should include the participant's mate value as an additional important moderator.

Our results also point to the important moderating role of sociosexual orientation in shaping sexual interest toward OSFs in women. Since unrestricted individuals possess attributes linked to success in short-term mating (Thornhill & Gangestad, 1994), it has been suggested that they may have been more successful in attempts to mate with OSFs (Lewis et al., 2012). Indeed, in Study 2 we showed a positive relationship between sociosexual orientation and sexual interest toward OSFs. Additionally, the association between OSF's financial resources and sexual interest toward OSFs was moderated by the sociosexual orientation level. Specifically, the effect was getting stronger as women became more unrestricted.

To conclude, our studies expand on earlier research by advancing and testing the *mating activation hypothesis* in the context of actual opposite-sex friends. In support of this hypothesis, it has been evidenced that men and women differ in a way they experience sexual interest in their OSFs while in a committed romantic relationship. Along with the arguments by Lewis et al. (2012), our research emphasizes the importance and necessity of investigating the interplay between various moderators in shaping men's and women's sexual interest in their OSFs. Among them are qualities of one's current partner, qualities of OSFs, as well as individual characteristic of participants. Finally, our research proves the predictive value of an evolutionary psychological approach to understanding OSF.

Data Availability Statement

The datasets presented in the two studies can be found in online repositories at: https://osf.io/8puks/?view_only=8e7f3ee3ac104f7e81f44a1f454dbfa8.

Declaration of Conflicting Interests

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ORCID iD

Aleksandra Szymkow  <https://orcid.org/0000-0002-6550-7369>

Supplemental material

Supplemental material for this article is available online https://osf.io/8puks/?view_only=8e7f3ee3ac104f7e81f44a1f454dbfa8.

Notes

1. We also had additional measures in Study 1 (both partner's and OSF's: agency, communion, and market value levels). We do not discuss them, as they serve to verify hypotheses not related to the topic presented here.
2. The scale by Swami et al. (2009) shows a normal distribution of *attractiveness ratings* and titles against each score ($M = 100$, $SD = 15$). What follows is that 55 were labeled *Very unattractive*, 70 *Unattractive*, 85 *Low average*, 100 *Average*, 115 *High average*, 130 *Attractive*, 145 *Very attractive*. As a guide against which to make their ratings, participants were informed that there are some very attractive individuals, but that most people are of average attractiveness (depicted as the normal distribution of attractiveness ratings). Participants were informed that the labels acted as a guide and that they could choose any number that they felt was most appropriate.
3. We have checked for all moderation effects with OSF's resources as a predictor (and separately with OSF's support as a predictor) of general sexual interest toward him or her and current partner's attractiveness, resources, support, and satisfaction with the romantic relationship as separate moderators (for men and women).

separately). As none of these effects were significant, we do not describe these analyses in further detail.

4. These variables are advised to be controlled if not taken into consideration (see for example Greiling and Buss, 2000).
5. We also had additional measures in the Study 2 (both partner's and OSF's agency and communion; declared Sternberg's types of love and satisfaction with the sex life with the current partner). We do not discuss them, as they serve to verify hypotheses not related to the topic presented here.

References

- Affifi W. A., & Faulkner S. L. (2000). On being "just friends": The frequency and impact of sexual activity in cross-sex friendships. *Journal of Social and Personal Relationships, 17*(2), 205–222. <https://doi.org/10.1177/0265407500172003>
- Bleske A. L., & Buss D. M. (2000). Can men and women be just friends? *Personal Relationships, 7*(2), 131–151. <https://doi.org/10.1111/j.1475-6811.2000.tb00008.x>
- Bleske-Rechek A. L., & Buss D. M. (2001). Opposite-sex friendship: Sex differences and similarities in initiation, selection, and dissolution. *Personality and Social Psychology Bulletin, 27*(10), 1310–1323. <https://doi.org/10.1177/01461672012710007>
- Bleske-Rechek A., Somers E., Micke C., Erickson L., Matteson L., Schumacher B., Stocco C., & Ritchie L. (2012). Benefit or burden? Attraction in cross-sex friendship. *Journal of Social and Personal Relationships, 29*(5), 569–596. <https://doi.org/10.1177/0265407512443611>
- Buss D. M. (1994). *The evolution of desire*. Basic Books.
- Buss D. M., Goetz C., Duntley J. D., Asao K., & Conroy-Beam D. (2017). The mate switching hypothesis. *Personality and Individual Differences, 104*, 143–149. <https://doi.org/10.1016/j.paid.2016.07.022>
- Buss D. M., & Schmitt D. P. (1993). Sexual strategies theory: An evolutionary perspective on human mating. *Psychological Review, 100*(2), 204–232. <https://doi.org/10.1037/0033-295X.100.2.204>
- Buss D., & Schmitt D. (2016). *Sexual strategies theory*. In Shackelford T. K., & Weekes-Shackelford V. A. (Eds.), *Encyclopedia of evolutionary psychological science* (pp. 1–5). Springer International Publishing AG.
- Buss D. M., & Schmitt D. P. (2019). Mate preferences and their behavioral manifestations. *Annual Review of Psychology, 70*(4), 77–110. <https://doi.org/10.1146/annurev-psych-010418-103408>
- Buss D. M., & Shackelford T. K. (1997). Susceptibility to infidelity in the first year of marriage. *Journal of Research in Personality, 31*(2), 193–221. <https://doi.org/10.1006/jrpe.1997.2175>
- Conroy-Beam D., Goetz C. D., & Buss D. M. (2016). What predicts romantic relationship satisfaction and mate retention intensity: Mate preference fulfillment or mate value discrepancies? *Evolution and Human Behavior, 37*(6), 440–448. <https://doi.org/10.1016/j.evolhumbehav.2016.04.003>
- Duntley J. (2007). *Backup mates* [Paper presentation]. Human Behavior and Evolution Society Annual Meeting, College of William and Mary, Williamsburg, VA.
- Gangestad S. W., & Dinh T. (2021). Robust evidence for moderation of ovulatory shifts by partner attractiveness in arslan, Et al.'s (2020) data. *Journal of Personality and Social Psychology, 121*(2), 432–440. <https://doi.org/10.1037/pspp0000305>
- Gangestad S. W., & Simpson J. A. (2000). The evolution of human mating: Trade-offs and strategic pluralism. *Behavioral and Brain Sciences, 23*(4), 573–644. <https://doi.org/10.1017/S0140525X0000337X>
- Gangestad S. W., Thornhill R., & Garver-Apgar C. E. (2005). Adaptations to ovulation: Implications for sexual and social behavior. *Current Directions in Psychological Science, 14*(6), 312–316. <https://doi.org/10.1111/j.0963-7214.2005.00388.x>
- Glass S. P., & Wright T. L. (1985). Sex differences in type of extramarital involvement and marital dissatisfaction. *Sex Roles: A Journal of Research, 12*(9–10), 1101–1120. <https://doi.org/10.1007/BF00288108>
- Glass S. P., & Wright T. L. (1992). Justifications for extramarital relationships: The association between attitudes, behaviors, and gender. *Journal of Sex Research, 29*(3), 361–387. <https://doi.org/10.1080/00224499209551654>
- Greiling H., & Buss D. M. (2000). Women's sexual strategies: The hidden dimension of extra-pair mating. *Personality and Individual Differences, 28*(5), 929–963. [https://doi.org/10.1016/S0191-8869\(99\)00151-8](https://doi.org/10.1016/S0191-8869(99)00151-8)
- Hayes A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Press.
- Hayes A. F., & Matthes J. (2009). Computational procedures for probing interactions in OLS and logistic regression: SPSS and SAS implementations. *Behavior Research Methods, 41*(3), 924–936. <https://doi.org/10.3758/BRM.41.3.924>
- Hendrick S. S. (1988). A generic measure of relationship satisfaction. *Journal of Marriage and the Family, 50*(1), 93–98. <https://doi.org/10.2307/352430>
- Kaplan D. L., & Keys C. B. (1997). Sex and relationship variables as predictors of sexual attraction in cross-sex platonic friendships between young heterosexual adults. *Journal of Social and Personal Relationships, 14*(2), 191–206. <https://doi.org/10.1177/0265407597142003>
- Kenrick D. T., Sadalla E. K., Groth G., & Trost M. R. (1990). Evolution, traits, and the stages of human courtship: Qualifying the parental investment model. *Journal of Personality, 58*(1), 97–116. <https://doi.org/10.1111/j.1467-6494.1990.tb00909.x>
- Koenig B. L., Kirkpatrick L. A., & Ketelaar T. (2007). Misperception of sexual and romantic interests in opposite-sex friendships: Four hypotheses. *Personal Relationships, 14*(3), 411–429. <https://doi.org/10.1111/j.1475-6811.2007.00163.x>
- Larson C. M., Pillsworth E. G., & Haselton M. G. (2012). Ovulatory shifts in women's attractions to primary partners and other men: Further evidence of the importance of primary partner sexual attractiveness. *PLoS ONE, 7*(9), e44456. <https://doi.org/10.1371/journal.pone.0044456>
- Lewis D. M. G., Al-Shawaf L., Conroy-Beam D., Asao K., & Buss D. M. (2012). Friends with benefits II: Mating activation in opposite-sex friendships as a function of sociosexual orientation and relationship status. *Personality and Individual Differences, 53*(5), 622–628. <https://doi.org/10.1016/j.paid.2012.04.040>
- Lewis D. M. G., Conroy-Beam D., Al-Shawaf L., Raja A., DeKay T., & Buss D. M. (2011). Friends with benefits: The evolved psychology of

- same- and opposite-sex friendship. *Evolutionary Psychology*, 9(4), 543–563. <https://doi.org/10.1177/147470491100900407>
- Lin Y.-H. W., & Rusbult C. E. (1995). Commitment to dating relationships and cross-sex friendships in America and China. *Journal of Social and Personal Relationships*, 12(1), 7–26. <https://doi.org/10.1177/0265407595121002>
- Monsour M. (1992). Meanings of intimacy in cross- and same-sex friendships. *Journal of Social and Personal Relationships*, 9(2), 277–295. <https://doi.org/10.1177/0265407592092007>
- O'Meara J. D. (1989). Cross-sex friendship: Four basic challenges of an ignored relationship. *Sex Roles: A Journal of Research*, 21(7-8), 525–543. <https://doi.org/10.1007/BF00289102>
- Penke L., & Asendorpf J. B. (2008). Beyond global sociosexual orientations: A more differentiated look at sociosexuality and its effects on courtship and romantic relationships. *Journal of Personality and Social Psychology*, 95(5), 1113–1135. <https://doi.org/10.1037/0022-3514.95.5.1113>
- Reeder H. M. (2000). 'I like yo, U... as a friend': The role of attraction in cross-sex friendship. *Journal of Social and Personal Relationships*, 17(3), 329–348. <https://doi.org/10.1177/0265407500173002>
- Rose S. (1985). Same- and cross-sex friendships and the psychology of homosexuality. *Sex Roles*, 12(1-2), 63–74. <https://doi.org/10.1007/BF00288037>
- Stewart-Williams S., & Thomas A. G. (2013). The ape that thought it was a peacock: Does evolutionary psychology exaggerate human sex differences? *Psychological Inquiry*, 24(3), 137–168. <https://doi.org/10.1080/1047840X.2013.804899>
- Swain S. (1992). Men's friendships with women: Intimacy, sexual boundaries, and the informant role. In Nardi P. (Ed.), *Men's friendships* (pp. 153–171). Sage.
- Swami V., Stieger S., Haubner T., Voracek M., & Furnham A. (2009). Evaluating the physical attractiveness of oneself and one's romantic partner: Individual and relationship correlates of the love-is-blind bias. *Journal of Individual Differences*, 30(1), 35–43. <https://doi.org/10.1027/1614-0001.30.1.35>
- Symons D. (1979). *The evolution of human sexuality*. Oxford.
- Thornhill R., & Gangestad S. W. (1994). Human fluctuating asymmetry and sexual behavior. *Psychological Science*, 5(5), 297–302. <https://doi.org/10.1111/j.1467-9280.1994.tb00629.x>
- Tooby J., & Cosmides L. (1992). The psychological foundations of culture. In J. H. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture* (pp. 19–136). Oxford University Press.
- Walter K. V., Conroy-Beam D., Buss D. M., Asao K., Sorokowska A., Sorokowski P., Aavik T., Akello G., Alhabahba M. M., Alm C., Amjad N., Anjum A., Atama C. S., Atamtürk Duyar D., Ayebare R., Batres C., Bendixen M., Bensafia A., & Bizumic B., ... Siddiqui R. S. (2020). Sex differences in mate preferences across 45 countries: A large-scale replication. *Psychological Science*, 31(4), 408–423. <https://doi.org/10.1177/0956797620904154>
- Werking K. J. (1994). *Dissolving cross-sex friendships* [Paper presentation]. Speech Communication Association Convention, New Orleans, LA.