# What kind of love is love at first sight? An empirical investigation

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## Abstract

Love at first sight (LAFS) is a commonly known phenomenon, but has barely been investigated scientifically. Major psychological theories of love predict that LAFS is marked by high passion. However, it could also be a memory confabulation construed by couples to enhance their relationship. We investigated LAFS empirically by assessing feelings of love at the moment participants met potential partners for the first time. Data were collected from an online study, a laboratory study, and three dating events. Experiences of LAFS were marked neither by high passion, nor by intimacy, nor by commitment. Physical attraction was highly predictive of reporting LAFS. We therefore suggest that LAFS is not a distinct form of love, but rather a strong initial attraction that some label as LAFS, either in the moment of first sight or retrospectively.

Romantic love at first sight (LAFS) has been a prominent theme in arts and literature for at least 3,000 years (Swami, 2011; Tallis, 2005) and is still common in contemporary media (Griffin, 2006; Tanner, Haddock, Zimmerman, & Lund, 2003). The concept seems to be widely known across cultures (Twamley,

2013). For example, the popular online encyclopedia Wikipedia contains entries about LAFS in numerous languages ("Love at first sight," 2016). In Western countries, approximately every third person reports having experienced it (Naumann, 2001; Zsok, de Wit, Haucke, & Barelds, 2017). LAFS seems to impact the quality of romantic relationships, because early memories of relationship initiation tend to remain influential at later stages of the relationship (Alea & Vick, 2010; Custer, Holmberg, Blair, & Orbuch, 2008). Accordingly, Barelds and Barelds-Dijkstra (2007) found that those who report LAFS with their partners have more passionate relationships, which in turn has been linked to higher relationship satisfaction and stability (Fehr, 2015). Despite all this, LAFS has barely been investigated empirically, and most scientists seem to discard it as romantic confabulation (Naumann, 2001). The aim of this study was to empirically investigate the experience of LAFS. We first posit that LAFS is a positive illusion couples create to enhance their relationships, followed by a discussion of the role of physical attraction in LAFS. We then

summarize the existing literature describing LAFS, and lead over to our study.

## LAFS as construed memory

LAFS could be an illusion that couples create in order to enhance their relationships. Falling in love typically involves cognitive biases that enhance the perception of the other person and make the relationship feel special (Barelds, Dijkstra, Koudenburg, & Swami, 2011; Fletcher & Kerr, 2010; Gagné & Lydon, 2004; Leo, Miller, & Maner, 2012; Lydon & Quinn, 2013). Thus, LAFS might not be a discrete experience or feeling, but rather a confabulated memory that adds meaning and uniqueness to the relationship. The motivation for this confabulation might partly stem from media that portray LAFS as the ideal way of falling in love (Glebatis, 2007; Griffin, 2006; Hefner & Wilson, 2013; Tanner et al., 2003).

This explanation seems plausible considering the ways cognition typically works, particularly in the context of developing relationships. One of the contributing mechanisms is probably hindsight or outcome bias. People have a general tendency to evaluate actions based on outcomes (Bernstein, Aßfalg, Kumar, & Ackerman, 2016). If their initial beliefs turn out to be true, they claim that they held them with confidence all along, independently of how certain they were in the first place. Hence, if a person felt strong initial attraction to a partner with whom they fell in love later, the first meeting might be more likely to be later construed as LAFS. The label might *not* be assigned if initial attraction is strong, but no romantic involvement follows from it. Related to that, people tend to view their past in the light of the present and underestimate changes that occur over time. This also holds for views on their romantic relationships (McFarland & Ross, 1987). Barelds and Barelds-Dijkstra (2007) found that reporting LAFS with a partner was associated with experiencing higher passion with them. Couples in love might therefore project their current feelings for each other onto their first meeting, and construe it as LAFS.

Experiencing LAFS might also be perceived as inappropriate, either by the person experiencing LAFS or by the target of their attraction. It might violate dating scripts and therefore present a barrier to relationship initiation and development (Afifi & Lucas, 2008; Custer et al., 2008). If people claim or communicate LAFS retrospectively from an established relationship, they reduce such risks.

In sum, due to influences of motivated cognition, it seems plausible that LAFS is the outcome of biased memory. This could explain the strong link between LAFS and development of romantic relationships suggested by Naumann's (2001) findings: Ninety-two percent of the 558 who claimed to have experienced LAFS reported that they fell in mutual love with this person and developed a romantic relationship with them. However, this explanation accounts neither for the 8% who did not develop a relationship nor for instances of unrequited LAFS (Chung, 2013). If LAFS is reported at actual first sight, memory bias cannot fully explain it. To test whether LAFS can be reported independently of memory bias, we hypothesize that participants will report LAFS while meeting someone for the first time (H1).

## Physical attraction

Looks matter, especially in the context of romantic attraction and relationships. Physical attractiveness has consistently been shown to be a strong predictor of attraction and partner choice (Asendorpf, Penke, & Back, 2011; Olderbak, Malter, Wolf, Jones, & Figueredo, 2017). This holds for both sexes, across cultures, and for short-term and long-term partner preferences (Eastwick, Luchies, Finkel, & Hunt, 2014; Little, 2015). It is an important trait in a partner that can be assessed very quickly. Accordingly, studies show that physical attraction at zero acquaintance predicts the outcomes of speed-dating sessions very well (Cooper, Dunne, Furey, & O'Doherty, 2012; Kurzban & Weeden, 2005). Initial physical attraction is a frequent theme in LAFS narratives (Aron et al., 2008; Aron, Dutton, Aron, & Iverson, 1989; Chung, 2013; Naumann, 2001; Swami, 2011; Tennov, 1998). Furthermore, Sangrador and Yela (2000) found that current perceived physical attractiveness of a partner was related to reporting LAFS with them.

This suggests a strong link between physical attraction and LAFS.

Based on Montoya and Horton's (2014) synthesis of the literature, we define physical attraction as the subjective experience of positive affect toward a specific individual, based on an assessment of their physical attractiveness. A related concept is what Giles (2015) calls sexual attraction:[1] interpersonal attraction with sexual motivation. Although sexual motives are typically not mentioned in LAFS narratives (e.g., Chung, 2013; Naumann, 2001), it cannot be ruled out that they also play a role. The basis for sexual attraction nevertheless seems to be physical attraction, as physically attractive people are also more sexually desirable (Hawk, Tolman, & Mueller, 2007).

Physical attractiveness probably also facilitates LAFS, because good-looking people are more likely to be viewed in an inflated positive view. They are typically assigned more positive character traits, a phenomenon referred to as the *halo effect* (Langlois et al., 2000). Swami and colleagues found that positive biases toward partners increased with their physical attractiveness (Swami, Stieger, Haubner, Voracek, & Furnham, 2009). As argued earlier, such biases seem to facilitate the construal of LAFS. It is, therefore, probably not mere sexual attraction that leads to the label LAFS, but also the positively biased evaluation of an attractive target person. Taken together, we therefore hypothesize that targets of LAFS will be rated as more physically attractive than other potential partners (H2).

### Infatuated love

Love is typically conceptualized as a property of enduring intimate relationships (Berscheid, 2010). Among its central components are trust, caring, and intimacy (Fehr, 2015), and research has also shown that these aspects are present in most romantic relationships (Gouveia, de Carvalho, dos Santos, & de Almeida, 2013; Madey & Rodgers, 2009). As these components are unlikely to be evident in a first impression, LAFS is viewed as

nonprototypical of love (Shaver, Schwartz, Kirson, & O'Connor, 1987). Most scholars have, therefore, described it as a distinctive kind of romantic love, different from the one in relationships (Lee, 1988; Sternberg, 1997).

Sternberg's triangular theory of love (Sternberg, 1997, 2006) serves as a useful typology of love. It suggests that love consists of three dimensions: intimacy, passion, and commitment. Different kinds of love supposedly emerge depending on the degree to which each component is evident in a relationship. Because LAFS is a distinct form of love, different from love in relationships, we hypothesize that the experience of LAFS involves these components to a lesser extent than romantic relationships do (H3).

Sternberg (1998) claims that LAFS is *infatuation*, high passion in the absence of intimacy and commitment. This suggestion seems reasonable at face value. Intimacy and emotional closeness typically evolve gradually over time through mutual sharing and understanding (Derlega, Winstead, & Greene, 2008; Sprecher, Felmlee, Metts, & Cupach, 2015; Sternberg, 2006), and are therefore hardly established at first glance. These feelings furthermore arise from mutuality, which is not necessarily the case in LAFS (Chung, 2013). Commitment, also termed *decision,* is the deliberate devotion to a relationship (Sternberg, 2006). People derive their commitment based on cognitions about the stability and permanence of a relationship, cost–benefit estimations, and predictions about the future (Rusbult, Agnew, & Arriaga, 2012). Hence, commitment is unlikely to be evident at zero acquaintance.

It seems possible, however, to experience passion at zero acquaintance. Sternberg (2006) defines passion as physical arousal, desire, excitement, and need for the other person. It should therefore largely depend on sexual and physical attraction, and be rather easily evoked by appearance only. This would also be consistent with the importance of physical attraction in LAFS.

Another influential theory of love makes a similar prediction, namely, Lee's taxonomy of love styles (Lee, 1988). Hendrick and Hendrick (2008) claim that LAFS is identical to Lee's love style *eros*, which is also

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1. We thank an anonymous reviewer for pointing out the similarity between the concepts.

characterized by high passion (Hendrick & Hendrick, 1989). In line with that, Baxter and Bullis (1986) describe LAFS as a point of strong passion in relationship development. Barelds and Barelds-Dijkstra (2007) found that couples who claimed having fallen in LAFS with each other reported more passion than those who had a more gradual relationship onset. The moment of LAFS—and possibly relationships developing from it—might thus be characterized by high passion. Based on these converging views, we therefore hypothesize that reports of LAFS will be characterized by high passion and eros, but low commitment and intimacy (H4). We also expect that those who report LAFS with their partners experience their romantic relationships to be more passionate than those who do not (H5).

### Present study and hypotheses

The goal of this study was to examine whether LAFS is reported outside of biased memory and whether it is marked by high passion. We therefore sampled LAFS experiences from participants at dating events that met potential partners for the first time. Such events provide a relatively controlled environment suitable for studying attraction (Eastwick & Finkel, 2008). To complement these data, we conducted an online study in which a dating event was simulated. That way we collected data about participants' feelings of love toward their partners. These reports served as comparisons for LAFS on the spot and enabled us to test how LAFS is related to feelings of passionate love in romantic relationships.

Our first hypothesis tested whether LAFS can be experienced outside of memory bias.

H1: *Some participants will report LAFS when meeting a person for the first time.*

With the second hypothesis, we tested the role of physical attraction.

H2: *Targets of LAFS will be rated as more physically attractive than non-LAFS targets.*

With H3, we tested whether LAFS on the spot differs from love in romantic relationships.

H3: *Scores of the Triangular Love Scale (TLS) from LAFS dating encounters will be lower than scores from romantic relationships.*

Our fourth hypothesis served as a test of whether LAFS on the spot is infatuated love.

H4: *Within LAFS encounters, passion and eros scores will be higher than commitment and intimacy scores.*

With H5a and H5b, we aimed to test whether LAFS is related to higher passion in ongoing romantic relationships.

H5a: *Passion and eros scores in romantic relationships with LAFS will be higher than commitment and intimacy scores.*

H5b: *Passion and eros scores of romantic relationships with LAFS will be higher than scores from relationships without LAFS.*

## Method

### Overview

There were three waves of data collection in different contexts: online, in a laboratory study, and at three dating events. They all took place in the spring of 2015. Participants filled out questionnaires about themselves (individual questionnaire) and about potential partners (target questionnaire) *before* interacting with them. The study was part of a larger investigation, and more information on the methods can be found requested from the first author (Zsok et al., 2017).

### Participants

Across all three waves of data collection, we obtained responses from a total of 396 participants (61.9% women). They were mostly Dutch (43.9%) or German (46.5%) students (61.6%), and the mean age was 24.18 years ($SD = 5.98$). Almost all were heterosexual (96.2%), and excluding the few homosexual and bisexual participants did not significantly affect the results. The study was advertised as concerning attraction and impression formation.

## Data collection

### Wave 1: Online study

The survey was distributed among the social networks of the authors. It was filled out by 282 people (179 women), mostly students (65%), and largely Dutch (56.8%) or Germans (38.1%). It was available in English, Dutch, or German. One-hundred and twenty participants were in a romantic relationship at the time of the survey and therefore answered the items of the target questionnaire about their partner, too. The items were left in their original phrasing referring to "your partner." After that, participants took part in a speed-dating simulation. They were presented with pictures of six people in a randomized order and answered the target questionnaire about each of them. Depending on sexual preferences, the pictures showed either males or females. Participants were instructed to imagine meeting each person at a speed-dating event. To reduce participants' burden, the TLS and the items for eros were presented only if participants reported LAFS with one of the persons on the pictures.

### Wave 2: Laboratory study

This wave consisted of 50 participants, of whom 32 were women and 43 students. Participants filled out a revised version of the online survey at a computer in the laboratory of the Heymans Institution of the University of Groningen. The study differed from the online survey in two ways. First, instead of six pictures, nine were presented. Second, as part of another study, participants received fake feedback on their value as a romantic partner. Besides those differences, the study was similar to the online study in Wave 1.

### Wave 3: Dating events

The third wave of data collection took place at three dating events. All participants reported to be single.

*Face-to-face dating.* The first event was run by the company "Face-to-Face Dating" in Hannover, Germany. Thirty-one (16 women)

heterosexual[2] German professionals, with ages ranging from 22 to 36 ($M = 29.35$, $SD = 3.43$) agreed to participate. They were rewarded with the chance to win cinema tickets. Participants met up in groups of 6 to 8 in a bar and had 90 min to get to know each other. The sex ratio was kept approximately equal. After that time, participants moved to another bar and again spent time in groups of similar sizes, but with other people. They went to three bars during one event, thus they met about 11 potential partners[3] at a given night.

There was one researcher in each of the five bars in which the event took place. Clipboards with the informed consent, the questionnaires, and a piece of candy were prepared on the tables before the arrival of the participants. The clipboards were used to give participants the opportunity to hide their answers from each other and to ensure confidentiality. When the participants arrived, the researchers welcomed them and explained the procedure of the study. The verbal instructions stressed that all responses were anonymous and confidential and that participation was voluntary. All information about the study was also included on the informed consent form and on the first page of the individual questionnaire.

Upon written and verbal consent, everyone was assigned a nickname consisting of a letter and a number, for example "4F" or "2B." This was done to keep responses anonymous, but still enable the researchers to connect the individual responses. Stripes of tape with the nicknames were attached visibly on the participants´ upper bodies. Participants were requested to fill out the target questionnaire about each member of the opposite sex they had just encountered for the first time. They then moved to the next bar, in which they filled out only the target questionnaire about the people of the opposite sex they had not met before. This procedure was also repeated for the third bar.

*Speed dating.* The second event was a speed-dating session in the traditional sense

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2. With the exception of two bisexual participants.
3. There were more potential partners for two bisexual participants.

in Groningen, Netherlands, organized by the authors. It included 15 (8 women) international students[4] (mean age = 22.8, $SD$ = 2.8). We applied the same method with name tags and clipboards as in the study before. The entire event took about 1 hr and was concluded by a verbal debriefing.

*Vegadate.* The third dating event was by "Vegadates" and took place in Gouda, Netherlands. It was organized as a rather informal gathering with food provided, in which people met up in groups of 4 and spent 20 min together. Nineteen (11 women) Dutch working adults (mean age = 39.69, $SD$ = 9.57) participated. We again provided clipboards and name tags.

### Materials

The target questionnaire assessed physical attractiveness, LAFS, eros, and the TLS with its subscales intimacy, passion, and commitment. All of the items that follow, except the one for physical attraction, were answered on a 7-point Likert scale with three anchors: 1 (*strongly disagree*), 4 (*neutral*), and 7 (*strongly agree*).

Physical attraction was measured using the item "How attractive do you find this person?" It was answered on a scale ranging from 1 (*not at all*) to 5 (*very much*), with the midpoint 3 (*neutral*). For LAFS, we used the item "I am experiencing love at first sight with this person." We measured eros with three items taken from Hendrick, Hendrick, and Dicke (1998), for example "I feel that the person and I were meant for each other." It yielded adequate internal consistency, $\lambda$-2 = .81. Furthermore, we included the question "Have you met this person before?" to make sure the encounter was first sight and excluded those who were not.

### Triangular Love Scale

The TLS was used to assess feelings of love in LAFS and thereby test our hypotheses.

Research has supported a dichotomous distinction between romantic and companionate love best, rather than different love styles or kinds of love (Berscheid, 2006, 2010; Fehr, 2015). Nevertheless, the TLS offers the benefit that it measures individual facets of a feeling toward a person, which was crucial for our hypotheses. Another point of criticism of the TLS is that its subscales often yield very high correlations and that it is, therefore, not very useful for differentiating between kinds of love after all (Hendrick & Hendrick, 1989; Whitley, 1993). However, these high correlations have mostly been found in data from established relationships and married couples (e.g., Acker & Davis, 1992; Madey & Rodgers, 2009). Relationships that strongly lack one of the components are predicted to be unstable (Sternberg, 1998) and as a result are less likely to be surveyed. Patterns observed in a wider range of relationships (e.g., different family members) and across different stages of relationships have been more variate (Sternberg, 1997). Thus, because we applied the TLS to speed-dating partners that met for the first time, we expected more variate patterns of the components as well.

We used a shortened version of the TLS that originally comprised 19 items (Sternberg, 1998). Four items that showed low construct validity in previous studies (Sternberg, 1997) were dropped. As the original questions referred to relationship partners, we adapted them to the situation of the participants in this study. They were reformulated in terms of "this person" instead of "your partner," for example, "I cannot imagine life without this person" instead of "I cannot imagine life without my partner." Two of the questions, for instance "My relationship with ____ is very romantic," did not make sense even if referring to "this person" and were consequently dropped entirely. All in all, we used 13 modified questions of the TLS. The average $\lambda$-2 of the subscales was .85.

### Translation

We compiled all questionnaires in English first, adjusted them to the situation of first encounter, and then translated them into Dutch and German. We used a parallel blind technique for the

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4. Except one professional.

**Table 1.** *Descriptive statistics of the love components in online and offline love at first sight (LAFS) and* t *tests comparing them*

|  |  | *M* | *t* | *df* | *p* |
|---|---|---|---|---|---|
| Eros | Online | 4.30 (1.01) | 0.50 | 38.44 | .62 |
|  | Offline | 4.18 (0.69) |  |  |  |
| Intimacy | Online | 4.47 (1.02) | 0.06 | 36.90 | .95 |
|  | Offline | 4.45 (0.80) |  |  |  |
| Passion | Online | 3.57 (1.16) | −1.72 | 26.15 | .10 |
|  | Offline | 4.25 (1.35) |  |  |  |
| Commitment | Online | 4.29 (1.30) | 0.20 | 40.56 | .84 |
|  | Offline | 4.23 (0.91) |  |  |  |

*Note*. All ratings were made on a 7-point scale. Standard deviations are given in parentheses.

German translations (Behling & Law, 2000). Two of the authors (native Germans) independently translated the questions, compared them, discussed differences, and then mutually agreed on a final version. The Dutch translation was performed by one author and then checked by another, both of whom were Dutch native speakers. The versions in different languages were used according to the preferences of the participants.

### Pictures

As part of our online study, participants saw pictures of potential dates. Three researchers looked independently for suitable pictures that were publicly available. We choose those that looked like profile pictures on social networking sites, as these are typically used on dating websites as well and are therefore most ecologically valid. We set the criteria that the people depicted had to gaze into the camera and smile slightly. Their faces had to be visible from a frontal view. Only pictures of Caucasians were used to rule out confounds associated with race, and also because this is the most common race in the Netherlands and Germany. We also excluded pictures with major distractions, such as interesting backgrounds or extraordinary clothing, jewelry, or hair styles. Four researchers (two male, two female) then assigned the pictures to one of the three categories "rather attractive," "average," or "rather unattractive." We thereby made sure that the stimuli varied in physical attractiveness and were therefore relatively representative of

people one would encounter at a dating event. Finally, we collectively decided on 2 pictures of each attractiveness category for each sex, a total of 12 pictures.

### Results

#### Reports of LAFS

A score of 5 or higher on the 7-point Likert scale to the statement "I am experiencing love at first sight with this person" was regarded as a report of LAFS. This corresponded to an answer above the option *neutral*. The average response was 1.66 ($SD = 1.12$), and both the median and the mode were 1 (*strongly disagree*). Because this distribution was highly skewed, we transformed this item into a dummy variable to indicate whether LAFS was reported in a given encounter or not.

H1 tested whether LAFS can be reported at the actual first sight of a person. Across all waves of data collection, LAFS was indicated 49 times by 32 different individuals. Thirty-one instances were obtained online, 16 in the field studies, and 2 in the laboratory study. H1 was thus confirmed. Table 1 shows the means and standard deviations of the relevant constructs in online and offline LAFS interactions and the corresponding *t* tests. There were no significant differences between online and offline LAFS reports. However, there was a marginal difference in passion scores. Out of 120 participants from Waves 1 and 2 who were in a romantic relationship, one third (40) reported to have fallen in LAFS with their partner.

**Table 2.** *Standardized means and standard deviations of the components of the Triangular Love Scale, eros, and physical attraction in no-love-at-first-sight (LAFS) encounters, LAFS encounters, and relationships*

|               | Intimacy     | Commitment   | Passion      | Eros         | Physical attraction |
|---------------|--------------|--------------|--------------|--------------|---------------------|
| No-LAFS       | −0.55 (0.69) | −0.54 (0.69) | −0.53 (0.66) | −0.55 (0.68) | −0.16 (0.94)        |
| LAFS          | 0.31 (0.49)  | 0.36 (0.60)  | 0.38 (0.69)  | 0.37 (0.49)  | 1.20 (0.47)         |
| Relationships | 1.30 (0.39)  | 1.26 (0.47)  | 1.23 (0.60)  | 1.26 (0.43)  | —                   |

*Note.* Standard deviations in parentheses.

### Groups of encounters

Data were analyzed with dating encounter as the level of analysis. That means every time a participant met a new person and filled out the target questionnaire about them, online or offline, this yielded one case. The assumption of independence was not fully met, because some participants provided multiple responses. However, a multilevel analysis showed similar results as our analysis at hand. For simplicity and general understanding, we therefore report the more common tests.

In the following analyses, three groups of encounters were compared: dating encounters with reported LAFS (LAFS group), those without reported LAFS (no-LAFS group), and reports about romantic partners (partner group). The data for the no-LAFS group were taken from the field studies in order to yield the most ecologically valid data ($n = 325$). The partner group data were only obtained online and from the laboratory study. Four responses from participants who indicated not to love their partners—operationalized as no agreement with the statement "I love that person"—were excluded. This left 125 partner encounters in total. The 49 LAFS encounters were taken from all studies combined. There were 499 encounters in total.

### Physical attraction

In order to test whether the targets of LAFS were perceived as especially physically attractive (H2), we compared the physical attraction scores of the LAFS group with the no-LAFS group, $t(91.45) = 15.12$, $p < .000$, $d = 3.16$. The effect was highly significant and largely in the expected direction, and therefore, the hypothesis was confirmed. In order to illustrate the effect size better, we also computed a binary logistic regression. The odds ratio was 9.08, which means that a 1-unit increase in attractiveness ratings lead to a chance of LAFS about 9 times as high. Furthermore, 89.4% of cases were predicted correctly by the logistic regression model, and the Nagelkerke $R^2$ was .43.

### Components of love

As an overview, Table 2 depicts the standardized means per group of encounter, and Table 3 the correlations among the relevant variables. All correlations were medium to large in size. The three TLS constructs were very highly correlated with each other. We predicted that love scores would be lower in LAFS encounters compared to romantic relationships (H3), and that LAFS encounters would have high scores on passion and eros, but low scores on intimacy and commitment (H4). In order to test our hypotheses, we conducted a mixed design analysis of variance, with the love components (four levels: intimacy, commitment, passion, and eros) as within factor, and the encounter group as between factor (three levels: LAFS, no-LAFS, and relationship). The score on the respective love component was the outcome variable. There was no main effect of the components, $F(2.74) = 0.17$, $p = .90$, $\eta^2 = 0$, but of the encounter group, $F(2) = 469.69$, $p < .000$, $\eta^2 = .66$. There was no interaction effect between encounter group and love component, $F(5.48) = 0.81$, $p = .56$, $\eta^2 = .0$ .

The scores per encounter group are illustrated in Figure 1. On average, all four components, henceforth referred to as love

**Table 3.** *Pearson correlations among the main variables per encounter*

|  | LAFS | Eros | Intimacy | Passion | Commitment |
|---|---|---|---|---|---|
| Eros | .57 | 1 |  |  |  |
| Intimacy | .53 | .91 | 1 |  |  |
| Passion | .65 | .89 | .87 | 1 |  |
| Commitment | .53 | .90 | .93 | .91 | 1 |
| Physical attraction | .46 | .71 | .65 | .72 | .69 |

*Note.* All correlations are significant at the .01 level. LAFS = love at first sight.
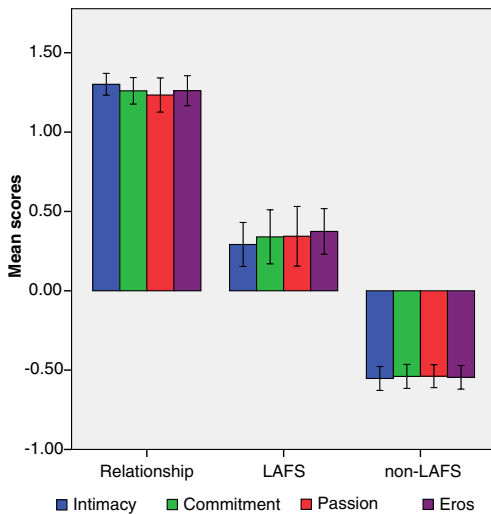


**Figure 1.** Pattern of the standardized Triangular Love Scale and eros scores across the three different encounter groups with 95% confidence intervals.

scores, were highest in the partner group ($M = 1.26$, $SD = 0.43$), followed by the LAFS group ($M = 0.36$, $SD = 0.49$), with the no-LAFS group at the end ($M = -0.54$, $SD = 0.63$). The difference between the relationship group and the LAFS group was significant, $t(172) = 11.92$, $p < .000$, $d = 1.82$, and so was the difference between the LAFS and the no-LAFS groups, $t(74.26) = 11.52$, $p < .000$, $d = 2.67$. Hence, the difference between the no-LAFS group and relationship group was significant as well, and therefore all differences were significant. There was no interaction effect between encounter group and love component; see Table 4. Love scores thus differed among different encounter groups, but

**Table 4.** *Pearson correlations among the main variables in reports of romantic relationships (n = 120)*

|  | LAFS | Eros | Passion | Intimacy |
|---|---|---|---|---|
| Eros | .34** | 1 |  |  |
| Passion | .26** | .60** | 1 |  |
| Intimacy | .18 | .72** | .55** | 1 |
| Commitment | .21* | .56** | .77** | .57** |

*Note.* LAFS = love at first sight.
*$p < .05$. **$p < .01$.

the different components were present equally in all encounter groups. We therefore retained H3, but refuted H4.

*Romantic relationships*

Hypotheses 5a and 5b predicted that in romantic relationships, LAFS would be associated with higher passion. For this test, we used reports by 120 participants about their romantic partners that were collected online in Wave 1. The scores of the LAFS item was distributed more evenly than in the previous analysis ($M = 3.36$, $SD = 2.0$, $Mdn = 3$, $Mode = 2$) and therefore analyzed as a continuous variable. Results matched the ones using a dichotomous variable. Table 4 depicts the zero-order correlations. LAFS was most strongly correlated with eros, then passion, followed by commitment. The correlation with intimacy did not reach statistical significance. Because of the collinearity among the love components, we computed a multiple linear regression model to distinguish common from unique variance (Cohen & Cohen, 2003; Stevens, 2009). We thereby used stepwise

**Table 5.** *Hierarchical multiple regression predicting love at first sight (LAFS) from the love components within romantic relationships (n = 120)*

|            | β     | t     | p    |
|------------|-------|-------|------|
| Eros       | .34   | 4.01  | .000 |
| Passion    | .08   | 1.16  | .45  |
| Commitment | .03   | 0.46  | .80  |
| Intimacy   | −.13  | −0.95 | .32  |



**Figure 2.** Pattern of the standardized Triangular Love Scale and eros scores in romantic relationships reported with or without love at first sight (LAFS), with 95% confidence intervals.

hierarchical regression and added predictors in order of strength of the zero-order correlations. Table 5 shows the results. Only eros remained a significant predictor and accounted for 11% of the variance in LAFS.

H5a stated that passion and eros scores should be higher than commitment and intimacy scores in LAFS relationships, and H5b that those relationships score higher on passion and eros than non-LAFS relationships. We tested these claims by running a mixed design analysis of variance, with LAFS dummy as a between variable, and the standardized[5] love components, including eros, as within variables. There was no main effect of love component, $F(2.49) = 0.15$, $p = .90$, but of LAFS, $F(1) = 7.32$, $p = .008$. The interaction effect was not significant, $F(2.49) = 0.89$, $p = .43$. As illustrated in Figure 2, romantic relationships with reported LAFS differed from those without it, but the components were similarly distributed in both kinds of relationships. We therefore found evidence for H5b, but not for H5a.

*Exploratory analysis*

LAFS was very strongly linked to physical attraction. It could therefore be that the higher love scores merely reflected the increased physical attractiveness of LAFS targets. In other t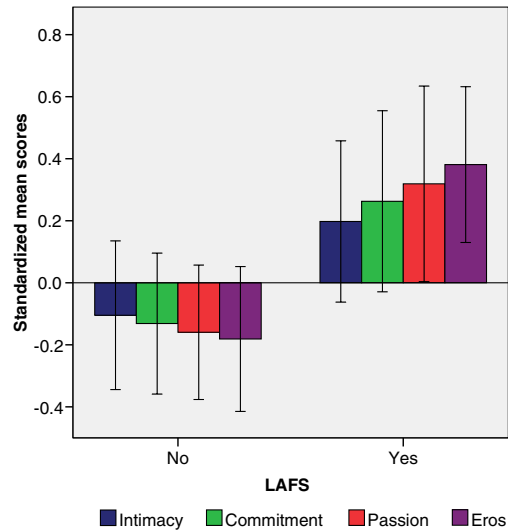erms, the relationship between love scores and LAFS might have been mediated by physical attraction. We tested for this possibility. Love scores were computed by averaging the three TLS components and eros. Because physical attraction was not assessed in romantic relationships, we used LAFS as a dummy variable differentiating between LAFS and no-LAFS dating encounters. Love scores were significantly correlated with physical attraction ($r = .74$, $p < .000$) and LAFS ($r = .45$, $p < .000$). We predicted love scores from physical attraction and the LAFS dummy in a linear regression model. Both turned out to be significant predictors, $β_{physical\ attraction} = .70$, $p < .000$, and $β_{LAFS} = .11$, $p = .007$. The correlation between LAFS and love scores dropped down from .45 to .10 when accounting for physical attractiveness. Physical attraction therefore partially mediated the effect between love scores and LAFS.

**Discussion**

In this study, we sampled the experience of LAFS when meeting somebody for the first time, and in romantic relationships. In line with our first hypothesis, some people indeed reported LAFS at first encounters. They did

5. Eros and passion scores were consistently lower than scores of the other construct in our data, as well as in Barelds and Barelds-Dijkstra (2007). This was probably because of the strong wording of the items. Standardized scores, therefore, allow for a comparison of the constructs outside of these psychometric differences.

so with dates they found very physically attractive, confirming H2. As predicted by H3, lower values for all components of love were reported in LAFS compared to reports about romantic partners. The data did not support that LAFS is marked by high passion or eros, and low commitment and intimacy (H4 and H5a). Instead, the three TLS components and eros were very similar within encounter groups, but different between these groups. Those participants that reported LAFS with their partners also reported higher levels of the TLS components.

### Reports of LAFS

Some people reported LAFS when meeting someone for the first time, as we had hypothesized. We looked at the responses in detail and did not find any signs of insincerity; that is, the questionnaires were filled out adequately. Judging from the internal consistency of the love scores and personality constructs of another part of the study (Zsok et al., 2017), the responses were also internally consistent. Furthermore, the validity of the LAFS reports is supported by the fact that they were stark outliers: Most people strongly disagreed with the LAFS item. Concerns about online responses also seem negligible, as we did not find any difference in scores between online and offline LAFS. The marginal difference in passion might be because the pictures in the online study only showed people's faces. Especially, men might experience more passion when they see a person's body as well, because it is important for their assessment of physical attractiveness (Kościński, 2013; Montoya, 2007; Wagstaff, Sulikowski, & Burke, 2015). It therefore seems most likely that the LAFS reports we sampled were genuine and valid. Hence, people can indeed report LAFS independently of biases in memory. We therefore supported H1.

In another part of the study, we found that men were more likely to report LAFS on the spot than women (Zsok et al., 2017). Part of these gender differences might be due to the photographs we used depicting people smiling slightly into the camera. Tracy and Beall (2011) found that men smiling on online dating photos were judged more negatively by women, whereas smiling women were judged more positively by men. The potential partners presented to women might, therefore, been perceived as less attractive. This might have led to fewer LAFS reports by women and hence fewer LAFS reports in total.

Of those who reported LAFS at the dating events, none was also the target of LAFS. That means none of the instances of LAFS was reciprocal. Given the small frequency of LAFS across first encounters, mutual LAFS at the spot might generally be rare. This has three implications. First, LAFS can also be unrequited and therefore be a negative experience for all involved, just as unrequited love in general (Baumeister, Wotman, & Stillwell, 1993; Chung, 2013). This contrasts with the positive romantic ideal that is typically portrayed by, for example, Disney movies (Tanner et al., 2003), other media (Glebatis, 2007; Hefner & Wilson, 2013), or Naumann's (2001) book. The second implication is that LAFS might sometimes be one-sided initially, and that this might serve as a basis for the development of mutual LAFS as a construed memory in the couple. The perceiver might "convince" the LAFS target of their mutual LAFS across the trajectory of relationship development. This might be enhanced by the cognitive biases of couples in love (Gagné & Lydon, 2004; Swami et al., 2009). A third implication is that if mutual LAFS seems to be so rare, this would partly explain why most people report only one LAFS experience in their lifetime (Naumann, 2001; Zsok et al., 2017). Reciprocity is a strong predictor of attraction (Montoya & Horton, 2014) and might therefore also contribute to the construal of LAFS. But as our research shows, the frequency of LAFS might be particularly low if mutuality is a criterion for it.

### Physical attraction

As hypothesized, those who reported LAFS experienced strong physical attraction toward their dates. Physical attraction strongly increased the likelihood of LAFS: A 1-unit increase on the 5-point Likert-scale resulted in a probability of reporting LAFS about 9 times as high. It accounted for a substantial

part (43%) of the variance in LAFS. Physical attraction was not only strongly predictive of LAFS, but also of overall love scores. It partly mediated the effect LAFS reports had on love scores and was a better predictor of them than LAFS.

This is consistent with research on physical attractiveness. The trait is highly desirable in a partner (Eastwick et al., 2014) and is literally assessed at first sight (Olson & Marshuetz, 2005; Willis & Todorov, 2006). Accordingly, it has been shown to be a strong predictor of partner choice in speed-dating studies (Asendorpf et al., 2011; Cooper et al., 2012; Kurzban & Weeden, 2005) and of romantic attraction at zero acquaintance (Olderbak et al., 2017). As our data show, some even report LAFS with attractive people they see for the first time.

Physical attraction probably also influences LAFS construed by memory. In the acquaintance process, the positive first impressions that attractive partners typically make are likely to be confirmed (Langlois et al., 2000; Willis & Todorov, 2006). This in turn might aid the construction of LAFS as hindsight bias: Because the first impression was overall positive, and this impression turned out to be correct, perceivers might assume it was love they felt all along. Attractive others are also more likely to be seen in a positively biased view in general (Langlois et al., 2000), as well as in romantic relationships (Swami et al., 2009). LAFS might emerge partly as part of these biases. Therefore, LAFS as memory confabulation might be more likely to take place. This might explain findings that reporting past LAFS with one's partner is more likely if he or she is very good looking (Sangrador & Yela, 2000). In sum, there seems to be a strong link between physical attraction and LAFS, and it exemplifies the powerful role physical attraction has on first impressions and relationship development.

### What kind of love is LAFS?

H3 predicted that LAFS encounters would be characterized by lower love scores than romantic relationships, and H4 that LAFS would be marked by high passion. Within encounter groups, the components did not differ among each other. However, overall love scores differed across types of encounters. They were highest in romantic relationships and lowest in no-LAFS encounters (see Figure 1). The mean of the raw love scores in LAFS encounters was 4.21, which was very close to the anchor 4 (*neutral*). People who reported LAFS were therefore rather indifferent about the love items: On average, they neither agreed nor disagreed with them. People in romantic relationships on the contrary clearly agreed, with a mean of 5.92 on a scale ranging from 1 to 7, and people in no-LAFS dating encounters clearly disagreed ($M = 2.5$).

H3 was therefore confirmed: The love scores in romantic relationships were higher than love scores in LAFS encounters. Love is typically considered to be made up of the components we assessed (Aron & Westbay, 1996; Sternberg, 2006), and they are evident in most ongoing relationships (Gouveia et al., 2013; Madey & Rodgers, 2009). Our respondents disagreed with these love items in non-LAFS interactions. This indicates that the components were not evident in these encounters. In LAFS encounters, however, respondents were rather neutral about the items. Maybe respondents did not agree, but they also did not fully rule out the feelings implied by the items. Even though these feelings were not present, participants might have felt prepared/ready to experience them with a person.

This possible readiness also seemed to be influenced by physical attraction, which was positively associated with love scores. The more attractive the targets were, the more inclined the respondents were to not disagree with the items. Independently of LAFS, this could reflect a higher readiness to experience the love components toward physically attractive people. The brief assessment of potential partners might not have sufficed to create passion, intimacy, and commitment, as especially the latter two typically take time to develop (Derlega et al., 2008; Sprecher et al., 2015; Sternberg, 2006). But participants might have at least been able to judge whether they might experience these feelings toward potential partners in the future.

Participants' lack of agreement with love items in LAFS encounters also means that

those that reported LAFS at the spot did not experience the components. This is evidence that LAFS at the actual moment of first sight does not seem to consist of high passion, contrary to the claims by Sternberg (2006) and Lee (Hendrick & Hendrick, 2008). Such reports of LAFS do not seem to resemble love in terms of the commitment and intimacy experienced either. Because these components are central to love (Aron & Westbay, 1996; Fehr, 2015; Sternberg, 2006), LAFS does not seem to be prototypical of love at all (Shaver et al., 1987) and seems to involve a different experience.

And indeed, if we consider narratives of LAFS experiences, they do not mention passion, intimacy, or commitment. Instead, Naumann (2001) found that respondents described a variety of feelings involved in LAFS. They mentioned excitement and exhilaration most frequently. Chung (2013) found that the feelings her eight interviewees reported were, for example, a "distinct and unique feeling" a "paradoxical feeling of not knowing and instantly knowing," and a "unique physical sensation" (p. 44). Her interviewees also mentioned constant thoughts about the person and the desire to be with him or her, which most closely resembles the experience of passionate love or being in love, rather than love more generally (Fehr, 2015; Reynaud, Karila, Blecha, & Benyamina, 2010; Tallis, 2005; Yount, 2010). However, because these reports have all been obtained retrospectively, it is unclear whether such feelings were actually involved, or whether they have been magnified by memory bias. To conclude, our findings suggest that LAFS reported at actual first sight resembles neither passionate love nor love more generally.

### LAFS in romantic relationships

The pattern of high passion also did not emerge in romantic relationships in which participants reported having experienced LAFS, rejecting H5a. But we found that those who reported LAFS with their romantic partners also reported more love toward them, particularly passion, in line with Barelds and Barelds-Dijkstra (2007) and H5b. One

possible explanation is that romantic relationships based on LAFS develop stronger emotional bonds (Naumann, 2001). This is congruent with a romantic view on LAFS that portrays it involving one's "one true love" (Sprecher & Metts, 1989). A less romantic and more scientific explanation might be that people project their current feelings into the past (McFarland & Ross, 1987) and that therefore experiencing love increases memory bias. However, individual differences could be another explanation: Those generally more prone to positive illusions and idealizations in romantic relationships (Swami et al., 2009) might also experience higher passion. Accordingly, Sprecher and Metts (1989) found that the belief in LAFS was associated with the tendency to endorse the love style eros.

### TLS and eros

Sternberg's (1986) triangular theory of love postulates that different types of love consist of different ratios of the three components. However, this has been criticized (e.g., Acker & Davis, 1992), and empirical investigations have not found evidence for all of these love types. In our study, we did not find evidence for one of Sternberg's concept—infatuated love—either. Furthermore, the components of the TLS were highly correlated across all groups of encounters. This matches former criticism of the theory: The constructs are highly correlated and therefore have little discriminate validity (Hendrick & Hendrick, 1989; Whitley, 1993). Hence, there seems to be little value in grouping kinds of love using this theoretical framework.

Similar arguments apply to Lee's (1988) love style eros. It was strongly correlated not only with passion of the TLS, but also with both other components, and the scores behaved similarly across typed of encounters. Therefore, eros does not seem to be a love style that corresponds to LAFS. This finding also supports empiric work showing that people's love styles do not tend to match Lee's taxonomy, but are mostly blends of them (Hendrick & Hendrick, 2008). A more accurate view on romantic love might therefore be that it does not consist of different categories, but rather that it is

a multifaceted, dynamic experience that varies between persons and relationships (Fehr, 2015; Sternberg, 2006).

## *Limitations and implications for future research*

Given that part of our data were obtained from field studies, we faced the problem of having a lot of situational factors that we could not control for, and that might influence romantic attraction (Arriaga, Agnew, Capezza, & Lehmiller, 2008). Participation was also voluntary, so there is likely also a participation bias in our data. It could also be that the cases of LAFS were very heterogeneous. Some participants might have agreed with the LAFS item because of demand characteristics. Others might have perceived their experience as a special moment of LAFS. These could be the few cases in which scores on the TLS were very high, but that are not reflected in our analysis, because we worked with the means.

There are numerous aspects of LAFS that could still be investigated. Our assessment of feelings and appraisal was limited to the constructs we measured, but there are probably many other factors that play a role. People often mention certain physical details of another person that made them fall in love with him or her, for instance, certain facial features or accessories (Aron et al., 1989; Naumann, 2001; Riela, Aron, & Acevedo, 2006; Tennov, 1998). They could be cues to important traits, similarity, desired personality, or reciprocal interest that in turn facilitate attraction (Barelds & Dijkstra, 2008; Little, Burt, & Perrett, 2006; Montoya & Horton, 2014; Re & Rule, 2016). Future studies could trace participants after they have reported a LAFS experience. This could be especially informative regarding several aspects: how exactly LAFS at the spot and confabulated memory interplay, how the initial appraisal unfolds across the trajectory of relationship initiation, when people decide that they fell in LAFS, whether LAFS elicits a process that creates mutual attraction or not, and what this is contingent on (Bredow, Cate, & Huston, 2008).

## *Conclusion*

Overall, this study provides evidence that some people report LAFS at the actual first sight of a partner, and that it is not only construed through biased memory. The moment of LAFS does not seem to be marked by high passion for a person and does not seem to involve feelings of love at all, but a readiness to experience them at best. Reporting LAFS with a partner is associated with experiencing more love and passion in the relationship. We conclude that LAFS is a strong initial attraction that some label as LAFS—either retrospectively or in the moment of first sight.

## References

Acker, M., & Davis, M. H. (1992). Intimacy, passion and commitment in adult romantic relationships: A test of the triangular theory of love. *Journal of Social and Personal Relationships*, *9*, 21–50. https://doi.org/10.1177/0265407592091002

Afifi, W. A., & Lucas, A. A. (2008). Information seeking in the initial stages of relational development. In S. Sprecher, A. Wenzel, & J. Harvey (Eds.), *Handbook of relationship initiation* (pp. 135–151). New York, NY: Psychology Press.

Alea, N., & Vick, S. C. (2010). The first sight of love: Relationship-defining memories and marital satisfaction across adulthood. *Memory*, *18*, 730–742. https://doi.org/10.1080/09658211.2010.506443

Aron, A., Dutton, D. G., Aron, E. N., & Iverson, A. (1989). Experiences of falling in love. *Journal of Social and Personal Relationships*, *6*, 243–257. https://doi.org/10.1177/0265407589063001

Aron, A., & Westbay, L. (1996). Dimensions of the prototype of love. *Journal of Personality and Social Psychology*, *70*, 535–551. https://doi.org/10.1037/0022-3514.70.3.535

Arriaga, X. B., Agnew, C. R., Capezza, N. M., & Lehmiller, J. J. (2008). The social and physical environment of relationship initiation: An interdependence analysis. In S. Sprecher, A. Wenzel, & J. Harvey (Eds.), *Handbook of relationship initiation* (pp. 197–215). New York, NY: Psychology Press.

Asendorpf, J. B., Penke, L., & Back, M. D. (2011). From dating to mating and relating: Predictors of initial and long-term outcomes of speed-dating in a community sample. *European Journal of Personality*, *25*, 16–30. https://doi.org/10.1002/per.768

Barelds, D. P. H., & Barelds-Dijkstra, P. (2007). Love at first sight or friends first? Ties among partner personality trait similarity, relationship onset, relationship quality, and love. *Journal of Social and Personal Relationships*, *24*, 479–496. https://doi.org/10.1177/0265407507079235

Barelds, D. P. H., & Dijkstra, P. (2008). Do people know what they want: A similar or complementary partner? *Evolutionary Psychology*, *6*, 595–602.

Barelds, D. P. H., Dijkstra, P., Koudenburg, N., & Swami, V. (2011). An assessment of positive illusions of the physical attractiveness of romantic partners. *Journal of Social and Personal Relationships*, *28*, 706–719. https://doi.org/10.1177/0265407510385492

Baumeister, R. F., Wotman, S. R., & Stillwell, A. M. (1993). Unrequited love: On heartbreak, anger, guilt, scriptlessness, and humiliation. *Journal of Personality and Social Psychology*, *64*, 377–394. https://doi.org/10.1037/0022-3514.64.3.377

Baxter, L. A., & Bullis, C. (1986). Turning points in developing romantic relationships. *Human Communication Research*, *12*, 469–493. https://doi.org/10.1111/j.1468-2958.1986.tb00088.x

Behling, O., & Law, D. K. S. (2000). *Translating questionnaires and other research instruments: Problems and solutions*. Thousand Oaks, CA: Sage.

Bernstein, D. M., Aßfalg, A., Kumar, R., & Ackerman, R. (2016). Looking backward and forward on hindsight bias. In J. Dunlosky, S. K. Tauber, J. Dunlosky, & S. K. Tauber (Eds.), *The Oxford handbook of metamemory* (pp. 289–304). New York, NY: Oxford University Press.

Berscheid, E. (2006). Searching for the meaning of "love." In R. J. Sternberg & K. Weis (Eds.), *The new psychology of love* (pp. 171–183). New Haven, CT: Yale University Press.

Berscheid, E. (2010). Love in the fourth dimension. *Annual Review of Psychology*, *61*, 1–25. https://doi.org/10.1146/annurev.psych.093008.100318

Bredow, C. A., Cate, R. M., & Huston, T. L. (2008). Have we met before? A conceptual model of first romantic encounters. In S. Sprecher, A. Wenzel & J. Harvey (Eds.), *Handbook of relationship initiation* (pp. 3–28). New York, NY: Psychology Press.

Chung, N. (2013). *An existential-phenomenological investigation of the experience of unrequited "love-at-first-sight"* (Doctoral dissertation, California Institute of Integral Studies). Retrieved from https://search.proquest.com/docview/1433963001

Cohen, J., & Cohen, J. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences*. (3rd ed.). Mahwah, NJ: Erlbaum.

Cooper, J. C., Dunne, S., Furey, T., & O'Doherty, J. P. (2012). Dorsomedial prefrontal cortex mediates rapid evaluations predicting the outcome of romantic interactions. *Journal of Neuroscience*, *32*, 15647–15656. https://doi.org/10.1523/JNEUROSCI.2558-12.2012

Custer, L., Holmberg, D., Blair, K., & Orbuch, T. L. (2008). "So how did you two meet?" Narratives of relationship initiation. In S. Sprecher, A. Wenzel, & J. Harvey (Eds.), *Handbook of relationship initiation* (pp. 453–470). New York, NY: Psychology Press.

Derlega, V. J., Winstead, B. A., & Greene, K. (2008). Self-disclosure and starting a close relationship. In S. Sprecher, A. Wenzel, & J. Harvey (Eds.), *Handbook of relationship initiation* (pp. 153–174). New York, NY: Psychology Press.

Eastwick, P. W., & Finkel, E. J. (2008). Speed-dating: A powerful and flexible paradigm for studying romantic relationship initiation. In S. Sprecher, A. Wenzel, & J. Harvey (Eds.), *Handbook of relationship initiation* (pp. 217–234). New York, NY: Psychology Press.

Eastwick, P. W., Luchies, L. B., Finkel, E. J., & Hunt, L. L. (2014). The predictive validity of ideal partner preferences: A review and meta-analysis. *Psychological Bulletin*, *140*, 623–665. https://doi.org/10.1037/a0032432

Fehr, B. (2015). Love: Conceptualization and experience. In M. Mikulincer, P. R. Shaver, J. A. Simpson, & J. F. Dovidio (Eds.), *APA handbook of personality and social psychology: Vol. 3. Interpersonal relations* (pp. 495–522). Washington, DC: American Psychological Association.

Fletcher, G. J. O., & Kerr, P. S. G. (2010). Through the eyes of love: Reality and illusion in intimate relationships. *Psychological Bulletin*, *136*, 627–658. https://doi.org/10.1037/a0019792

Gagné, F. M., & Lydon, J. E. (2004). Bias and accuracy in close relationships: An integrative review. *Personality and Social Psychology Review*, *8*, 322–338. https://doi.org/10.1207/s15327957pspr0804_1

Giles, J. (2015). *Sexual attraction: The psychology of allure*. Santa Barbara, CA: Praeger/ABC-CLIO.

Glebatis, L. M. (2007). "Real" love myths and magnified media: Effects of "The Bachelorette." In M.-L. Galician & D. L. Merskin (Eds.), *Critical thinking about sex, love, and romance in the mass media* (pp. 319–334). Mahwah, NJ: Erlbaum.

Gouveia, V. V., de Carvalho, E. A. B., dos Santos, F. A., & de Almeida, M. R. (2013). Escala tetrangular do amor: Testando sua estrutura e invariância fatorial [Tetrangular Love Scale: Testing its factorial structure and invariance]. *Psicologia: Ciência e Profissâo*, *33*, 32–45. https://doi.org/10.1590/S1414-98932013000100004

Griffin, S. A. (2006). *A qualitative inquiry into how romantic love has been portrayed by contemporary media and researchers*. (Doctoral dissertation, The Ohio State University). Retrieved from https://etd.ohiolink.edu/ap/10?0::NO:10:P10_ACCESSION_NUM:osu1149001149

Hawk, S. T., Tolman, R., & Mueller, C. W. (2007). The effects of target attractiveness on men's sexual arousal in response to erotic auditory stimuli. *Journal of Sex Research*, *44*, 96–103. https://doi.org/10.1207/s15598519jsr4401_10

Hefner, V., & Wilson, B. J. (2013). From love at first sight to soul mate: The influence of romantic ideals in popular films on young people's beliefs about relationships. *Communication Monographs*, *80*, 150–175. https://doi.org/10.1080/03637751.2013.776697

Hendrick, C., & Hendrick, S. S. (1989). Research on love: Does it measure up? *Journal of Personality and Social Psychology*, *56*, 784–794. https://doi.org/10.1037/0022-3514.56.5.784

Hendrick, C., Hendrick, S. S., & Dicke, A. (1998). The love attitudes scale: Short form. *Journal of Social and Personal Relationships*, *15*, 147–159. https://doi.org/10.1177/0265407598152001

Hendrick, S. S., & Hendrick, C. (2008). Satisfaction, love, and respect in the initiation of romantic relationships. In S. Sprecher, A. Wenzel, & J. Harvey (Eds.), *Handbook of relationship initiation* (pp. 337–351). New York, NY: Psychology Press.

Kościński, K. (2013). Attractiveness of women's body: Body mass index, waist–hip ratio, and their relative importance. *Behavioral Ecology*, *24*, 914–925. https://doi.org/10.1093/beheco/art016

Kurzban, R., & Weeden, J. (2005). HurryDate: Mate preferences in action. *Evolution and Human Behavior*, *26*, 227–244. https://doi.org/10.1016/j.evolhumbehav.2004.08.012

Langlois, J. H., Kalakanis, L., Rubenstein, A. J., Larson, A., Hallam, M., & Smoot, M. (2000). Maxims or myths of beauty? A meta-analytic and theoretical review. *Psychological Bulletin*, *126*, 390–423. https://doi.org/10.1037/0033-2909.126.3.390

Lee, J. A. (1988). Love-styles. In R. J. Sternberg & M. L. Barnes (Eds.), *The psychology of love* (pp. 38–67). New Haven, CT: Yale University Press.

Leo, J. L., Miller, S. L., & Maner, J. K. (2012). It's not all conflict: Relationship maintenance psychology. In T. K. Shackleford & A. T. Goetz (Eds.), *The Oxford handbook of sexual conflict in humans* (pp. 148–168). New York, NY: Oxford University Press.

Little, A. C. (2015). Attraction and human mating. In V. Zeigler-Hill, L. L. M. Welling, & T. K. Shackelford (Eds.), *Evolutionary perspectives on social psychology* (pp. 319–332). Cham, Switzerland: Springer.

Little, A. C., Burt, D. M., & Perrett, D. I. (2006). What is good is beautiful: Face preference reflects desired personality. *Personality and Individual Differences*, *41*, 1107–1118. https://doi.org/10.1016/j.paid.2006.04.015

Love at first sight. (2016). *Wikipedia*. Retrieved from https://en.wikipedia.org/wiki/Love_at_first_sight

Lydon, J. E., & Quinn, S. K. (2013). Relationship maintenance processes. In J. A. Simpson & L. Campbell (Eds.), *The Oxford handbook of close relationships* (pp. 573–588). New York, NY: Oxford University Press.

Madey, S. F., & Rodgers, L. (2009). The effect of attachment and Sternberg's triangular theory of love on relationship satisfaction. *Individual Differences Research*, *7*, 76–84.

McFarland, C., & Ross, M. (1987). The relation between current impressions and memories of self and dating partners. *Personality and Social Psychology Bulletin*, *13*, 228–238. https://doi.org/10.1177/0146167287132008

Montoya, R. M. (2007). Gender similarities and differences in preferences for specific body parts. *Current Research in Social Psychology*, *13*, 133–144.

Montoya, R. M., & Horton, R. S. (2014). A two-dimensional model for the study of interpersonal attraction. *Personality and Social Psychology Review*, *18*, 59–86. https://doi.org/10.1177/1088868313501887

Naumann, E. (2001). *Love at first sight: The stories and science behind instant attraction*. Naperville, IL: Sourcebooks.

Olderbak, S. G., Malter, F., Wolf, P. S. A., Jones, D. N., & Figueredo, A. J. (2017). Predicting romantic interest at zero acquaintance: Evidence of sex differences in trait perception but not in predictors of interest: Romantic interest. *European Journal of Personality*. Advance online publication. https://doi.org/10.1002/per.2087

Olson, I. R., & Marshuetz, C. (2005). Facial attractiveness is appraised in a glance. *Emotion*, *5*, 498–502. https://doi.org/10.1037/1528-3542.5.4.498

Re, D. E., & Rule, N. O. (2016). Appearance and physiognomy. In D. Matsumoto, H. C. Hwang, & M. G. Frank (Eds.), *APA handbook of nonverbal communication* (pp. 221–256). Washington, DC: American Psychological Association.

Reynaud, M., Karila, L., Blecha, L., & Benyamina, A. (2010). Is love passion an addictive disorder? *American Journal of Drug and Alcohol Abuse*, *36*, 261–267. https://doi.org/10.3109/00952990.2010.495183

Riela, S., Aron, A., & Acevedo, B. (2006, July). *Precursors of falling in love: Category, rate, and ethnic differences*. Paper presented at the biannual meeting of the International Association for Relationship Research, Rethymnon, Crete, Greece.

Rusbult, C. E., Agnew, C. R., & Arriaga, X. B. (2012). The investment model of commitment processes. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (Vol. 2, pp. 218–231). Thousand Oaks, CA: Sage.

Sangrador, P., & Yela, C. (2000). "What is beautiful is loved": Physical attractiveness in love relationships in a representative sample. *Social Behavior and Personality*, *28*, 207–218. https://doi.org/10.2224/sbp.2000.28.3.207

Shaver, P., Schwartz, J., Kirson, D., & O'Connor, C. (1987). Emotion knowledge: Further exploration of a prototype approach. *Journal of Personality and Social Psychology*, *52*, 1061–1086. https://doi.org/10.1037/0022-3514.52.6.1061

Sprecher, S., Felmlee, D., Metts, S., & Cupach, W. (2015). Relationship initiation and development. In M. Mikulincer, P. R. Shaver, J. A. Simpson, & J. F. Dovidio (Eds.), *APA handbook of personality and social psychology: Vol. 3. Interpersonal relations* (pp. 211–245). Washington, DC: American Psychological Association.

Sprecher, S., & Metts, S. (1989). Development of the "Romantic Beliefs Scale" and examination of the effects of gender and gender-role orientation. *Journal of Social and Personal Relationships*, *6*, 387–411. https://doi.org/10.1177/0265407589064001

Sternberg, R. J. (1997). Construct validation of a Triangular Love Scale. *European Journal of Social Psychology*, *27*, 313–335. https://doi.org/10.1002/(SICI)1099-0992(199705)27:3<313::AID-EJSP824>3.0.CO;2-4

Sternberg, R. J. (1998). *Cupid's arrow: The course of love through time*. Cambridge; New York, NY: Cambridge University Press.

Sternberg, R. J. (2006). A duplex theory of love. In R. J. Sternberg & K. Weis (Eds.), *The new psychology of*

*love* (pp. 184–199). New Haven, CT: Yale University Press.

Stevens, J. (2009). *Applied multivariate statistics for the social sciences* (5th ed.). New York, NY: Routledge.

Swami, V. (2011). Love at first sight? In T. Chamorro-Premuzic, S. von Stumm, & A. Furnham (Eds.), *The Wiley-Blackwell handbook of individual differences* (pp. 747–772). Oxford, UK: Wiley-Blackwell.

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*, 35–43. https://doi.org/10.1027/1614-0001.30.1.35

Tallis, F. (2005). *Love sick*. London, UK: Arrow.

Tanner, L. R., Haddock, S. A., Zimmerman, T. S., & Lund, L. K. (2003). Images of couples and families in Disney feature-length animated films. *American Journal of Family Therapy*, *31*, 355–373. https://doi.org/10.1080/01926180390223987

Tennov, D. (1998). *Love and limerence: The experience of being in love* (2nd ed.). Lanham, MD: Scarborough House.

Tracy, J. L., & Beall, A. T. (2011). Happy guys finish last: The impact of emotion expressions on sexual attraction. *Emotion*, *11*, 1379–1387. https://doi.org/10.1037/a0022902

Twamley, K. (2013). Love and desire amongst middle-class Gujarati Indians in the UK and India. *Culture, Health & Sexuality*, *15*, 327–340. https://doi.org/10.1080/13691058.2012.754945

Wagstaff, D. L., Sulikowski, D., & Burke, D. (2015). Sex-differences in preference for looking at the face or body in short-term and long-term mating contexts. *Evolution, Mind and Behaviour*, *13*, 1–17.

Whitley, B. E. (1993). Reliability and aspects of the construct validity of Sternberg's Triangular Love Scale. *Journal of Social and Personal Relationships*, *10*, 475–480. https://doi.org/10.1177/0265407593103013

Willis, J., & Todorov, A. (2006). First impressions: Making up your mind after a 100-ms exposure to a face. *Psychological Science*, *17*, 592–598. https://doi.org/10.1111/j.1467-9280.2006.01750.x

Yount, M. B. (2010). "Crazy in love": The nature of romantic love. In K. Miller & M. Clark (Eds.), *Dating: Flirting with big ideas* (pp. 67–75). Oxford, UK: Wiley-Blackwell.

Zsok, F., de Wit, C. Y., Haucke, M., & Barelds, D.P.H. (2017). *A flair for the romantic: Individual difference variables associated with reporting love at first sight*. Manuscript in preparation.