

Research article

I think I like you: Spontaneous and deliberate evaluations of potential romantic partners in an online dating context

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Abstract

The present research examined processes of impression formation within an online dating context. Across two studies, female participants formed impressions of a potential partner based on an online dating profile containing information about the target's facial attractiveness and self-described ambition. Afterwards, deliberate evaluations of the target were assessed with a self-report measure and spontaneous evaluations were measured with an affective priming task. The results showed that deliberate evaluations varied as a function of both self-described ambition and facial attractiveness. In contrast, spontaneous evaluations varied only as a function of facial attractiveness. Experiment 2 further showed that these effects were independent of the order in which the two types of information had been encoded. The results are discussed in terms of associative and propositional processes, and the conditions under which these processes can lead to conflicting evaluations of the same potential romantic partner. Copyright © 2009 John Wiley & Sons, Ltd.

Over the past decade, online dating has dramatically risen in popularity, with over 40 million unique visitors to dating websites in the United States (Mulrine, 2003), and more than 800 different websites currently in existence (Marsan, 2008). In the United States alone, approximately 7 million online dating site users have gone on to meet a fellow user face-to-face and 3 million individuals have formed long-term romantic relationships with someone they met on the internet (Boyd, 2007). This rise in popularity of online dating has been simultaneously linked with a corresponding reduction in the stigma historically associated with meeting romantic partners through the internet. A survey commissioned by the Pew Internet and American Life Project (2006) found that 61 per cent of respondents disagreed with the view that online daters are desperate. Evidently, online dating is now more popular and socially acceptable than it has ever been, and this trend is likely to continue.

The users of online dating websites, like any mating pool, are individuals possessing varying levels of attributes that influence their interpersonal likeability as a potential mate. Thus, a pertinent question arises: What factors influence the likeability of potential romantic partners in an online dating context? By examining a dataset from a major online dating site, Hitsch, Hortaçsu, and Ariely (2005) determined that physical attractiveness was a significant predictor of receiving messages from other users of the site for both men and women. Furthermore, the researchers found that women were more likely to contact men with higher annual incomes and men seeking long-term relationships. Similarly, Evans and Brase (2007) found that after examining an online dating profile of an opposite-sex individual, women tended to discuss the target's ambitiousness, whereas men tended to comment on the target's attractiveness when asked open-ended questions about the target in the dating profile.

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Although these studies provide first insights into mate preferences in online dating, there has been surprisingly little research examining how first impressions are formed within this context. The main goal of the present research is to examine factors that influence spontaneous and deliberate evaluations of potential online dating partners. Using the Associative-Propositional Evaluation (APE) model (Gawronski & Bodenhausen, 2006a, 2007) as a guiding framework, we were particularly interested in how the interplay of associative and propositional processes can contribute to dissociations between spontaneous and deliberate evaluations of the same individual, and how these general processes operate in the context of online dating.

Other Initiation Contexts and Stated versus Revealed Preferences

Since online dating is in some ways similar to the domains of newspaper personal ads and speed dating, research using those modes of interaction is applicable to identifying potential factors that impact the initial impression formed of a prospective romantic partner. These modes of impression formation are particularly revealing because they are reliant upon individuals making romantic decisions based on the limited information that can be gleaned about the potential partners from a short description or brief interaction (for an overview, see Ambady & Skowronski, 2008). Research in these areas suggests that people's stated preferences may not necessarily be in line with their revealed preferences, which provides preliminary evidence for the current claim that people may show different evaluative responses to the same potential dating partner.

Newspaper personal ads typically contain a short verbal self-description of the person placing the advertisement and the characteristics the individual is seeking in a mate. Prior research using newspaper personal ads has typically found sex differences in the attributes advertised by seekers and desired from potential romantic partners. For instance, Rajecki, Bledsoe, and Rasmussen (1991) found that males tended to advertise status and desire physical attractiveness, while females conversely tended to advertise physical attractiveness and desire status. To determine what factors influence responses to personal ads, Goode (1996) created and submitted ads to newspapers and discovered that the response rate to the ads was primarily based on physical attractiveness for female advertisers, whereas the response rate for male advertisers was more dependent upon occupational and financial success. These results are consistent with research examining stated mating preferences, which has found that in a potential mate of the opposite sex, physical attractiveness is considered more important by men and earning prospects are considered more important by women (e.g., Buss, 1989).

Research using speed dating paradigms can also provide some insights into how people form initial impressions of potential romantic partners. Speed dating typically involves multiple individuals interacting as a pair for a very brief period and later deciding whether or not they desire further contact with each individual they encountered during the speed dating session (Finkel & Eastwick, 2008; Finkel, Eastwick, & Matthews, 2007). Interestingly, research using this paradigm, which has the potential to reveal mating preferences through the decision to seek further contact with the individuals encountered, has not reliably found the sex differences typically observed in the self-reported mating preferences research. For example, Kurzban and Weeden (2005) found that each potential partner's physical attractiveness played a significant role in the desire for further contact in both sexes, but income was not a significant factor for either men or women. Similarly, Eastwick and Finkel (2008) discovered that although individuals claimed they held preferences consistent with the stated mating preferences literature (e.g., Buss, 1989), their interest in further contact with the people they met at the event did not reveal the expected sex differences in preferences for attractiveness and earning potential that the stated preferences research has generally uncovered. In fact, Eastwick and Finkel (2008) found that stated preferences for the characteristics individuals desired in a potential mate were extremely poor predictors of their interest in further contact with a given interaction partner at the event, and they suggest that this may be the result of individuals not having introspective access to the factors driving their actual mate preferences (see Nisbett & Wilson, 1977).

Evaluative Processes in Impression Formation

The large discrepancy between stated and revealed mating preferences is puzzling, but research examining evaluative processes can shed some light on why these dissociations may exist. According to the APE model (Gawronski & Bodenhausen, 2006a, 2007), evaluative responses should be understood in terms of their underlying mental processes. Specifically, the APE model posits the existence of two distinct mechanisms underlying evaluation: Associative and

propositional processes. These conceptually distinct, but interacting processes are further assumed to provide the basis for two kinds of evaluative responses: Spontaneous affective reactions and deliberate evaluative judgments. Associative processes are described as the *activation* of evaluative associations in memory when a stimulus is encountered, and these associations are assumed to determine a person's spontaneous affective response to that stimulus. In contrast, propositional processes are defined as the *validation* of the evaluation implied by the affective response, such that propositional processes determine whether the affective response does or does not provide a valid basis for a deliberate evaluative judgment. Hence, the primary distinction between these two processes is their concern with validity.

Associative processes are assumed to be validation-independent, and thus spontaneous affective reactions may be activated regardless of whether an individual does or does not endorse the evaluation implied by the affective response. For example, a potential partner may elicit a positive affective response based on the valence of automatically activated associations. The evaluation implied by the affective response (e.g., "I like this person") may then be subjected to propositional validation by considering its consistency with other relevant information (e.g., "My friends like that person"). To the degree that the affective response is consistent with other momentarily considered information, it may be regarded as valid, and therefore serve as a basis for an evaluative judgment. If, however, the affective response is inconsistent with other momentarily considered information, it may be regarded as invalid, and therefore rejected as a basis for an evaluative judgment (e.g., Gawronski, Peters, Brochu, & Strack, 2008a; Gawronski & Strack, 2004)

As a simple invalidation (or negation) of a spontaneous affective response does not necessarily deactivate the associations that have led to that response (e.g., Deutsch, Gawronski, & Strack, 2006; Gawronski, Deutsch, Mbirikou, Seibt, & Strack, 2008b; see also Gilbert, 1991), associative and propositional processes can sometimes result in divergent evaluative responses. Specifically, activated associations may continue to determine spontaneous affective responses even if a spontaneous affective response has been invalidated by propositional processes. According to Gawronski and Bodenhausen (2006a, 2007), such cases provide the basis for previously obtained dissociations between implicit and explicit measures, such that automatic associations may influence implicit measures even when these associations are invalidated by propositional processes, and therefore are not explicitly endorsed in a self-report measure (for a review, see Hofmann, Gschwendner, Nosek, & Schmitt, 2005).

These dissociations may also explain the discrepancies between stated and revealed mating preferences found in past studies. Prior research examining stated mating preferences typically employed self-report measures asking individuals what they seek in a potential romantic partner (e.g., Buss, 1989). According to Gawronski and Bodenhausen (2006a, 2007), these types of measures tap into validated, propositional evaluations—they measure what individuals think they prefer in a romantic partner (see also Strack & Deutsch, 2004). In contrast, revealed mating preferences may be influenced more strongly by the affective responses resulting from spontaneously activated associations. For instance, the desire for further contact in a speed-dating context may depend primarily on how a person feels toward a potential dating partner, rather than on a deliberate assessment of that person's attributes as a potential mate. As such, it may be possible that observed discrepancies between stated and revealed mating preferences are the product of the different processes involved in the evaluation of a potential romantic partner.

Overview of the Present Research

In the present research, we investigated potential dissociations between spontaneous and deliberate evaluations of potential dating partners within an online dating context. For this purpose, the present study used an impression formation task adapted from Wilbur and Campbell (2009) in which women assess profiles of men ostensibly submitted to an online dating service for university students. In the impression formation task, female participants examined a dating profile of a male target individual containing a picture of the individual and the target individual's written profile. Wilbur and Campbell (2009) found that female undergraduates' preferences were primarily influenced by the target's level of ambition and level of facial attractiveness. Participants generally preferred ambitious over unambitious men and attractive over unattractive men. The preferences for these characteristics were used in the present study to operationalize the distinct processes involved in the activation and validation of evaluative information. Drawing on earlier findings by McConnell, Rydell, Strain, and Mackie (2008), facial attractiveness was assumed to be a primary source of spontaneous affective responses, given that attractiveness cues are highly salient (Olson & Marshuetz, 2005; Van Leeuwen & Macrae, 2004) and strongly associated with the valence of interpersonal evaluations (Dion, Berscheid, & Walster, 1972). In contrast, a

person's self-description of ambition represents propositional information that is not only less salient, but also requires a more deliberate assessment of the target's attributes and one's long-term relationship goals (e.g., ambition as a cue to future status; see Townsend & Wasserman, 1998). According to Strack and Deutsch (2004), such assessments of delayed long-term effects require propositional processes, which implies that self-described ambition may be more effective in influencing deliberate compared to spontaneous evaluations (see also Metcalfe & Mischel, 1999).

Another important question concerns potential interactions between the two kinds of processes and their implications for the impact of facial attractiveness and self-described ambition information. According to Gawronski and Bodenhausen (2006a, 2007) spontaneous affective responses typically serve as the basis for deliberate evaluative judgments, unless the evaluation implied by an affective response is inconsistent with other momentarily considered propositional information (see also Strack & Deutsch, 2004). Applied to the present question, this conceptualization implies that facial attractiveness may influence deliberate evaluative judgments as long as the evaluation implied by a person's attractiveness level is consistent with the evaluation implied by the target's self-described ambition. If, however, the evaluation implied by the target's ambition is inconsistent with the attractiveness-related response, the latter should be rejected as a basis for an evaluative judgment. These assumptions imply the prediction that spontaneous and deliberate evaluations should be significantly correlated when the two kinds of information are consistent, however, spontaneous and deliberate evaluations should be unrelated when the two kinds of information are inconsistent (e.g., Gawronski et al., 2008a; Gawronski & Strack, 2004).

To test these assumptions, female participants formed impressions of a potential partner based on an online dating profile containing verbal (self-described ambition) and visual (facial attractiveness) information. Afterwards, deliberate evaluations of the target were assessed with a self-report measure; spontaneous evaluations were measured with an affective priming task (Payne, Cheng, Govorun, & Stewart, 2005). In Experiment 1, the visual information about attractiveness and the verbal information about ambition information were presented simultaneously. In Experiment 2, the two kinds of information were presented sequentially in order to test potential order effects.

We hypothesized that the facial attractiveness information should influence spontaneous evaluations regardless of the verbal information about the target's ambition due to the high salience of attractiveness cues and their strong associations with valence (see McConnell et al., 2008; Van Leeuwen & Macrae, 2004). In contrast, verbal information about the target's ambition was expected to influence only deliberate, but not spontaneous evaluations (for related findings, see Edwards, 1990). Moreover, attractiveness-related, spontaneous evaluations were expected to provide a basis for deliberate evaluations only when spontaneous evaluations are consistent, but not when they are inconsistent with the propositional information about the target's ambition (see Gawronski et al., 2008a; Gawronski & Strack, 2004). As such, spontaneous and deliberate evaluations should be significantly correlated when the two kinds of information are consistent, but not when they are inconsistent.

EXPERIMENT 1

Method

Participants and Design

A total of 100 heterosexual female undergraduates at the University of Western Ontario were recruited for a study on "attitudes and impression formation" in return for course credit. Participants' mean age was 18.48 years ($SD = 0.85$), with an age range between 17 and 22 years. Participants were randomly assigned to one of the conditions of a 2 (target attractiveness: high vs. low) \times 2 (target ambition: high vs. low) between-subjects design. The order in which participants completed the two measures of spontaneous and deliberate evaluations following the impression formation task was counterbalanced across participants.

Impression Formation Task

For the impression formation task, we adapted a total of four hypothetical online dating profiles from Wilbur and Campbell (2009) featuring a male target seeking a female dating partner. The profiles described the target as a 22-year old male student of political science. In addition, the profiles included neutral information about the target's ethnic background

(White), zodiac sign (Gemini), religious affiliation (non-religious), height (6'0), body type (fit), smoking habits (non-smoker), and drinking habits (socially). Physical attractiveness was manipulated by the inclusion of a facial photograph of either a highly attractive or highly unattractive male target, which was chosen from a set of faces used by Maner et al. (2003). Ambition was manipulated via a self-description ostensibly provided by the target. In the high ambition condition, the target described himself as someone who considers his education as being very important in his life. In addition, the description indicated that the target intends to get into law school and that he is working hard to keep up good grades. In the low ambition condition, the target described himself as someone who considers his education as unimportant. The description also indicated that the target originally intended to get into law school, but that he has given up these plans because it is too competitive.

Measures

Deliberate evaluations of the potential romantic target were assessed with a five-item likeability questionnaire. Specifically, participants were asked: (1) "How much do you like the person in the profile you have just seen?" (2) "Would you like to go out on a date with this person?" (3) "Would you like to be friends with this person?" (4) "Do you think this person is nice?" (5) "Would you like to get to know this person better?" Responses to these items were assessed with scales ranging from 1 (*not at all*) to 7 (*very much*). Spontaneous evaluations of the target were assessed using a variant of the Affect Misattribution Procedure (AMP; Payne et al., 2005). On each trial of the task, participants were first presented with a fixation cross for 1000 milliseconds, which was replaced by a prime stimulus for 75 milliseconds. As prime stimuli, we used the attractive and unattractive target faces featured in the impression formation task and a gray square which served as a filler prime. The presentation of the prime stimulus was followed by a blank screen for 125 milliseconds, and then by a Chinese ideograph appearing for 100 milliseconds. The Chinese ideograph was subsequently replaced by a black and white pattern mask. This pattern mask remained on the screen until participants had responded to whether they considered the presented ideograph as visually more pleasant or visually less pleasant than the average Chinese ideograph. Participants were asked to press a key on the right side of the computer keyboard (*Numpad 5*) if they considered the Chinese ideograph as more pleasant than the average Chinese ideograph, and a key on the left side (*A*) if they considered the Chinese ideograph as less pleasant than the average one. As per the instructions employed by Payne et al. (2005), participants were told that the pictures appearing before the Chinese ideograph can sometimes bias people's responses, and that they should try not to let the pictures influence their judgments. Payne et al.'s (2005) warning was utilized to ensure that participants did not deliberately use the prime in making their judgments. The AMP consisted of a total of 90 trials including 30 trials using the attractive target face as a prime, 30 trials using the unattractive target face as a prime, and 30 control trials using a gray square as a prime.

Procedure

Upon arrival, participants were welcomed by the experimenter and seated in a cubicle in front of a computer. Written instructions on the screen explained that the study is concerned with factors that influence partner preferences in online dating. Instructions further indicated that they will be presented with an online dating profile that will be randomly selected from a pool of profiles. Participants were asked to take their time to examine the profile thoroughly and try to form an impression of the person in the profile. Participants were then presented with one of the four dating profiles. Once participants had viewed the profile, they were asked to complete the two measures of spontaneous and deliberate evaluations. The order in which participants completed the two measures was counterbalanced across participants, such that half of the participants completed the likeability questionnaire first and half completed the AMP first. As the order of measures did not qualify any of the obtained effects, order was dropped as a separate factor in the following analyses.

Results

Spontaneous Evaluations

The AMP involves a binary choice between the *more pleasant than average* and *less pleasant than average* responses. An index of spontaneous positivity toward the target was created by dividing the number of *more pleasant* responses to the

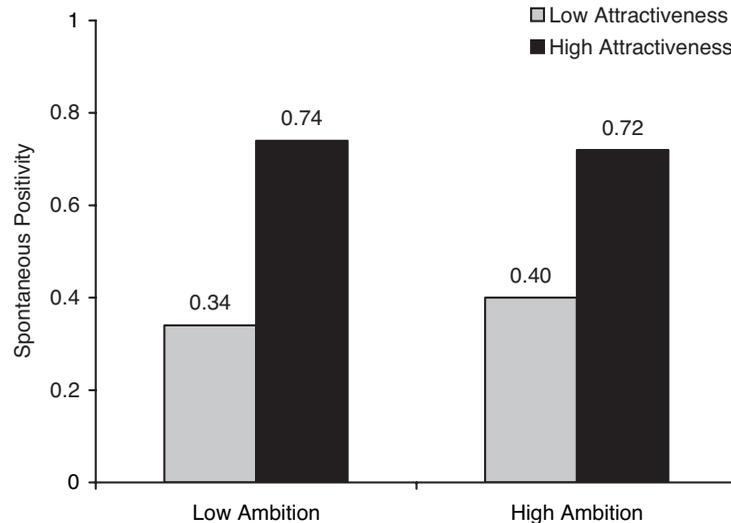


Figure 1. Experiment 1: Mean values of spontaneous target evaluations as a function of facial attractiveness (high vs. low) and self-described ambition (high vs. low).

Chinese ideographs that were preceded by the picture of the target individual in the dating profile by the total number of trials featuring that target (Cronbach's $\alpha = .90$). Hence, priming scores of spontaneous evaluation can range from 0 to 1, with higher scores indicating more positive evaluations.¹ In order to test the impact of attractiveness and ambition on spontaneous evaluations, positivity scores were submitted to a 2 (attractiveness) \times 2 (ambition) ANOVA. This analysis revealed a significant main effect of attractiveness, $F(1, 96) = 77.40, p < .001, \eta^2 = .446$ (see Figure 1). Consistent with our predictions, participants showed more favorable responses toward the target individual in the profile when the target was attractive than when he was unattractive. No other main or interaction effect reached statistical significance (all $F_s < 1.07$).

Deliberate Evaluations

An index of deliberate evaluations of the target individual was created by averaging each participant's item ratings on the likeability questionnaire (Cronbach's $\alpha = .89$). Submitted to the same 2 (attractiveness) \times 2 (ambition) ANOVA, this analysis revealed a significant main effect of ambition, such that participants showed more favorable evaluations of the target when he was ambitious than when he was unambitious, $F(1, 96) = 5.28, p = .02, \eta^2 = .052$ (see Figure 2). In addition, there was a significant main effect of attractiveness indicating that participants showed more favorable evaluations of the target in the profile when he was attractive than when he was unattractive, $F(1, 96) = 17.39, p < .001, \eta^2 = .153$ (see Figure 2).

Consistency

Drawing on Gawronski and Bodenhausen's (2006a, 2007) assumption that the influence of spontaneous affective reactions on deliberate evaluative judgments depends on the consistency of the affective response with other momentarily considered propositional information (see Gawronski et al., 2008a; Gawronski & Strack, 2004), we hypothesized that attractiveness-related, spontaneous evaluations provide a basis for deliberate evaluations when spontaneous evaluations

¹Payne et al. (2005) suggested a baseline correction for AMP scores in which the proportion of more pleasant responses on trials with a control prime (e.g., gray square) is subtracted from the proportion of more pleasant responses on trials with the relevant prime. This baseline correction revealed identical patterns of results in the current study; however, reliability estimates, and correspondingly the effect sizes of our experimental manipulations tended to be lower for baseline-corrected scores.

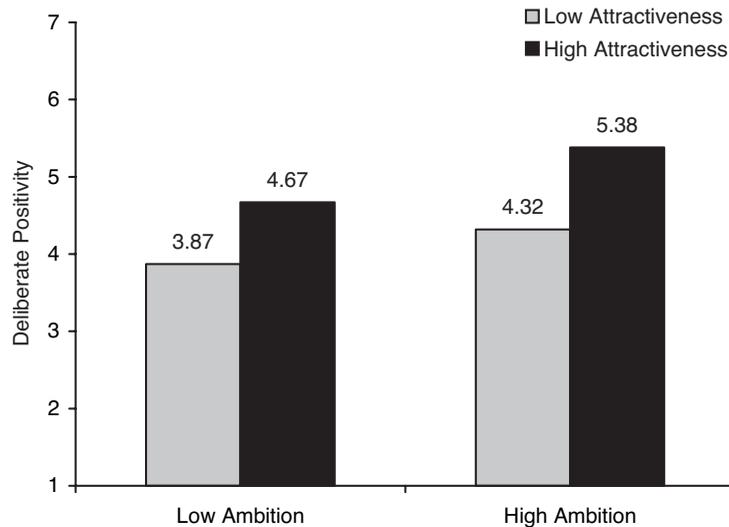


Figure 2. Experiment 1: Mean values of deliberate target evaluations as a function of facial attractiveness (high vs. low) and self-described ambition (high vs. low).

are consistent, but not when they are inconsistent with the information about the target's ambition. To test this assumption, we recoded our ambition manipulation to reflect its consistency with the valence of the attractiveness manipulation. Specifically, ambition was coded as consistent with attractiveness when (a) both ambition and attractiveness were high or (b) both ambition and attractiveness were low. In contrast, ambition was coded as inconsistent with attractiveness when (a) ambition was high, but attractiveness was low or (b) ambition was low, but attractiveness was high. In line with our predictions, a 2 (attractiveness: high vs. low) \times 2 (ambition: consistent vs. inconsistent with attractiveness) ANOVA on deliberate evaluations revealed a significant two-way interaction, $F(1, 96) = 5.28, p = .02, \eta^2 = .052$, showing a significant effect of attractiveness when it was consistent with the ambition information ($M_s = 3.87$ vs. 5.38 , respectively), $F(1, 47) = 21.66, p < .001, \eta^2 = .315$, but not when the two kinds of information were inconsistent ($M_s = 4.32$ vs. 4.67 , respectively), $F(1, 49) = 1.70, p = .20, \eta^2 = .034$.

As the two-way interaction reflecting these effects is statistically equivalent to the main effect of ambition reported above (Brauer & Judd, 2000), it remains ambiguous as to whether the effects on deliberate evaluations should be interpreted as two independent main effects of the two manipulations or as a consistency-related interaction. Thus, to provide more convincing evidence for our consistency interpretation, we investigated the correlations between spontaneous and deliberate evaluations in the two consistency conditions. Drawing on the APE model (Gawronski & Bodenhausen, 2006a, 2007), we argue that spontaneous evaluations should serve as a basis for deliberate judgments when the two kinds of information are evaluatively consistent, but not when they are inconsistent. This assumption implies that the spontaneous and deliberate evaluations should be significantly correlated in the case of consistent information, but not in the case of inconsistent information (e.g., Gawronski et al., 2008a; Gawronski & Strack, 2004). Overall, spontaneous and deliberate evaluations were positively correlated ($r = .25, p = .01$). As predicted, however, this correlation was primarily driven by a significant correlation of spontaneous and deliberate evaluations in the consistent condition ($r = .45, p = .001$); in the inconsistent condition, spontaneous and deliberate evaluations were uncorrelated ($r = .04, p = .77$). The difference between these two correlations was statistically significant, $z = 2.15, p = .03$.

Discussion

The present results provide preliminary evidence for the differential impact of different kinds of information on impression formation processes in an online dating context. Specifically, we found that facial attractiveness served as a primary determinant of spontaneous evaluations, whereas self-described ambition influenced only deliberate, but not spontaneous evaluations. In addition, attractiveness showed significant effects on deliberate evaluations; however,

supplementary analyses suggest that this influence was limited to conditions when the attractiveness-related, spontaneous response was consistent, but not when it was inconsistent with the evaluation implied by the ambition information. Furthermore, spontaneous evaluations were significantly correlated with deliberate evaluations when the valence of the attractiveness information was consistent with the available information about ambition; however, spontaneous and deliberate evaluations were uncorrelated when the two kinds of information were evaluatively inconsistent. Using the APE model (Gawronski & Bodenhausen, 2006a, 2007) as an interpretive framework, these findings are consistent with the claim that exposure to an attractive target may elicit positive affective responses, but these responses may be discounted as a basis for a deliberate evaluation if they are inconsistent with other momentarily considered information, such as the target's low level of ambition. Conversely, exposure to an unattractive target may elicit less favorable affective responses, but these responses may be discounted as a basis for a deliberate evaluation when the target is ambitious.

Despite the consistency of these findings with our predictions, one may object that the target's facial attractiveness may have been the first information participants noticed when they were presented with the dating profile. As such, it is possible that the obtained effects on spontaneous evaluations simply reflect a stronger influence of earlier compared to later acquired information (Rudman, 2004; Wilson, Lindsey, & Schooler, 2000). In line with this contention, several studies have found that spontaneous evaluations often reflect the valence of earlier acquired information, and that the impact of later acquired information tends to be stronger for deliberate compared to spontaneous evaluations (e.g., Gregg, Seibt, & Banaji, 2006; Petty, Tormala, Briñol, & Jarvis, 2006). Thus, to rule out potential order effects, Experiment 2 provided the two kinds of information sequentially rather than simultaneously, while manipulating the order of information presentation. This manipulation not only helps to rule out the abovementioned alternative explanation; it also provides deeper insights as to whether our findings generalize to cases where (a) individuals first see a picture of a potential date at an online dating website and then click to see a verbal self-description of the target, and (b) individuals first see a verbal self-description and then have the chance to see a picture of the individual in the profile.

EXPERIMENT 2

Method

Participants and Design

A total of 80 heterosexual female undergraduates at the University of Western Ontario participated in a study on "online dating and attitude change" in return for course credit. Participants had a mean age of 18.60 years ($SD = 2.28$), with an age range of 17–33 years. Participants were randomly assigned to one of the conditions of a 2 (attractiveness: high vs. low) \times 2 (ambition: high vs. low) \times 2 (information order: attractiveness first vs. ambition first) between-subjects design. The order in which participants completed the two measures of spontaneous and deliberate evaluations following the impression formation task was counterbalanced across participants.

Impression Formation Task

The impression formation task in this study was identical to the one employed in Experiment 1, the only exception being that the picture and the self-description were presented sequentially rather than simultaneously. Half of the participants saw the target's picture first and were then presented with the target's self-description; the remaining half saw the target's self-description first and were then presented with the target's picture.

Measures and Procedure

The measure of deliberate evaluations was identical to the one employed in Experiment 1. Spontaneous evaluations were assessed with the same AMP (Payne et al., 2005) employed in Experiment 1, the only difference being that we included a set of five distracter faces as primes to reduce excessive repetitions of the same two faces. Overall, the AMP variant employed in this study consisted of a total of 100 trials, including 25 trials using the attractive face as a prime, 25 trials using the unattractive face as a prime, 25 distracter trials using the 5 distracter faces as primes, and 25 filler trials using a

gray square as a prime. The order of the two measures was counterbalanced across participants. As the order of measures did not qualify any of the obtained effects, this variable was dropped as a separate factor in the following analyses. The overall procedure was identical to Experiment 1, the only exception being the sequential presentation of attractiveness and ambition information.

Results

Spontaneous Evaluations

Responses on the priming task were aggregated using the same procedure employed in Experiment 1 (Cronbach's $\alpha = .86$).² Scores of spontaneous positivity were submitted to a 2 (attractiveness) \times 2 (ambition) \times 2 (information order) ANOVA, which revealed a significant main effect of attractiveness, $F(1, 72) = 15.50, p < .001, \eta^2 = .18$ (see Figure 3). Replicating the findings of Experiment 1, participants showed more favorable responses to the target individual in the profile when the target was attractive than when he was unattractive. No other main or interaction effects reached statistical significance (all F s < 1).

Deliberate Evaluations

The responses to the five items on the likeability questionnaire were averaged to create an index of deliberate positivity (Cronbach's $\alpha = .91$). Submitted to the same 2 (attractiveness) \times 2 (ambition) \times 2 (information order) ANOVA, this index

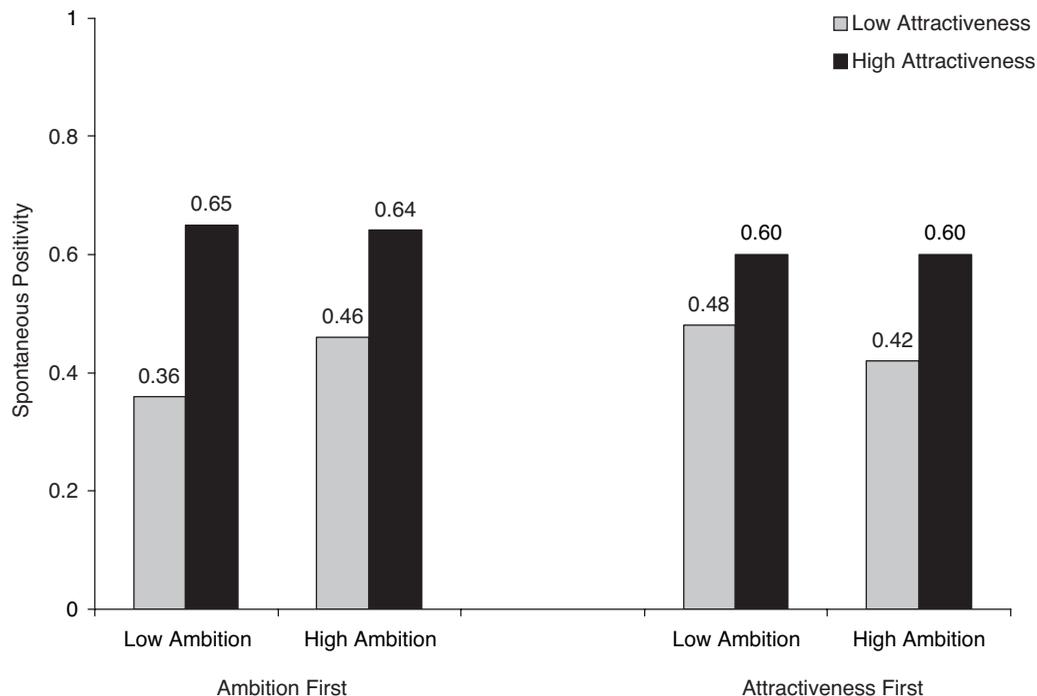


Figure 3. Experiment 2: Mean values of spontaneous target evaluations as a function of facial attractiveness (high vs. low), self-described ambition (high vs. low), and order of information presentation (ambition first vs. attractiveness first).

²As with Experiment 1, baseline-corrected scores revealed identical patterns of results; however, reliability estimates, and correspondingly the effect sizes of our experimental manipulations tended to be lower for baseline-corrected scores.

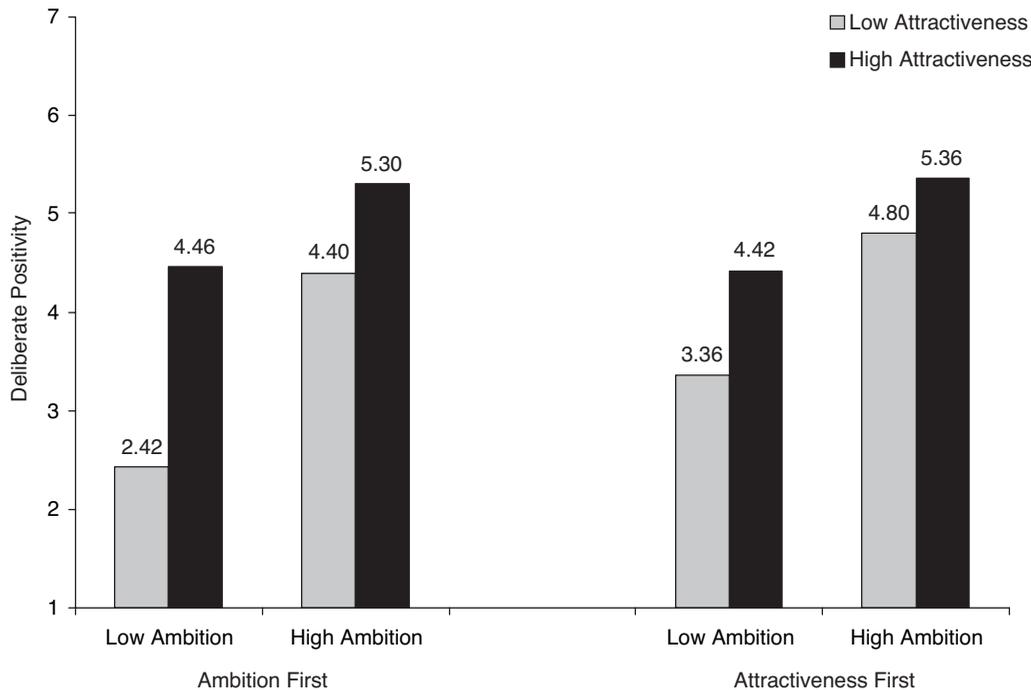


Figure 4. Experiment 2: Mean values of deliberate target evaluations as a function of facial attractiveness (high vs. low), self-described ambition (high vs. low), and order of information presentation (ambition first vs. attractiveness first).

revealed a significant main effect of attractiveness, $F(1, 72) = 26.41, p < .001, \eta^2 = .27$, and a significant main effect of ambition, $F(1, 72) = 34.34, p < .001, \eta^2 = .32$ (see Figure 4). Replicating the findings of Experiment 1, participants rated the target as more likable when he was attractive than when he was unattractive. In addition, participants rated the target more positively when he was ambitious than when he was unambitious. Furthermore, there was a marginally significant interaction between attractiveness and ambition, $F(1, 72) = 3.42, p = .07, \eta^2 = .05$, indicating that the effect of ambition was somewhat more pronounced when the target was unattractive than when he was attractive, even though both effects reached the conventional level of statistical significance; unattractive: $F(1, 38) = 22.72, p < .001, \eta^2 = .37$, attractive: $F(1, 38) = 11.07, p = .01, \eta^2 = .23$. Order of information presentation did not qualify any of these effects (all $F_s < 1$). No other main or interaction effects reached statistical significance (all $F_s < 2.35$).

Consistency

In line with the analyses of Experiment 1, we re-coded our ambition manipulation to reflect its consistency with the valence of the attractiveness manipulation, and then submitted deliberate evaluations to a 2 (attractiveness: high vs. low) \times 2 (ambition: consistent vs. inconsistent with attractiveness) \times 2 (information order: attractiveness first vs. ambition first) ANOVA. Consistent with the results of Experiment 1, this ANOVA revealed a significant two-way interaction, $F(1, 72) = 34.34, p < .001, \eta^2 = .32$ showing a significant effect of attractiveness when it was consistent with the ambition information ($M_s = 2.89$ vs. 5.33 , respectively), $F(1, 36) = 92.61, p < .001, \eta^2 = .72$, but not when the two kinds of information were inconsistent ($M_s = 4.60$ vs. 4.40 , respectively), $F(1, 36) = 0.19, p = .66, \eta^2 = .01$. To further corroborate our interpretation in terms of an interactive influence (see Brauer & Judd, 2000), we investigated the correlations between spontaneous and deliberate evaluations in the two consistency conditions. Overall, spontaneous and deliberate evaluations showed a significant positive correlation ($r = .35, p = .01$). Moreover, in line with the results of Experiment 1, this correlation was primarily driven by a significant correlation of spontaneous and deliberate evaluations in the consistent condition ($r = .47, p = .01$); in the inconsistent condition, spontaneous and deliberate evaluations were uncorrelated ($r = .18, p = .26$); however, the difference between these correlations failed to reach the conventional level of statistical significance, $z = 1.41, p = .15$.

Discussion

The present study investigated how the order of information about facial attractiveness and self-described ambition influences spontaneous and deliberate evaluations of a potential dating partner in an online dating context. Replicating the findings of Experiment 1, our results showed that female participants' deliberate evaluations were influenced by both a male target's attractiveness and his level of ambition. In contrast, spontaneous evaluations were affected only by the target's attractiveness, corroborating the asymmetrical effects obtained in Experiment 1.

Supplementary analyses further suggest that the influence of attractiveness on deliberate evaluations was limited to conditions when the attractiveness-related, spontaneous response was consistent, but not when it was inconsistent with the evaluation implied by the ambition information. Moreover, spontaneous evaluations were significantly correlated with explicit evaluations when the valence of the attractiveness information was consistent, but not when it was inconsistent with the available information about ambition. Importantly, information order did not qualify any of these effects on either spontaneous or deliberate evaluations. These results suggest that facial attractiveness may be a primary determinant of spontaneous evaluations regardless of whether attractiveness information is acquired before or after self-descriptions of ambition become available.

The finding that information order had little influence on spontaneous and deliberate evaluations seems at odds with the commonly held view that first impressions are of the utmost importance. This assumption is especially widely held in the domain of interpersonal attraction. The present results are in line with earlier findings showing that deliberate evaluations tend to integrate multiple pieces of available information rather than placing a greater weight upon the initial impression (e.g., Gregg et al., 2006; Petty et al., 2006; Rydell & McConnell, 2006). Similarly, spontaneous evaluations were unaffected by the order in which the information in the dating profile was presented, but instead reflected the target's facial attractiveness regardless of information order. The latter finding suggests that spontaneous evaluations may in fact depend on the valence of informational cues that are most accessible during the elicitation of spontaneous evaluations, rather than by initially acquired information. Of course, it seems possible that initially acquired information may enjoy some kind of superiority, such that early information might often be more accessible in memory (Rudman, 2004); however, what ultimately matters is the accessibility of this information during the elicitation of a spontaneous response, rather than the time it was encoded. To the degree that facial attractiveness represents a cue that is highly salient and accessible in many contexts, these considerations suggest a dominance of attractiveness information in determining spontaneous evaluations, as obtained in the present studies (see also McConnell et al., 2008; Van Leeuwen & Macrae, 2004).

GENERAL DISCUSSION

Across two studies, we investigated spontaneous and deliberate evaluations of potential romantic partners within an online dating context. In Experiment 1, we examined the effects of different kinds of information—facial attractiveness and self-described ambition—on spontaneous and deliberate evaluations of a potential dating partner. In Experiment 2, we expanded the scope of our research to include information order as a potential factor that may moderate the impact of the two kinds of information. The results of the two studies demonstrate that facial attractiveness represents an important source of spontaneous evaluations, whereas self-described ambition had little impact on spontaneous evaluations (for related findings, see Edwards, 1990). In contrast, deliberate evaluations were influenced by both types of information, though their particular impact seemed to depend on their consistency. Drawing on theorizing by Gawronski and Bodenhausen (2006a, 2007), we argued that attractiveness-related, spontaneous evaluations provide the basis for deliberate evaluative judgments when the spontaneous response is consistent, but not when it is inconsistent with other momentarily considered propositional information, in this case information about the target's ambition. In line with these assumptions, we found a significant effect of attractiveness on deliberate evaluations only when the ambition information was evaluatively consistent with the attractiveness information, but not when it was evaluatively inconsistent. Further supporting the proposed relationship between spontaneous and deliberate evaluations, the two kinds of evaluation were significantly correlated when the ambition information was consistent, but not when it was inconsistent with the attractiveness information. Importantly, information order did not qualify the effects of facial attractiveness and self-described ambition on either spontaneous or deliberate evaluations suggesting a genuine difference between the two kinds of information in influencing spontaneous and deliberate evaluations.

The present research provides preliminary support for our speculative explanation of why stated and revealed mating preferences often conflict. Specifically, it seems possible that the particular processes involved in evaluating a potential dating partner determine what factors individuals consider important in a potential mate and whether or not they like a particular potential partner. If individuals engage in a deliberate validation of whether their subjectively desired characteristics are present or absent in a potential partner stated mating preferences should have a strong impact on partner evaluations (e.g., Goode, 1996; Rajecki et al., 1991). In this case, people may integrate different kinds of information in their evaluations, including facial attractiveness and self-described ambition. If, however, individuals do not engage in such a validation process—for instance when they rely on their momentary feelings or gut reactions to a potential partner—the impact of stated preferences may be reduced. Instead, factors that influence spontaneous affective responses to a given target (e.g., facial attractiveness) may succeed in determining an individual's revealed preference, such as the desire for further contact in a speed-dating context (e.g., Eastwick & Finkel, 2008; Kurzban & Weeden, 2005).

Relation to Previous Findings

The current results resemble earlier findings by McConnell et al. (2008) who examined how visual information about a target's attractiveness and verbal statements about this person's behavior influenced spontaneous and deliberate evaluations. In line with the current findings, the researchers found that spontaneous evaluations were influenced exclusively by the target's attractiveness for the highly attractive and highly unattractive targets, but remained unaffected by the verbal information about the target's behavior. Interestingly, McConnell et al. also found that deliberate evaluations were affected by the target's attractiveness only when the behavioral descriptions were evaluatively ambiguous, but not when they were unambiguously positive or negative. While the latter results may seem at odds with the current findings, it seems important to note that McConnell et al. investigated general evaluations in a decontextualized impression formation task, whereas our studies concerned goal-specific evaluations of potential partners in an online dating context. To the degree that attractiveness may be regarded as a relevant cue in dating contexts, but less relevant for decontextualized judgments of mere likeability, these differences may point to the flexible nature of propositional reasoning processes in weighing the contextual relevance of a given piece of information (Strack & Deutsch, 2004). For instance, in McConnell et al.'s study, positive or negative behavioral information may be regarded as the most relevant information for making a decontextualized likeability judgment, while attractiveness is deemed irrelevant as long as unambiguous behavioral information is available. Conversely, in our study, attractiveness may be regarded as relevant information for judgments about a potential dating partner, at least as long as it is consistent with other dating-relevant information (e.g., level of ambition). As such, the apparent inconsistency between the present results and McConnell et al.'s findings can be easily resolved from the perspective of the APE model, according to which subjective validity (or relevance) of a given piece of information represents a crucial factor for the use of this information in making a deliberate evaluative judgment (see also Gawronski & Sritharan, in press). Nevertheless, future research may help to clarify the boundary conditions under which a target's level of attractiveness influences deliberate evaluations, especially with respect to the perceived relevance of this feature to goal-related evaluations.

The current findings also speak to research examining how wearing facial cosmetics can influence spontaneous and deliberate evaluations. Huguët, Croizet, and Richetin (2004) found that young women were rated more negatively on a variety of traits when they wore facial makeup than when they did not, and this effect was independent of attributed physical attractiveness. In contrast, Richetin, Croizet, and Huguët (2004) found that pictures of women wearing facial makeup spontaneously activated associations with positive traits and high-status professions. The dissociation between these findings may be explained by the APE model's process distinction in manner similar to the patterns observed in our own results. In effect, facial makeup may activate positive associations, but these associations may be rejected in the process of propositional validation, which in fact may reverse the evaluative implication of the activated associations. Similar to the current discounting of attractiveness when a target's level of self-described ambition was inconsistent with this person's level of attractiveness, participants may have rejected the attractiveness of women wearing facial makeup when they have deliberated on the source of this attractiveness (cosmetics vs. natural beauty). In fact, they may have considered potential implications for what the wearing of facial makeup may suggest about the individual's personality (e.g., this person is shallow), thereby coming to a conclusion that stands in direct opposition to their spontaneous response.

Even though the present research used the APE model (Gawronski & Bodenhausen, 2006a, 2007) as a guiding framework, dissociations between spontaneous and deliberate evaluations have been addressed by various other models,

such as the MODE Model (Fazio, 2007), the dual attitudes model (Wilson et al., 2000), and the Systems of Evaluation Model (SEM; Rydell & McConnell, 2006). For instance, McConnell et al. (2008) interpreted their findings in terms of the SEM, which shares several assumptions with the APE model; however, the SEM differs from the APE model in that it proposes the storage of two independent attitudes (implicit vs. explicit) in two distinct memory systems (associative versus rule-based). Applied to the present findings, the SEM would argue that dissociations between spontaneous and deliberate evaluations emerge because the two memory systems are differentially responsive to different kinds of information (i.e., the associative system being more responsive to visual attractiveness; the rule-based system being more responsive to verbal descriptions of ambition). This perspective differs from the APE model, according to which propositional processes monitor the input of associative processes in terms of subjective validity and relevance (e.g., by using consistency as a marker of validity). Thus, whereas the SEM explains dissociations between spontaneous and deliberate evaluations by two mutually independent memory representations, the APE model proposes two distinct, but interacting processes that operate on the basis of a single representation. Even though it is notoriously difficult, if not impossible, to empirically distinguish between dual and single representation models (Greenwald & Nosek, 2009),³ we believe that the APE model is able to integrate the majority of findings obtained under the framework of the SEM. These findings include, among others, McConnell et al.'s (2008) research on visual attractiveness and behavioral descriptions as sources of spontaneous and deliberate evaluations (see above), and research by Rydell, Strain, and Mackie (2008) showing that discrepancies between spontaneous and deliberate evaluations can have unique effects on information processing (see Gawronski, Strack, & Bodenhausen, 2009). Conversely, we believe that the SEM has some difficulties integrating empirically confirmed predictions of the APE model, in particular predictions about mutual interactions between associative and propositional processes (e.g., Whitfield & Jordan, 2009) and differences in the correlation between spontaneous and deliberate evaluations as a function of cognitive consistency (e.g., Gawronski et al., 2008a; Gawronski & Strack, 2004), including the correlation patterns obtained in the current studies. Of course, it remains possible that any finding that has been obtained under the framework of one theory can be reinterpreted by the other theory (Greenwald & Nosek, 2009). Thus, what may ultimately decide between different models may not be a "crucial" test, but the amount of research that is inspired by a given theory and the relative ease of integrating the available evidence (Lakatos, 1970).

Limitations and Future Directions

Despite the consistency of these findings with our predictions, there are a few caveats that need to be discussed. First, our studies were particularly concerned with mating preferences in heterosexual female participants. As such, it remains an open question whether these findings generalize to heterosexual male participants. Given earlier evidence for gender-differences in the type of characteristics desired in a romantic partner, future studies investigating similar processes in male participants seem essential before one can draw strong conclusions about similar effects in male populations. Similar concerns could be raised about the average age of our sample, which was between 18 and 19 years in both studies. As young adults may put a greater emphasis on attractiveness compared to older adults, it seems possible that the superiority of facial attractiveness in determining spontaneous responses may decrease as a function of age. Future studies comparing the impact of facial attractiveness and self-described ambition across age groups may be helpful in answering this question.

Second, our manipulation of facial attractiveness and self-described ambition confounded the modality of a given piece of information (i.e., visual vs. verbal) with the content of that information (i.e., attractiveness vs. ambition). As such, it remains an open question whether the superiority of facial attractiveness in influencing spontaneous evaluations is due to its processing modality (i.e., faster processing of visual compared to verbal information; see Glaser, 1992) or to its particular content domain (i.e., attractiveness as an evolutionary cue to health; see Jones et al., 2001). Even though the manipulations employed in the present studies reflect the typical confounding of these kinds of information in online dating contexts, it would be interesting to investigate the respective roles of information modality and information content more thoroughly. For instance, perceived ambition of a potential dating partner could be manipulated visually by the type of clothing that is worn by the target in the picture. In line with this contention, Townsend and Levy (1990) found that varying the clothing worn by males indicative of status (i.e., business suits vs. fast-food uniforms) influenced female

³Another debate that seems important to mention in this context concerns the controversy between single-process and dual-process models. More detailed discussions of the respective arguments in this debate, in particular regarding the APE model, are provided by Gawronski and Bodenhausen (2006b) and Kruglanski and Dechesne (2006).

participants' attraction to these males as potential partners. Similar results have been found in research on spontaneous evaluations, showing that clothing indicative of different social roles can influence spontaneous evaluations of the same target (e.g., Barden, Maddux, Petty, & Brewer, 2004). Future studies may provide deeper insights into the determinants of spontaneous and deliberate evaluations by manipulating attractiveness and ambition within the same modality.

Finally, one may object that our measures of spontaneous evaluations used pictures of the respective targets as primes, which may increase the salience of facial attractiveness in the task. Even though we agree that this confounding limits the possibility of drawing strong theoretical inferences, it seems less problematic if it is evaluated against its similarity to real-life situations. For instance, the measure of spontaneous evaluations seems quite similar to the situation of having a first in-person meeting. In such situations, a person's facial attractiveness tends to be highly salient, such that it may have a strong impact on spontaneous evaluative responses to that person. Conversely, our measure of deliberate evaluations seems closer to the situation of ruminating about a potential partner when this person's facial attractiveness is less salient and other information may be integrated in one's overall evaluation. Nevertheless, future research manipulating the salience of the target's facial attractiveness in the measure of spontaneous evaluation (e.g., by using names as primes) may provide deeper insights into the relative impact of different kinds of information on spontaneous and deliberate evaluations of potential dating partners. To further increase ecological validity, it may also be useful to examine how exposure to multiple targets (instead of a single target) contributes to spontaneous and deliberate evaluations.

CONCLUSION

In sum, our findings provide deeper insights into the determinants of spontaneous and deliberate evaluations of potential partners in an online dating context. In the present studies, we found that facial attractiveness and self-described ambition differentially influenced spontaneous and deliberate evaluations, and that their respective impacts are independent of the particular order in which relevant information is acquired. We believe that considering the processes that underlie the evaluation of a potential dating partner can bring clarity to discrepant findings in the literature on romantic attraction, especially in initiation settings that involve minimal interaction. As dating shifts toward more non-traditional forms of initial interaction (e.g., online dating, speed-dating), impression formation in these contexts is worthy of attention from relationship researchers to better understand the factors that influence whether or not individuals will ultimately move on to pursue a relationship together.

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