

Bucknell University

Bucknell Digital Commons

Faculty Journal Articles

Faculty Scholarship

2021

I saw him first: Competitive nonverbal flirting among women, the tactics used and their perceived effectiveness

T. Joel Wade

Bucknell University, jwade@bucknell.edu

Maryanne L. Fisher

Saint Mary's University - Canada

Elizabeth Clark

Bucknell University

Follow this and additional works at: https://digitalcommons.bucknell.edu/fac_journ



Part of the [Social Psychology Commons](#)

Recommended Citation

Wade, T. Joel; Fisher, Maryanne L.; and Clark, Elizabeth. "I saw him first: Competitive nonverbal flirting among women, the tactics used and their perceived effectiveness." (2021) .

This Article is brought to you for free and open access by the Faculty Scholarship at Bucknell Digital Commons. It has been accepted for inclusion in Faculty Journal Articles by an authorized administrator of Bucknell Digital Commons. For more information, please contact dcadmin@bucknell.edu.

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Personality and Individual Differences

journal homepage: www.elsevier.com/locate/paid

I saw him first: Competitive nonverbal flirting among women, the tactics used and their perceived effectiveness

T. Joel Wade^{a,b,*}, Maryanne L. Fisher^{c,d,e}, Elizabeth Clark^a^a Bucknell University, United States of America^b Psychological Adaptations Research Consortium, United States of America^c Saint Mary's University, Canada^d Kinsey Institute, United States of America^e Psychological Adaptations Research Consortium, Canada

ARTICLE INFO

Keywords:

Flirting
Intrasexual competition
Tie-signs
Women
Mating competition

ABSTRACT

Here we explored nonverbal actions women use to flirt competitively against each other for the purposes of accessing a mate. We also investigated the perceived effectiveness of these competitive flirting actions. Using act nomination, Study 1 ($n = 91$) yielded 11 actions (eye contact with the man, dancing in his line of sight, smiling at him, touching him, giggling at his jokes, butting in between the other woman and the man, showing distaste for her, brushing against him, hugging him, flirting with other men, waving to him) for competitive flirtation against other women. Actions that signal possession (e.g., tie-signs) were predicted to be perceived as the most effective. While other actions were included in Study 2 ($n = 139$), results showed the most effective actions were tie-signs: touching him, initiating eye contact, hugging him, giggling at his jokes, and butting in between him and the rival. These findings are discussed in terms of prior research.

Universally, people have a desire to form intimate relationships, whether they be of a short or long-term duration. One of the challenges people interested in establishing romantic relationships face is attracting mates, and a way to overcome this obstacle is to flirt. Flirting is a universal and essential aspect of human interpersonal interaction (Eibl-Eibesfeldt & Hass, 1967; Luscombe, 2008). Flirting can be used by single individuals to attract a mate, while those in relationships can flirt to induce a mate's jealousy to see if they care (see Dainton & Gross, 2008; Frisby & Booth-Butterfield, 2012; Messman, Canary, & Hause, 2000). Those in relationships may also use flirting as an attempt to intensify and advance the relationship and promote relational development (J.L. Downey & Damhave, 1991) or as a precursor to sex (Abrahams, 1994). Also, individuals may flirt to help determine their current mate value (Givens, 1978; Luscombe, 2008). While flirting may be used for many purposes, such as fun, to increase self-esteem, or to gain material goods or services (e.g., Henningsen, 2004), it undoubtedly is part of mating. Indeed, the overwhelming bulk of the literature clearly pertains to how it involves signaling to a potential mate that one is interested in dating/spending time with them (see J.L. Downey & Vitulli, 1987; Henningsen, 2004; M.M. Moore, 2002, 2010; Whitty, 2003).

Clearly, flirting is an evolved adaptation to help solve the problem of

mate acquisition, given it is universal. However, flirting differs among men and women, reflecting their distinct mate preferences due to their unique levels of obligatory parental investment (D.M. Buss & Schmitt, 1993). That is, men may have far more children than women, and opt to invest very minimally in any of them. Contrariwise, women are biologically constrained to have far fewer children, and unless there is termination of the pregnancy, their investment demands gestation and lactation, and typically, the majority of post-partum childcare. Consequentially, evolutionary psychologists argue that heterosexual men typically choose their mates based on fertility and reproductive potential cues, and sexual access (D.M. Buss, 1989, 2006). Men can invest at not only a genetic level via insemination but also in terms of providing resources, protection, time, and assistance with childcare, so women most often focus on cues indicative of a strong future parental investment for long-term mate selection (D.M. Buss, 1989, 2006). Men vary on these characteristics, and hence, women may intrasexually compete to gain access to desirable mates (see Fisher, 2013, *in press* for an overview).

While these sex differences have been well-documented, how they relate to flirting and subsequent relationship formation is complex. For instance, men's preference for mates who are sexually accessible may

* Corresponding author at: Bucknell University, United States of America.

E-mail address: jwade@bucknell.edu (T. Joel Wade).

<https://doi.org/10.1016/j.paid.2021.110898>

Received 4 January 2021; Received in revised form 26 March 2021; Accepted 27 March 2021

0191-8869/© 2021 Elsevier Ltd. All rights reserved.

lead one to predict at first glance that women's flirting should emphasize these qualities to solicit interest, but appearing sexually receptive is counterproductive to women's motivations for establishing a longer-term relationship. Baumeister, Reynolds, Winegard, and Vohs (2017) propose sexual economics theory, where heterosexual women are theorized to negotiate their sexual transactions in terms of what matters most to them. That is, women "sell" exclusive sexual access to "buyers" who are men who will provide material resources and commitment in exchange. Moreover, women, more so than men, are documented to be discerning in choosing mates due to the former's higher obligate parental investment (Geary, Vigil, & Byrd-Craven, 2004). Consequently, how women flirt to attract a potential mate is presumably dependent upon many factors, such as whether the mate is of high enough quality to be initially chosen, whether his value is worth any costs associated with intrasexual competition, and if he has been selected as a possible long-term mate.

While flirting may be performed verbally such as through the use of pick-up lines (M. Fisher, Coughlin, & Wade, 2020), it is more often done non-verbally (K. Grammer, Kruck, Juette, & Fink, 2000; Renninger, Wade, & Grammer, 2004; T.J. Wade, Renninger, Salerno, & Moran, 2016; Crook, 1972; Givens, 1978; M.M. Moore, 1985, 2010; M.M. Moore & Butler, 1989). This reliance is echoed by the types of content each sex may intend to convey while pursuing a mate. For example, women may attempt to advertise their sexuality, which is presumably easier to perform in a trusted way via nonverbal than verbal means. Moreover, women's flirtatious actions that are suggestive of sexual accessibility, and men's flirtatious actions that are suggestive of a willingness to commit may be the most effective ways for women and men to flirt with the opposite sex. M.M. Moore (1985; with Butler 1989; 2010) concluded that women, given their higher reproductive investment, are the 'selectors' and, thereby, the 'initiators' in the courtship process, and that the communication of this selection is primarily performed through nonverbal channels. Nonverbal cues are given more credence than verbal cues (Archer & Akert, 1977; Argyle, Alkema, & Gilmour, 1971), and women, in particular, are highly sensitive to nonverbal messages (J. A. Hall, 1978, 1984). Additionally, flirting by women is often more subtle than flirting by men because women have to deal with the problem of signaling to men that they are interested but remain capable of ending the interaction if the men prove to be unacceptable/unappealing after the initial interaction (see K. Grammer et al., 2000; J.A. Hall, 1984; T.J. Wade & Feldman, 2016; T.J. Wade & Slempp, 2015).

While flirtation by women may be more subtle than flirtation by men, many women may be signaling to the same potential mate in a given setting, and women may become indirectly aggressive with each other in order to gain access to him (see M. Fisher, 2013 for a review). Thus, we posit that flirtation among women may be competitive; that is, involving intrasexual competition. The topic of women's intrasexual competition has gained momentum (Fisher, *in press*; Fisher and Krems, *in press*; see also Reynolds, 2021 for a review) and now covers an array of topics relevant to mating such as the challenges women face in obtaining and retaining a desired mate. However, researchers have not examined how women compete nonverbally, via flirtation, with other women for the purposes of attracting mates. Here we present the findings from two studies that were implemented to determine the nonverbal actions women use to 'competitively flirt' against other women, and men's and women's perceived effectiveness of these actions.

In the current work, and primarily in Study 2, we specifically focus on the use of tie-signs, which are non-verbal public displays, signs, or objects (e.g., wedding rings, holding hands) that indicate that a relationship exists between two people (see D.M. Buss, 2002; J. Moran & Wade, 2017). Tie-signs vary significantly in their purpose but nonverbally signal an interpersonal bond is present, in a manner that is more trusted than through verbal means (W.A. Afifi & Johnson, 1999; Burgoon, 1994). They are considered an effective way that individuals may use to manage how their relationship is defined and perceived by others,

especially in terms of the level of intimacy between those involved, but also in how the latter communicate their intentions towards each other (see W.A. Afifi & Johnson, 1999). We focus on tie-signs in the context of competitive flirting because it represents an effective device to signal to a large number of possible rivals that a mate has been selected already (i.e., he is "taken"). This information can be used in a way that is misleading; for example, it might cause a rival to think that a mate is already in a relationship when he is not (i.e., competitor manipulation, M. Fisher & Cox, 2011). Thus, if a woman is advertising her sexuality to a potential mate, she may do so in a way that is simultaneously also a potential tie-sign, such as by touching his arm, embracing, or kissing his cheek. It also enables a woman to signal her interest in an unambiguous, clear, and direct manner to the potential mate so that he attends to her and not another woman (i.e., mate manipulation; M. Fisher & Cox, 2011). Therefore, we predict tie-signs will be often identified as the way that women engage in competitive flirting.

1. Study 1

The goal of Study 1 was to use act nomination to create a list of behaviors that women knowingly perform, or are aware they could perform, for the purposes of flirting in a context where there is competition for the mate. The strength of act nomination is that it allows for current conceptualizations of a behavior to be identified without researcher bias about the behaviors previously documented. Thus, if a new way to flirt becomes prevalent, this method allows for it to be documented by participants, and then would be included in Study 2 where its effectiveness is explored. Moreover, we contend that only some flirting behaviors may be used in this competitive flirting context, whereas other behaviors may be used in situations where the participant is alone with the potential mate, for example, or where he is surrounded by friends and no other women are present. Given there has been no research on competitive flirting, and that only some behaviors may be used in this particular context, an act nomination approach was deemed the most suitable.

2. Method

In Study 1, we sought to determine what nonverbal flirtatious acts are performed by women who are in competition with other women for access to mates. The sample included self-reported heterosexual women from a private University in the Northeastern US ($N = 91$, age in years 18 to 58, $M_{age} = 30.95$, $SD_{age} = 11.29$). Participants from introductory psychology courses who took part received a partial credit towards a course research participation requirement, while participants from other psychology courses received extra course credit for their participation. Additionally, some women were recruited via an online campus bulletin board.

2.1. Procedure

Participants received an online questionnaire that included demographic questions and the following instructions:

"Think back to situations in which you, or heterosexual women you know, competed with other women for access to a potential mate (a man) and list the nonverbal actions that you, or they, did below. For example, imagine you are a heterosexual woman who has identified a man as a potential mate. You arrive at a party where you hope he will be and see him from across the room. As you approach you notice that he is casually speaking with another woman. Without using verbal communication, how would you get his attention to shift from her to you. Also, without using verbal communication, how would you let her know that you intend to pursue him and would like her to remove herself from the conversation. Be sure to write down nonverbal acts or behaviors. A nonverbal act is something that a person does or did, not something that they are, or something they said. Do not write down things like "she is

sorry” or “she feels guilty.”

These are not behaviors. You should describe nonverbal acts or behaviors that someone could read and answer the questions: “Did you ever do this?” and “How often have you observed someone do this?” Please be as specific as possible, but do not mention specific places or specific people.”

The women nominated 187 total acts. These acts were examined by two of the authors, consistent with prior research (see, D.M. Buss, 2016; J.B. Moran, Wade, & Murray, 2020; T.J. Wade, Auer, & Roth, 2009; T.J. Wade & Slempp, 2015). Acts that were similar in content were combined, and then acts nominated 5 times or more were considered consensus nominated acts and comprised the final list of 11 consensus actions that involve: capturing the man’s attention, deterring the female competitor, doing both of those aforementioned things, and employing a tie-sign. Specifically, the consensus nominated actions for competitive flirtation were: eye contact, dancing in his line of sight, smiling at him, touching him, giggling at his jokes, butting in between the other woman and the man, showing distaste for her (i.e., glaring, eye rolls, frowning), brushing against him, hugging him, flirting with other men, and waving to him (see Table 1).

3. Study 2

In Study 2 we sought to determine which of the 11 competitive nonverbal flirtatious actions are perceived as the most effective. We hypothesized that heterosexual women’s nonverbal actions that signal possession (e.g., tie-signs) would be perceived by both sexes as most effective for intrasexual flirting competition (W.A. Afifi & Johnson, 1999, 2005; Morris, 1994). These actions are the least ambiguous and may lead rivals to assume a relationship has already been established.

Effectiveness of one’s flirtation is highly important because it means that one was successful at conveying the message that the potential mate possesses the qualities that the person flirting desires (T.J. Wade & Feldman, 2016). Researchers have examined flirting behaviors and their effectiveness (e.g., White, Lorenz, Perilloux, & Lee, 2018), and recently, the traits that are linked to making a flirtation effective (Apostolou & Christoforou, 2020). However, there has been no prior examination into flirting actions and their effectiveness, as it relates to women’s intrasexual competition for access to mates.

4. Method

There was a total of 139 participants (89 women and 50 men, age in years 18 to 93, $M_{age} = 32.11$, $SD_{age} = 14.47$). Some participants were from psychology courses at a private university in the Northeastern US. Participants from introductory psychology courses who took part received partial credit towards a course research participation requirement while participants from other courses received extra course credit for their participation. Some participants were also solicited via an online campus bulletin board, and online listservs to which the authors are

Table 1
Consensus competitive flirtatious actions nominated.

Act	Nomination frequency
1. She initiates eye contact with him	22
2. She shows distaste for the competitor without speaking	19
3. She physically joins their space and excludes the competitor	18
4. She smiles at him	16
5. She touches his arm, shoulder, chest or leg	16
6. She squeezes past and bumps or brushes against him	10
7. She positions herself or dances in his view	9
8. She looks at or flirts with other men to spur jealousy	8
9. She giggles/laughs at his jokes	7
10. She waves at him	6
11. She hugs him	5

members. Participant’s demographics were as follows: 39% of women reported using hormonal birth control, 73% reported their race as Caucasian, 8.9% reported their race as African American, 3.2% reported Native American, 7% reported Hispanic, 3.8% reported Asian and 3.8% reported their race as Other; 83.4% reported being heterosexual, 1.8% reported gay or lesbian, 9.6% reported other and 5.2% did not provide sexual orientation information; 88% reported having ever been in a relationship, 58.4% reported currently being in a relationship, 34.3% reported not being in a relationship, 1.8% reported being unsure if they were in a relationship, and 5.4% did not provide that information; and 82% reported having sexual relationship experience. Note that the final sample included only those who self-reported a heterosexual orientation.

4.1. Procedure

Participants received an online questionnaire with demographic questions (i.e., age, sex, sexual orientation, sexual relationship experience, current relationship status, prior relationship history, hormonal birth control usage (if appropriate)), a social desirability measure (the MC-10, Strahan & Gerbasi, 1972) to allow for the control of socially desirable responding, the 11 consensus competitive flirtatious actions from Study 1, and the following instructions:

“Below are listed nonverbal things women do to compete with other women for access to potential mates (to let a woman competitor know that they are interested in a particular man, i.e., to get the man to notice/interact with them and select them over the other women, and to get the other woman to ‘back off’ from the particular man). We are interested in how effective you think each act would be at achieving this goal if another woman did the action to you, if you are a woman, and, in general, if you are a man. Please read each action carefully and rate it in terms of how successful it would be in getting a woman to back off and in getting a man to select the woman doing the behavior as his potential mate. Use the 7-point scale below each action to indicate the effectiveness of the action. A 7 means it is highly effective. A 4 means it is moderately effective and a 1 means it is ineffective. Please answer truthfully and do not discuss your responses with others answering the questionnaire.”

5. Results

Due to missing data, degrees of freedom vary such that 116 to 119 of the original 139 heterosexual participants were included in the data analyses. Cronbach’s alpha revealed that the 11 flirtatious acts were reliable, $\alpha = 0.82$. A 2(sex of participant) x 11(flirtations) Mixed Model Repeated Measures ANCOVA was computed. Scores on the MC-10 measure were summed and included as the covariate. The ANCOVA revealed a significant effect for flirtations, $F(10, 104) = 3.77$, $p < .0001$, $\eta^2 = 0.27$. Comparisons with Bonferroni corrections revealed that the most effective actions were, in order: touching him, initiating eye

Table 2
Mean Perceived Effectiveness of the Competitive Flirtatious Actions.

Flirtatious act	Mean (\pm Stdv.)
(a) She touches his arm, shoulder, chest or leg	5.66 (1.12)
(b) She initiates eye contact with him	5.09 ^a (1.40)
(c) She hugs him	5.07 ^a (1.40)
(d) She giggles/laughs at his jokes	4.97 ^a (1.34)
(e) She physically joins their space and excludes the competitor	4.84 ^a (1.40)
(f) She smiles at him	4.81 ^a (1.50)
She positions herself or dances in his view	4.41 ^{abcd} (1.45)
She squeezes past and bumps or brushes against him	4.31 ^{abcde} (1.56)
She waves at him	3.79 ^{abcde} (1.57)
She shows distaste for the competitor without speaking	3.09 ^{abcde} (1.58)
She looks at or flirts with other men to spur jealousy	2.82 ^{abcde} (1.62)

Note: Higher numbers mean more effective, means with the same super script were compared and are significantly different, $p < .001$.

contact, hugging him, giggling at his jokes, and butting in, see Table 2.

Additionally, for exploration, we examined participant's romantic relationship experience (none versus some), with the prediction that those with some experience would be more aware of flirtation techniques involved in acquiring a potential mate. A 2 (relationship experience) \times 11 (flirtations) Mixed Model Repeated Measures ANCOVA revealed a significant interaction effect for relationship experience and flirtations, $F(10, 104) = 2.45, p < .011, \eta^2 = 0.19$. A *t*-test with Bonferroni corrections revealed that individuals who had no relationship experience rated the flirtation "She touches his arm, shoulder, chest or leg" as more effective than those who have been in a relationship, $t(119) = 2.21, p < .029 (M = 6.40, SD = 0.70$ vs $M = 5.59, SD = 1.13$ for has no relationship experience, and has relationship experience, respectively). Additional explorations across sexual experience as well as hormonal birth control usage (for women) did not reveal any significant effects; analyses excluded for brevity.

Since the age ranges of the participants in Study 1 (18–58) and in Study 2 (18–93) differed we computed a multiple regression with age as the dependent variable and the 11 flirtations as the independent variables to see if age mattered in Study 2. The regression was not significant, $F(11,118) = 1.73, ns$.

6. Discussion

Flirting is extremely important, as it effectively signals to a prospective mate that someone is interested in pursuing a potentially intimate relationship. Presumably, there has been a substantial amount of research on flirting for this reason. Flirting, though, does not occur in a vacuum. In addition to the person flirting and the intended target, there are often others in close proximity who are also flirting and expressing interest. However, despite the large literature on flirting, human courtship displays, women's intrasexual competition (M. Fisher, 2013), and non-human species where conspecifics compete in courtship (e.g., in insects West-Eberhard, 1984) there has been no study of competitive flirting among humans. There is tremendous importance, evolutionarily speaking, of successfully mating, given that it is the only vehicle for transmission of one's genes into future generations. Hence, there must be very strong selective pressures for shaping humans' flirting, which by necessity must include an awareness of what one's mating rivals are doing, and then out-performing them.

Past research has addressed the variety of flirting techniques men and women use to gain a potential mate's interest. Here we focus specifically on women, given that women's intrasexual competition is distinct from that observed in men (M. Fisher, 2013), and so too are their ways of flirting. T.J. Wade and Feldman (2016) found the most effective ways for women to flirt included acts such as moving closer to the target, kissing him on the cheek, showing interest during a conversation, and touching him. Interestingly, they also found that men rated women's flirting that indicated sexual access the most effective. Although this previous work is highly informative, it fails to address techniques that may be influenced by the presence of mating rivals. Effective female flirting to attract a mate (T.J. Wade & Feldman, 2016) differs from effective female flirting to deter a competitor (current research). Effective female flirting to attract a mate involves conveying sexual accessibility while effective flirting to deter a female competitor involves conveying a tie with the target male.

The results were consistent with the main hypothesis. The actions from women that suggest they have laid claim to a particular man are perceived as the most effective for competitive flirtation, consistent with W.A. Afifi and Johnson (1999, 2005) and Morris (1994). Additionally, surprisingly, individuals with no relationship experience rated tie-sign actions as more effective than individuals with relationship experience.

Touching a man on the arm, shoulder, chest or leg may be the most effective flirtatious act because it signifies to other women that a bond is being, or has been, formed with the man (Morris, 1994). From the standpoint of intrasexual competition, once a mate is 'taken' it may be

more fruitful to turn to potential alternative mates rather than waste one's energy and time trying to compete against a rival. We acknowledge that this explanation is simplistic, as women's intrasexual competition involves a myriad of factors, including most notably views of one's own mate value, the rival's mate value, and the quality of the mate (M.L. Fisher & Fernández, 2017). It would be interesting to explore how one's self-perceived mate value influences their flirting techniques, and in particular, how it impacts on competitive flirting.

The other documented flirting techniques deserve comment. Initiating eye contact may be another effective activity because sustained eye contact can lead to feelings of love (Kellerman, Lewis, & Laird, 1989; Rubin, 1970) drawing the man's attention away from the other woman. Hugging may be effective because it may be seen as a tie-sign indicating possession (a bond has been formed) and because hugging releases oxytocin which also bonds individuals (Gouin et al., 2010), again drawing the man's attention away from the other woman. Laughing at his jokes may be effective because it indicates that she "likes" him (K. Grammer & Eibl-Eibesfeldt, 1990), which could also draw the attention away from the other woman. The significance of drawing attention away from a rival must be emphasized: M. Fisher and Cox (2011) documented how it is an integral part of mate manipulation, which is a strategy for intrasexual mating competition. That strategy also includes isolating a mate or sequestering the mate to remove him from being considered by rivals.

Surprisingly, the results were not consistent with the findings for the relationship experience hypothesis. Individuals without relationship experience may feel that touching a man's arm shoulder, chest, or leg is more effective than individuals with relationship experience because they may be more desirous of a relationship and are more competitive. Further research is necessary to ascertain why these differences exist, and the ways in which relationship experience may influence flirtation overall. Individuals without any mating experience may need to fine-tune their flirting, so as to gain access to mates. It is worth exploring this process of learning about flirting and the shaping of one's techniques to be effective at signaling to a mate, as well as how people become aware that they are competing against rivals.

In this study, we show women competitively flirt against other women for access to a mate. Further, both men and women show strong agreement on which actions a woman may perform in terms of effectively engaging in competitive flirting to gain a man's attention. This study is the first to document these phenomena and build on the previous literature. It provides a bridge between two areas that are well-studied: intrasexual mating competition and flirting, and highlights the need to more fully understand the way that flirting occurs in the presence of rivals.

CRedit authorship contribution statement

T Joel Wade: Conceptualization, Methodology, data analysis, writing, review, editing; Maryanne Fisher: Conceptualization, Methodology, writing, review, editing; Elizabeth Clark: Conceptualization, Methodology, data collection.

References

- Abrahams, M. F. (1994). Perceiving flirtatious communication: An exploration of the perceptual dimensions underlying judgments of flirtatiousness. *Journal of Sex Research, 31*, 283–303.
- Afifi, W. A., & Johnson, M. L. (1999). The use and interpretation of tie signs in a public setting: Relationship and sex differences. *Journal of Social and Personal Relationships, 16*(1), 9–38.
- Afifi, W. A., & Johnson, M. L. (2005). The nature and function of tie-signs. In V. Manusov (Ed.), *The sourcebook of nonverbal measures: Going beyond words* (pp. 189–198). New York: Routledge.
- Apostolou, M., & Christoforou, C. (2020). The art of flirting: What are the traits that make it effective? *Personality and Individual Differences, 158*(1). <https://doi.org/10.1016/j.paid.2020.109866>.
- Archer, D., & Akert, R. M. (1977). Words and everything else: Verbal and nonverbal cues in social interpretation. *Journal of Personality and Social Psychology, 35*, 443–449.

- Argyle, M., Alkema, F., & Gilmour, R. (1971). The communication of friendly and hostile attitudes by verbal and nonverbal signals. *European Journal of Social Psychology, 1*, 385–402.
- Baumeister, R. F., Reynolds, T., Winegard, B., & Vohs, K. D. (2017). Competing for love: Applying sexual economics theory to mating contests. *Journal of Economic Psychology, 63*, 230–241.
- Burgoon, J. K. (1994). Nonverbal signals. In M. L. Knapp, & G. R. Miller (Eds.), *Handbook of interpersonal communication*. Thousand Oaks, CA: Sage.
- Buss, D. M. (1989). Sex differences in human mate preferences: Evolutionary hypotheses tested in 37 cultures. *Behavioral and Brain Sciences, 12*(1), 1–14.
- Buss, D. M. (2002). Human mate guarding. *Neuroendocrinology Letters, 23*(Suppl 4), 23–29.
- Buss, D. M. (2006). Strategies of human mating. *Psihologijske Teme, 15*(2), 239–260.
- Buss, D. M. (2016). Act nomination method. In *Encyclopedia of evolutionary psychological science* (pp. 1–3).
- Buss, D. M., & Schmitt, D. P. (1993). Sexual strategies theory: An evolutionary perspective on human mating. *Psychological Review, 100*(2), 204–232.
- Crook, J. H. (1972). Sexual selection, dimorphism, and social organization in primates. In B. Campbell (Ed.), *Sexual selection and the descent of man 1871–1971* (pp. 231–281). Chicago, IL: Aldine.
- Dainton, M., & Gross, J. (2008). The use of negative behaviors to maintain relationships. *Communication Research Reports, 25*, 179–191.
- Downey, J. L., & Damhave, K. W. (1991). The effects of place, type of comment, and effort expended on the perception of flirtation. *Journal of Social Behavior and Personality, 6*, 35–43.
- Downey, J. L., & Vitulli, W. F. (1987). Self-report measures of behavioral attributions related to interpersonal flirtation situations. *Psychological Reports, 61*, 899–904.
- Eibl-Eibesfeldt, I., & Hass, H. (1967). Film studies in human ethology. *Current Anthropology, 8*, 477–479.
- Fisher, M. (2013). Women's intrasexual competition. In M. Fisher, J. Garcia, & R. Chang (Eds.), *Evolution's empress: Darwinian perspectives on the nature of women* (pp. 19–42). NY: Oxford University Press.
- Fisher, M. (2021). Female intrasexual competition. In T. K. Shackelford (Ed.), *The Cambridge handbook of evolutionary perspectives on sexual psychology*. Cambridge University Press (in press).
- Fisher, M., Coughlin, S., & Wade, T. J. (2020). Can I have your number? Men's perceived effectiveness of pick-up lines used by women. *Personality and Individual Differences, 153*.
- Fisher, M., & Cox, A. (2011). Four strategies used during intrasexual competition for mates. *Personal Relationships, 18*, 20–38.
- Fisher, M., & Krebs, J. (2021). Women's intrasexual competition. In D. M. Buss (Ed.), *Oxford handbook of human mating*. New York: Oxford University Press (in press).
- Fisher, M. L. & Fernández, A. M. (2017). The influence of women's mate value on intrasexual competition. In M. Fisher (Ed.), *The Oxford handbook of women and competition* (pp. 281–299). NY: Oxford University Press.
- Frisby, B. N., & Booth-Butterfield, M. (2012). The “how” and “why” of flirtatious communication between marital partners. *Communication Quarterly, 60*(4), 465–480.
- Geary, D. C., Vigil, J., & Byrd-Craven, J. (2004). Evolution of human mate choice. *Journal of Sex Research, 41*(1), 27–42. <https://doi.org/10.1080/00224490409552211>.
- Givens, D. (1978). The nonverbal basis of attraction: Flirtation, courtship and seduction. *Psychiatry, 41*, 346–359.
- Gouin, J. P., Carter, C. S., Pournajafi-Nazarloo, H., Glaser, R., Malarkey, W. B., Loving, T. J., ... Kiecolt-Glaser, J. K. (2010). Marital behavior, oxytocin, vasopressin, and wound healing. *Psychoneuroendocrinology, 35*(7), 1082–1090.
- Grammer, K., & Eibl-Eibesfeldt, I. (1990). The ritualisation of laughter. *Natürlichkeit der Sprache und der Kultur, 18*, 192–214.
- Grammer, K., Kruck, K., Juette, A., & Fink, B. (2000). Non-verbal behavior as courtship signals: The role of control and choice in selecting partners. *Evolution and Human Behavior, 21*, 371–390.
- Hall, J. A. (1978). Sex roles and nonverbal communication skills. *Sex Roles, 7*, 273–287.
- Hall, J. A. (1984). *Nonverbal sex differences: Accuracy of communication and expressive styles*. Baltimore: Johns Hopkins University Press.
- Henningsen, D. D. (2004). Flirting with meaning: An examination of miscommunication in flirting interactions. *Sex Roles, 50*(7/8), 481–489.
- Kellerman, J., Lewis, J., & Laird, J. D. (1989). Looking and loving: The effects of mutual gaze on feelings of romantic love. *Journal of Research in Personality, 23*(2), 145–161.
- Luscombe, B. (2008). Why we flirt. *Time, 171*(4), 62–65, January.
- Messman, S. J., Canary, D. J., & Hause, K. S. (2000). Motives to remain platonic, equity, and the use of maintenance strategies in opposite-sex friendships. *Journal of Social and Personal Relationships, 17*, 67–94.
- Moore, M. M. (1985). Nonverbal courtship patterns in women. *Ethology and Sociobiology, 6*, 237–247.
- Moore, M. M. (2002). Courtship communication and perception. *Perceptual and Motor Skills, 94*, 97–105.
- Moore, M. M. (2010). Human nonverbal courtship behavior—A brief historical review. *Journal of Sex Research, 47*(2–3), 171–180.
- Moore, M. M., & Butler, D. L. (1989). Predictive aspects of nonverbal courtship behaviors in women. *Semiotica, 76*, 205–215.
- Moran, J., & Wade, T. J. (2017). Sex and the perceived effectiveness of short-term mate poaching acts in college students. *Human Ethology Bulletin, 32*(3), 109–128.
- Moran, J. B., Wade, T. J., & Murray, D. R. (2020). The psychology of breakup sex: Exploring the motivational factors and affective consequences of post-breakup sexual activity. *Evolutionary Psychology, 18*(3).
- Morris, D. (1994). *The human animal: A personal view of the human species*. Slovenia: BBC Books.
- Renninger, L. A., Wade, T. J., & Grammer, K. (2004). Getting that female glance: Patterns and consequences of male nonverbal behavior in courtship contexts. *Evolution and Human Behavior, 25*, 416–431.
- Reynolds, T. A. (2021). Our grandmothers' legacy: Challenges faced by female ancestors leave traces in modern women's same-sex relationships. *Archives of Sexual Behavior, 4*. <https://doi.org/10.1007/s10508-020-01768-x>.
- Rubin, Z. (1970). Measurement of romantic love. *Journal of Personality and Social Psychology, 16*(2), 265.
- Strahan, R., & Gerbasi, K. C. (1972). Short, homogeneous versions of the Marlowe-Crowne social desirability scale. *Journal of Clinical Psychology, 28*, 191–193.
- Wade, T. J., Auer, G., & Roth, T. M. (2009). What is love: Further investigation of love acts. *Journal of Social, Evolutionary, and Cultural Psychology, 3*(4), 290–304.
- Wade, T. J., & Feldman, A. (2016). Sex and the perceived effectiveness of flirtation techniques. *Human Ethology Bulletin, 30*.
- Wade, T. J., Renninger, L., Salerno, K. & Moran, J. (2016). Strike a pose: The perceived flirtatiousness of men's nonverbal behavior. Paper presented at the 10th Northeastern Evolutionary Psychology Society Conference, Halifax, Nova Scotia.
- Wade, T. J., & Slem, J. (2015). How to flirt best: The perceived effectiveness of flirtation techniques. *Interpersona: An International Journal on Personal Relationships, 9*(1), 32–43.
- West-Eberhard, M. J. (1984). Sexual selection, competitive communication and species-specific signals in insects. T. Lewis (Ed.), *Insect communication* (pp. 238–324). NY: Academic Press.
- White, J., Lorenz, H., Perilloux, C., & Lee, A. (2018). Creative Casanovas: Mating strategy predicts using—but not preferring—Atypical flirting tactics. *Evolutionary Psychological Science, 4*, 443–455.
- Whitty, M. T. (2003). Cyber-flirting: Playing at love on the internet. *Theory & Psychology, 13*(3), 339–357.