

Examining the Possible Functions of Kissing in Romantic Relationships

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ABSTRACT

Recent research suggests that romantic kissing may be utilized in human sexual relationships to evaluate aspects of a potential mate's suitability, to mediate feelings of attachment between pair-bonded individuals, or to facilitate arousal and initiate sexual relations. This study explored these potential functions of romantic kissing by examining attitudes towards the importance of kissing in the context of various human mating situations. The study involved an international online questionnaire, which was completed by 308 male and 594 female participants aged 18 to 63 years. Support was found for the hypothesis that kissing serves a useful mate-assessment function: women, high mate-value participants, and participants high in sociosexual orientation placed greater importance on kissing in romantic relationships and stated that an initial kiss was more likely to affect their attraction to a potential mate than did men, low-mate value participants or low sociosexual orientation participants. Kissing also seemed to be utilized in the mediation of pair-bond attachments: kissing was seen to be more important at established stages of relationships by low sociosexual participants, kissing was generally seen as more important in long-term relationship contexts (but particularly so by women), and kissing frequency was found to be related to relationship satisfaction. The findings of this research showed very little evidence to support the hypothesis that the primary function of kissing is to elevate levels of arousal.

Key Words: romantic kissing; pair-bonding; attachment; mate choice; mate value; sociosexual orientation.

INTRODUCTION

The prevalence of various human courtship and mating behaviors around the world is thought to signify their usefulness in the process of assessing potential mating partners, in mediating pair-bond attachments or in initiating sexual relations (Eibl-Eibesfeldt, 1972; Fisher, 1982; Miller, 2001). Mouth-to-mouth romantic kissing is one such behavior, common in over 90% of known cultures (Eibl-Eibesfeldt, 1972; Kirshenbaum, 2011). In the few societies where mouth-to-mouth partner contact is unknown or frowned upon, sexual partners have often still been found to practice analogous “kissing” traditions of close face-to-face contact involving sniffing, licking or rubbing (Fisher, 1992; Ford & Beach, 1951). In fact, the first written and pictorial accounts of sexual-partner kissing have been found to date back to humanity’s earliest surviving records, in ancient Hindu Veda Sanskrit texts, and in the murals of ancient Egypt, where kissing was often represented by romantic partners pressing faces to lick or inhale the scent of the other (Parkinson, 1999).

The historical and cultural pervasiveness of kissing in sexual relationships suggests that it might serve a useful function in the context of human mating. It has been suggested that the close proximity initiated by various kissing customs might facilitate the subconscious appraisal of a potential mate by utilizing pheromonal cues to assess genetic MHC-based compatibility (see Wedekind, Seebeck, Bettens, & Paepke, 1995), general health (Durham, Malloy, & Hodges, 1993), underlying genetic fitness (Thornhill & Gangestad, 1999), or menstrual cycle phase and fertility (Thornhill et al., 2003). Other research also suggests that kissing may aid in mate assessment via sampling of semiochemical gustatory cues found in skin oils and saliva compounds (Durham et al., 1993; Nicholson, 1984).

A second possibility is that high levels of physiological stimulation induced by kissing may function to elevate levels of autonomic arousal, ready the body for coitus, and increase

the likelihood that a particular romantic encounter will result in sexual intercourse (Byers & Heinlein, 1989; de Graaf, Vanwesenbeeck, Meijer, Woertman, & Meeus, 2009; Zuckerman, 1971). Even without direct mouth-to-mouth contact, “face-sniffing” might mediate arousal levels via olfactory semiochemical pathways involving compounds such as androstenone and androstenol (Grammer, Fink, & Neave, 2005; Thorne, Neave, Scholey, Moss, & Fink, 2002). A third possibility is that romantic kissing, along with other forms of direct physical contact, plays a role in mediating feelings of attachment, and thus relationship satisfaction, between romantic partners (Floyd et al., 2009; Grewen, Girdler, Amico, & Light, 2005; Gullledge, Gullledge, & Stahmann, 2003; Heiman et al., 2011; Light, Grewen, & Amico, 2005). Anecdotal evidence for the role of kissing in attachment lies in the business practices of working prostitutes, who often refuse to kiss clients on the basis that it is “too intimate” or “it smacks too much of genuine desire and love for the other person” (Brewis & Linstead, 2000). Kissing-related behaviors may also act as social and psychological signals of commitment between partners, who demonstrate a willingness to expose themselves to potential health hazards, such as influenza, herpes simplex virus or meningococcal meningitis (Cowan et al., 2002; Guerrero & Andersen, 1991; Schoch-Spana, 1992; Tully et al., 2006).

Research suggests that, in humans, the sexes may utilize various courtship and relationship behaviors in divergent ways. Evolutionary approaches to studying these sex differences predict that the sex making the greater minimal parental investment will be more discerning when it comes to selecting a mate (Bjorklund & Schackelford, 1999; Trivers, 1972). In humans, as in all mammals, the female pays the higher metabolic cost of parenting (through gestation and lactation), with a considerable body of research confirming that females do indeed undertake a more rigorous and selective mate-selection process than males

(Buss, 1989; Candolin, 2003; Grammer, Kruck, Juette, & Fink, 2000; Kenrick, Sadalla, Groth, & Trost, 1990; Townsend & Wassermann, 1998).

This process of selecting mates may involve the assessment of various physical and behavioral cues, many of which accurately convey information about genetic quality, including fluctuating asymmetry (Grammer & Thornhill, 1994), sexually dimorphic traits of masculinity/femininity (Little, Burt, Penton-Voak, & Perrett, 2001), voice pitch/quality (Collins & Missing, 2003), and olfactory cues (Grammer et al., 2005; Rikowski & Grammer, 1999). Human females have also been found to place greater value than males on traits signaling a willingness and ability to invest resources and time into parental care (Buss, 1989; Kenrick et al., 1990; Townsend & Wassermann, 1998) and on the creation and maintenance of long-term relationships (Baumeister & Bratslavsky, 1999; Ellis & Symons, 1990; Symons, 1979).

Since it is believed that various human courtship behaviors (like physical touching) may act to strengthen pair-bond attachments, it is not surprising to find that females also place greater value than males on these types of relationship activities (Denney, Field, & Quadagno, 1984; Hughes, Harrison, & Gallup, 2007; Hughes & Kruger, 2011; Johnson & Edwards, 1991; Symons, 1979). Romantic kissing may actually be one of the most effective bond-mediating courtship behaviors, with both males and females rating it as the type of physical affection “most expressive of love” (Gulledge et al., 2003). Recent neurological evidence suggests that romantic physical contact may function to mediate romantic pair-bonds by elevating levels of arousal, by activating the brain’s reward and motivational systems, or by initiating the release of neurotransmitters, opioids, and other neurohormones (Carter, 1998; Dunbar, 2010; Esch & Stefano, 2005; Fisher, Aron, & Brown, 2006; Light et al., 2005; Macdonald & Macdonald, 2010; Marazziti & Canale, 2004).

Preliminary studies into romantic kissing confirm that it is women who seem to place greater overall importance on romantic kissing than men (Hughes et al., 2007), and that women in the late follicular phase of their cycle (at highest risk of conception) value kissing at initial relationship stages more than women in the luteal phase of their cycle (Wlodarski & Dunbar, 2013). Similarly, research also demonstrates that men are more likely to initiate kissing before sex, when it might be used for arousal purposes, whereas women are more likely to initiate kissing after sex, where it might better serve a relationship maintenance function (Hughes & Kruger, 2011), and are more likely to utilize kissing to assess a partner's level of commitment throughout the relationship (Hughes et al., 2007).

The evidence thus suggests that the ritual of romantic kissing serves several possible functions in the process of human mating: to assess the suitability of potential mates; to increase levels of autonomic arousal (and initiate coitus); and to mediate feelings of attachment in pair-bonded relationships. This research study was designed to differentiate between these functions in a large, multicultural sample by examining individuals' attitudes towards the importance of kissing in different romantic partner interactions.

Hypothesis 1 predicted that, if kissing serves a mate-assessment function, individuals who typically demand higher standards of mate quality and commitment from potential mating partners, including women, individuals high in mate-value (see Kavanagh, Robins, & Ellis, 2010; Little et al., 2001; Noe & Hammerstein, 1994; Pawlowski, 1999), and high sociosexual orientation individuals (Sacco, Hugenberg, & Sefcek, 2009; Simpson & Gangestad, 1992; Simpson et al., 1991), should place greater importance on kissing in romantic partner interactions. Furthermore, this hypothesis also predicts that these more selective individuals (again women, high mate-value participants, high sociosexual

orientation participants) will be more likely to have had their attraction to a potential romantic partner affected by an initial kissing experience.

Hypothesis 2 predicted that, if kissing plays a significant role in mediating the attachment felt between established romantic partners, individuals who prioritize the pursuit of long-term mating relationships over short-term mating interactions (i.e., women and individuals with a low sociosexual orientation) will find kissing to be more important in the established relationship phase than in the initial relationship phase. Furthermore, this hypothesis predicts that, with long-term partners, kissing will be valued equally in all interactions surrounding sex, including at times not directly related to sex. Females should also place particular value on kissing at times unrelated to sex, where it would be most useful in mediating pair-bonds. Furthermore, this hypothesis predicts that kissing frequency in a relationship should be positively related to feelings of attachment (as measured by relationship satisfaction).

Hypothesis 3 predicted that, if kissing plays a primary role in arousal and the physiological preparation of the body for coitus, individuals should find kissing more important immediately before sexual intercourse than during or after sexual intercourse, particularly within short-term (casual sex) romantic partners. This hypothesis also predicts that males, who have been previously shown to prioritize short-term mating interactions more than women, will place greater value on kissing before sex where it might be most useful in arousal and initiating sexual relations.

METHOD

Participants

An online questionnaire was distributed to several public U.S. and UK based online psychological testing repository websites and colleges of the University of Oxford. The study

was advertised as being about “romantic attraction,” and responses were voluntary, restricted to individuals over 18 years of age, and anonymous. All participants were offered the chance to enter a prize draw for a \$50 online shopping voucher.

In total, 902 participants took the survey to completion, of which 308 were male and 594 were female, ranging in age from 18 to 63 years ($M = 24.7$, $SD = 7.9$). The majority of participants self-identified as being ethnically Caucasian/white (78.7%); 4.6% were Latino and 3.1% South Asian. The sample was mostly made up of nationals of British (39.1%), North American (36.7%), and Western European (6.6%) origin. High school education was completed by 99.2% of participants, with 46.9% having attained a Diploma or some college experience, and 30.6% completing a Bachelor’s degree or higher. Of the sample, 55.2% of participants were in some kind of long-term/committed relationship (either living apart, living together or married) at the time of the survey.

Procedure

Participants were asked to complete questions about their attitudes towards romantic kissing in various romantic partner situations. Throughout the questionnaire, romantic partners were defined as persons with whom the participant could be romantically involved (with or without the involvement of sex), with short-term relationships defined as involving “*casual, short-term partners (i.e., one night stands)*” and long-term relationships defined as those with a “*committed, long-term romantic partner (i.e., someone you are in a relationship with)*.” Throughout the survey, kissing was defined as “*kissing on the lips or open-mouth (“French”) kissing.*” Participants were also asked to provide general demographic information. In all cases, responses were collected using 5-point Likert-type scales with endpoints labeled either “Extremely unlikely/Extremely likely,” “Not at all important/Extremely important,” or “Strongly disagree/Strongly agree” as appropriate.

Participants in a relationship at the time of the survey were also asked to complete a version of the Relationship Assessment Scale (RAS) (Hendrick, 1988) to assess the quality of their relationship. This 7-item scale asked for participants' levels of agreement with questions such as "*My partner meets all my needs*" and "*There are many problems in my relationship,*" with responses collected using 7-point Likert-type scales which had endpoints ranging from "Strongly disagree" to "Strongly agree." Responses were reverse scored where necessary and averaged to calculate a mean RAS score which ranged from 1-7. Participants were also asked about how often they kissed their partners, had sexual intercourse with them, and whether they were satisfied with the amount of kissing and sexual intercourse in their relationship.

To measure participants' preference for short-term, casual sexual encounters versus committed, close sexual relationships, referred to as "sociosexual orientation" (Simpson et al., 1991), questions were included from the 9-item Sociosexual Orientation Inventory Revised (SOI-R) to evaluate an individual's behaviors, attitudes, and desires as they relate to non-committal sex (Penke & Asendorpf, 2008). Sample questions included "*With how many different partners have you had sexual intercourse on one and only one occasion?*" in the behavioral component (rated on 9-point frequency scales ranging from "0" to "20 or more"), "*Sex without love is ok*" in the attitude component (rated on 9-point agreement scales ranging from "Strongly disagree" to "Strongly agree"), and "*How often do you have fantasies about having sex with someone you are not in a committed romantic relationship with?*" in the desire component (rated on 9-point frequency scales ranging from "Never" to "At least once a day"). Overall sociosexual orientation scores were derived from participants' mean answers to the nine items (with reverse scoring as necessary), which were then median-split into high/low sociosexual orientation for use in ANOVA analysis.

Each participant's mate-value was approximated by their self-rated attractiveness, which has previously been found to be highly correlated to peer-rated attractiveness (Feingold, 1988) and to act as a suitable proxy for genetic quality and hence mate-value in a biological mating market (Barber, 1995). Answers to the questions "*How do you think other people would rate you on physical attractiveness?*" and "*How do you think other people would rate you on sexual attractiveness?*" were collected using a 7-point Likert-type scale ranging from "Very low" to "Very high." An overall self-rated attractiveness factor score was calculated using principal components analysis and median-split into a high/low self-rated attractiveness for use in further analysis.

RESULTS

Importance of Kissing, Relationship Phase, Sex, Sociosexual Orientation and Attraction

Participants were asked "*How important do you think kissing is . . . at the very initial stages of a relationship/during the established phases of a committed, long-term relationship?*" A 2 x 2 x 2 x 2 mixed design ANOVA was conducted with sex (male/female), SOI (low/high), and self-rated attractiveness (low/high) as between subjects factors and time in the relationship (initial stage vs. established phase) as a within-subjects factor. Table 1 shows the results of this ANOVA analysis.

Table 1

ANOVA Results for Ratings of Kissing Importance at Initial/Established Relationship Phases by Sex, Sociosexual Orientation (SOI) and Self-rated Attractiveness

	<i>df</i>	<i>F</i>	<i>partial η²</i>	<i>p</i>
<i>Within subject effects</i>				
Relationship phase	882	< 1	.001	ns
Relationship phase × Sex	882	< 1	.001	ns
Relationship phase × SOI	882	17.34	.019	.001
Relationship phase × Attractiveness	882	1.55	.002	ns
Relationship phase × Sex × SOI	882	2.32	.003	ns
Relationship phase × Sex × Attractiveness	882	< 1	.001	ns
Relationship phase × SOI × Attractiveness	882	< 1	.001	ns
Relationship phase × Sex × SOI × Attractiveness	882	< 1	.001	ns
<i>Between subject effects</i>				
Sex	882	32.53	.036	.001
SOI	882	5.05	.006	.025
Attractiveness	882	11.55	.013	.001
Sex × SOI	882	4.42	.005	.036
Sex × Attractiveness	882	< 1	.001	ns
SOI × Attractiveness	882	< 1	.001	ns
Sex × SOI × Attractiveness	882	1.06	.001	ns

The main effect for sex suggests that women ($M = 4.17$, $SE = 0.03$) rated kissing as more important in all romantic partner interactions than men ($M = 3.83$, $SE = 0.05$), while the main effect for self-rated attractiveness indicated that participants high in attractiveness ($M = 4.10$, $SE = 0.05$) rated kissing as more important than low attractiveness participants ($M = 3.90$, $SE = 0.04$). The interaction effect between relationship stage and SOI suggests that participants with a low SOI score believed kissing was less important at the initial stages of a relationship ($M = 3.82$, $SE = .06$) than at later stages of a relationship ($M = 4.04$, $SE = .06$), while participants scoring high in SOI indicated the opposite: that kissing was more important at the initial stages of a relationship ($M = 4.14$, $SE = .05$) than at the later stages of a relationship ($M = 4.00$, $SE = .04$). The interaction effect between sex and SOI suggested that male participants with high SOI scores ($M = 3.96$, $SE = .05$) believed kissing to be more important overall than those with low SOI scores ($M = 3.70$, $SE = .09$), while there was no significant difference in ratings of female participants scoring either high ($M = 4.18$, $SE = .05$) or low ($M = 4.17$, $SE = .04$) in SOI. None of the three-way or 4-way interactions were significant.

Importance of Kissing around Sexual Intercourse with Short- and Long-Term Partners by Sex

Participants were asked the question “*How important do you think kissing is with a [casual, short-term romantic partner/committed, long-term romantic partner] in the following situations: Immediately before sex; During sex; After sex; At all other times (not related to sex)?*” A 2 x 2 x 4 mixed design ANOVA was conducted with participant sex (male/female) as the between subject factor and romantic partner type (short-term/long-term) and time in relation to sex (before, during, after, “other times”) as the within-subject factors. The results of this analysis are shown in Table 2.

Table 2

ANOVA Results for Ratings of Kissing Importance with Short/Long Term Partners at Different Times Around Sexual Intercourse by Sex.

	<i>df</i>	<i>F</i>	<i>partial η²</i>	<i>p</i>
<i>Within subject effects</i>				
Short/Long Term Partner	867	1052.12	.548	.001
Short/Long Term Partner × Sex	867	2.98	.003	ns
Time Around Sex	867	447.96	.341	.001
Time Around Sex × Sex	867	4.50	.005	.034
Short/Long Term Partner × Time Around Sex	867	658.89	.432	.001
Short/Long Term Partner × Time Around Sex × Sex	867	< 1	.001	ns
<i>Between subject effects</i>				
Sex	867	2.40	.003	ns

The results suggest that an interaction effect was present between sex and time around sex, with post-hoc tests (adjusted for multiple comparisons, differences significant at $p < .001$) revealing that women thought kissing was more important than men “at other times not related to sex” (women $M = 3.39$, $SE = 0.03$, men $M = 3.16$, $SE = 0.05$), but did not differ from men in rating the importance of kissing before, during or after sex ($ps > .05$).

Another interaction effect was found between romantic partner type and time around sex, with post-hoc pairwise comparisons (adjusted for multiple tests, all differences significant at $p < .001$) indicating that overall kissing was seen as much more important with long-term partners ($M = 4.05$, $SE = 0.03$) than with short-term partners ($M = 2.94$, $SE = 0.03$). Furthermore, kissing short-term partners was seen as most important before sex ($M = 3.79$,

$SE = 0.04$), less important during sex ($M = 3.04, SE = 0.04$), even less important after sex ($M = 2.57, SE = 0.04$), and least important at “other times” ($M = 2.37, SE = 0.04$). When it came to long-term romantic partners, kissing was seen as equally important before sex ($M = 4.24, SE = 0.03$) and at “other times not related to sex” ($M = 4.18, SE = 0.03$), while it was significantly less important after sex ($M = 3.96, SE = 0.04$) and least important during sex ($M = 3.82, SE = 0.04$).

Change in Attraction after an Initial Kiss

Stepwise multiple regression analysis was conducted regressing the three main predictor variables of sex, self-rated attractiveness, and SOI, as well as their interactions, onto answers to the question “*Have you ever felt attracted to someone, only to find that your attraction to them had changed after an initial kiss?*” None of the interaction terms were found to improve the model fit and therefore were not included in the analysis, the results of which are shown in Table 3.

Table 3

Multiple Regression Results for Change in Attraction after an Initial Kiss

	<i>B</i>	<i>SE B</i>	β
Constant	1.72	0.11	
Sex	0.38	0.07	.18***
Self-rated Attractiveness	0.23	0.03	.23***
SOI	0.11	0.02	.19***

Note: $R^2 = .126, ***p < .001$

The results showed that women were more likely than men to have experienced a change in attraction after an initial kiss, that participants who considered themselves more

attractive were more likely to have had a kiss alter their feelings of attractiveness, and that higher sociosexuality was associated with greater changes in post-kiss attraction.

Kissing and Relationship Satisfaction

A multiple regression analysis was conducted to see to what extent romantic partner kissing ability, frequency of kissing and sexual intercourse, and satisfaction with the amount of kissing and sexual intercourse in the relationship predicted relationship quality. As shown in Table 4, having a partner who was a “good” kisser, greater frequency of kissing in the relationship, greater satisfaction with the amount of kissing, and greater satisfaction with the amount of sex in the relationship were all positively associated with relationship quality, while the frequency sex in the relationship was not significantly related to relationship quality.

Table 4

Multiple Regression Results for Predictors of Relationship Quality

	<i>B</i>	<i>SE B</i>	β
Constant	2.072	0.256	
How “good” at kissing partner is	0.405	0.052	.321***
Frequency of kissing partner	0.116	0.049	.111*
Satisfaction with amount of kissing	0.155	0.062	.132*
Frequency of sex with partner	0.065	0.050	.066
Satisfaction with the amount of sex	0.168	0.057	.161**

*Note: $R^2 = .331$, * $p < .05$, ** $p < .01$, *** $p < .001$*

DISCUSSION

This study explored the potential functions of romantic kissing by examining attitudes towards kissing in the context of various human mating situations. The three main hypotheses for potential functions of romantic kissing were: mate assessment—either via sebum, saliva or auxiliary pheromone sampling for signs of fitness or genetic (MHC) compatibility; bonding—the initiation and mediation of feelings of attachment between individuals; and arousal—mediating readiness for sex and inducing sexual interaction. Table 5 compares the various results of this study against the predictions made by the three competing hypotheses in a “critical tests” format (see also Calhim, Shi, & Dunbar, 2006; van Schaik & Dunbar, 1990). Our data generally supported the predictions made by the mate assessment hypothesis (Hypothesis 1) and bonding hypothesis (Hypothesis 3), while showing very little support for the arousal hypothesis (Hypothesis 2).

Kissing and Mate Assessment

Support for Hypothesis 1, that kissing aids in mate assessment, was provided by the finding that both women and participants high in mate-value believed kissing was more important in relationships than either men or low mate-value participants, and responded that they were more likely to have had their attraction to an individual change after an initial kiss. It was also found that high sociosexual orientation (SOI) individuals thought kissing was more important at early stages of a relationship than low SOI individuals, that they reported greater changes in attraction after an initial kissing encounter, and that males with high SOI thought kissing was more important than males with low SOI.

Table 5*Critical Tests Analysis Between Competing Hypotheses for the Function of Kissing*

Research Question	Predictions of each hypothesis			Observed Result
	Assessment (Hyp. 1)	Arousal (Hyp. 2)	Bonding (Hyp. 3)	
Women believe kissing is more important in relationships than men do	<u>YES</u>	NO*	<u>YES</u>	YES
High mate-value participants believe kissing is more important than low mate-value participants	<u>YES</u>	NO*	<u>YES</u>	YES
Kissing importance at early (E) vs. late (L) stages of relationship	E>L*	<u>E=L</u> *	E<L*	E=L
High SOI participants value kissing more at early stages of a relationship	<u>YES</u> *	NO	NO	YES
Low SOI participants value kissing more at late stages of a relationship	NO	NO	<u>YES</u> *	YES
High SOI male participants value kissing more than low SOI male participants	<u>YES</u> *	NO	NO	YES
Women more likely to have attraction change after an initial kiss than men do	<u>YES</u> *	NO	NO	YES
High mate value participants more likely to have attraction change after an initial kiss	<u>YES</u> *	NO	NO	YES
High SOI participants more likely to have attraction change after an initial kiss	<u>YES</u> *	NO	NO	YES
With ST partner: kissing more important before sex than at other times	NO	<u>YES</u> *	NO	YES
With LT partner: kissing important at all times around sex	NO	NO	<u>YES</u> *	YES
Males find kissing more important before sex than during/after sex	<u>NO</u>	YES*	<u>NO</u>	NO
Women find kissing more important at times not related to sex than men	NO	NO	<u>YES</u> *	YES
Frequency of kissing predicts relationship satisfaction	NO	NO	<u>YES</u> *	YES
Number of correct predictions	8	2	7	
Number of critical tests confirmed (no. available)	5 (6)	2 (5)	4 (5)	

Notes: prediction which matched the observed result is underlined

** Critical test that yields a unique prediction in favor of one hypothesis only*

Previous research suggests that women and participants high in mate-value are generally more selective when it comes to choosing a mate and are more likely to place value on both cues signaling underlying genetic fitness/compatibility and on cues signaling long-term commitment and resource-acquisition potential (Buss, 1989; Candolin, 2003; Grammer et al., 2000; Kenrick et al., 1990; Little et al., 2001; Regan, 1998; Shackelford, Schmitt, & Buss, 2005; Todd, Penke, Fasolo, & Lenton, 2007; Townsend & Wassermann, 1998). The fact that kissing was seen as more valuable in a relationship setting and more likely to mediate initial attraction in these populations suggests that it may also act as a cue to mate assessment. Our results provided further support for this hypothesis with the finding that high SOI participants more than low SOI participants valued kissing in initial relationship stages, were more likely to have had their attraction mediated by a kiss, and that high SOI males valued kissing more than low SOI males. Previous research on sociosexual orientation has found that such individuals, and in particular male high SOI individuals, show greater sensitivity to interest in cues signaling genetic quality (Sacco et al., 2009; Simpson & Gangestad, 1992).

Kissing and Attachment Bonds

Strong support was also found for Hypothesis 3, that kissing aids in the mediation of long-term attachments or pair-bonds. Low SOI participants believed kissing to be more important at established rather than initial stages of a relationship compared to high SOI participants. Also, with short-term casual sex partners, participants responded that kissing was primarily important immediately before sex, whereas with long-term romantic partners kissing was very important before, during, and after sex (as well as at other times not related to sexual intercourse). With long-term partners, we found that women more than men felt kissing was important at “times not related to sex.”

Since low SOI participants have previously been found to prioritize the pursuit of long-term, committed mating relationships (Sacco et al., 2009; Simpson & Gangestad, 1992), valuing kissing at later stages of a relationship suggests that it may prove useful in mediating such relationships. Further evidence in support of kissing's role in affecting long-term attachment lies in the finding that women felt kissing was more important at times where it could not possibly affect initial attraction or arousal levels, i.e., at times unrelated to sex with long-term partners. Since past research has shown that women tend to prioritize activities which aid in the creation and maintenance of relationship pair-bonds (Denney et al., 1984; Ellis & Symons, 1990; Hughes et al., 2007; Hughes & Kruger, 2011; Johnson & Edwards, 1991; Symons, 1979), it follows that kissing is being utilized for this purpose among these participants. This research also found that the frequency of kissing in established relationships was significantly related to relationship satisfaction, a result which echoes similar research which had previously found that various physically intimate partner activities were related to both relationship satisfaction and feelings of attachment (Floyd et al., 2009; Grewen et al., 2005; Gullledge et al., 2003; Heiman et al., 2011; Light et al., 2005). IN our study we found that the frequency of more "intimate" partner activities (i.e., sexual intercourse) had no effect on relationship satisfaction—suggesting that there may be something unique about romantic kissing that affects attachment and satisfaction to a greater degree than more physiologically arousing behaviors such as intercourse.

Kissing and Arousal

Our findings provided very little evidence to support Hypothesis 2: that the primary function of kissing was to elevate levels of arousal and initiate coitus in romantic encounters. The data suggested that with short-term romantic partners kissing was seen as most important immediately before sex, but less so during sex, after sex, and at other times not related to sex.

While in these circumstances it seems that kissing serves an arousal function, support for the arousal hypothesis only arises in this situation since the possibilities of kissing for the potentially more useful functions of mate assessment or bonding are non-existent, since during short-term sexual interactions any initial assessment of a mate is already likely to have occurred, and mediating attachment is not a typical goal of short-term sexual encounters.

While it is highly likely that one of the consequences of kissing is indeed autonomic arousal, our data did not support the hypothesis that arousal was a driving factor associated with the prevalence of kissing.

Conclusions

Our data suggest that kissing in romantic relationships serves two main functions: mate assessment and the mediation of attachment.

It is likely that kissing can function to both assess mates and facilitate attachment by working at different stages of the relationship process. This opens up an interesting question: whether, during the evolutionary process, one preceded the other. Kissing may have evolved first for mate choice and was later utilized for bonding purposes or, alternatively, it may have been useful in mediating bonding initially and then been exploited for mate choice purposes. Unfortunately, our data did not allow us to test between these two alternative scenarios although we can speculate that the first seems logically the more likely, if only because pair-bonding is relatively rare in primate and mammalian species (Kleiman, 1977) and evolutionary issues related to mate selection would have likely preceded those surrounding pair-bonded relationships.

Other questions remain about the exact mechanisms by which kissing achieves its proposed functions. It is unclear, for example, whether kissing aids in the process of mate assessment by facilitating the evaluation of pheromonal cues for overall health, genetic

fitness, or menstrual cycle phase and fertility, or alternatively by aiding gustatory assessment of skin oils and saliva compounds. Similarly, while it is likely that kissing functions to mediate attachment in a similar fashion to other forms of close physical affection (such as hugging or touching), it is not known whether this process works by affecting arousal levels, by reducing stress, by instigating the release of neurotransmitters (endorphins or oxytocin/vasopressin), or by directly affect the dopaminergic reward centers of the brain. At this point, investigations into the functions of romantic kissing in mate assessment and pair-bond maintenance are still in their infancy and future research in this field would benefit from study designs based on more methodologically challenging experimental designs that examine each of these proposed mechanisms in greater detail.

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