Separating Fact From Fiction: An Examination of Deceptive Self-Presentation in Online Dating Profiles

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This study examines self-presentation in online dating profiles using a novel cross-validation technique for establishing accuracy. Eighty online daters rated the accuracy of their online self-presentation. Information about participants' physical attributes was then collected (height, weight, and age) and compared with their online profile, revealing that deviations tended to be ubiquitous but small in magnitude. Men lied more about their height, and women lied more about their weight, with participants farther from the mean lying more. Participants' self-ratings of accuracy were significantly correlated with observed accuracy, suggesting that inaccuracies were intentional rather than self-deceptive. Overall, participants reported being the least accurate about their photographs and the most accurate about their relationship information. Deception patterns suggest that participants strategically balanced the deceptive opportunities presented by online self-presentation (e.g., the editability of profiles) with the social constraints of establishing romantic relationships (e.g., the anticipation of future interaction).

Keywords: *deception; self-presentation; online dating; romantic relationships; computer-mediated communication*

The quest for love has inspired people to invest much thought and effort in the process of "engineering" successful romantic encounters (Leone & Hawkins, 2006). Crucial to the success of these encounters is people's ability to present themselves as desirable mates (Metts, 1989), an endeavor that often involves the use of deception.[1] For instance, both men and women report lying to an attractive member of the opposite sex to initiate a date (Rowatt, Cunningham, & Druen, 1998).

Online dating, a service that allows users to create Internet-based profiles describing themselves and to contact or be contacted directly by others, has become an increasingly popular choice for the engineering of romantic encounters (Egan, 2003). According to estimates, 16 million Americans report having used online dating services, 3 million of whom have entered long-term relationships with their online dating partners, including marriage (Madden & Lenhart, 2006). Despite its popularity, online dating is often perceived as being rife with deception, a concern that may arise from the separation between the self presented online and the embodied self. In the absence of direct physical contact between daters, characteristics such as height and weight can be easily misrepresented, photographs manipulated, and status and income exaggerated.

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Indeed, recent surveys report that 86% of online daters believe that others misrepresent their physical appearance (Gibbs, Ellison, & Heino, 2006) and many identify deception as the biggest disadvantage of online dating (Brym & Lenton, 2001; Madden & Lenhart, 2006). Although existing research reveals suspicions about lying in online dating profiles, it has been limited to self-report data that do not describe actual deception practices. The reliance on self-report methods is an important limitation for deception research in general, as it involves asking participants to be honest about lying (DePaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996).

In the present study, we address this issue by comparing the information presented by daters in their online profiles with their observed characteristics in an effort to establish *ground truth* about the information in online dating profiles. Ground truth is defined as the actual facts of a situation and is used to determine, with certainty, whether information is accurate (see Vrij, 2000). These ground truth data, in addition to participants' views of their own accuracy, are used to assess deceptive practices in online dating profiles and to examine the self-presentational factors that shape the nature of deception in this context of relationship formation.

Self-Presentation, Romance, and Deception

Initiating relationships involves important decisions regarding self-disclosure: what information to disclose and how to disclose it to create a favorable impression. This process of packaging and editing the self is an essential and ubiquitous component of any social interaction, and it is broadly construed as self-presentation (Baumeister, 1982; Goffman, 1959). Self-presentation is a creative endeavor that takes into account both the target audience and the context of the social interaction, and it involves making choices about what information to include, what to leave out, and whether to engage in deception (Schlenker, 2002; Schlenker & Pontari, 2000). Indeed, as DePaulo et al. (2003) note, self-presentational concerns are the most prevalent motivations for engaging in deceptive communication. For instance, a self-presentational goal to appear likable or competent can significantly increase the likelihood that someone will lie when meeting a potential partner for the first time (Feldman, Forrest, & Happ, 2002).

Perhaps nowhere are self-presentational pressures more explicit than in the dating arena. To be successful, daters must manage their presentation to appear desirable and compare favorably with others. By providing access to millions of profiles and allowing for direct comparisons among them, dating in an online context can render self-presentational goals highly salient. Under these circumstances, it is no surprise that some daters think of their online dating profiles as résumés, or strategic tools intended for marketing their "best" selves rather than for providing completely candid self-representations (Heino, Ellison, & Gibbs, 2005).

Upon closer examination, the online dating context may encourage individuals to experience opposing tensions when considering how to present themselves in their profiles. On one hand, they may wish to emphasize their positive attributes and present themselves as appealing. On the other hand, they may feel the need to put forth their true selves, complete with quirks and shortcomings, because ultimately they seek understanding and acceptance from their significant others (Ellison, Heino, & Gibbs, 2006; see also Reis & Shaver, 1988). For instance, self-verification theory (Swann, De La Ronde, & Hixon, 1994; Swann, Stein-Seroussi, & Giesler, 1992) argues that people prefer interaction and marriage partners who see them as they see themselves, rather than partners who merely evaluate them positively. How online daters, and daters more generally, resolve this tension between authenticity and impression management may be related to the specific constraints posed by *incipient* relationships.

Skillful self-presentation is vital in the beginning stages of relationships because daters will use any information available to decide whether to pursue the relationship (Derlega, Winstead, Wong, & Greenspan, 1987). The high levels of information seeking observed in new relationships tend to increase the occurrence of falsification and distortion relative to more established relationships (Berger, 1987; Ekman, 1985). For example, Rowatt et al. (1998) note that the uncertainty of being accepted by potential partners increases the likelihood that daters will resort to deception to appear appealing. Buss (1988) also concludes that the most frequently used strategy in attracting a date is to make oneself appear more attractive or competent than competitors. Because the online dating arena counts millions of subscribers, this sense of competitiveness and the pressure to use deception as a resource for appearing more attractive should be high.

Telling Lies Online

The preceding overview suggests that daters should engage in deception to accomplish the self-presentational goals salient in incipient relationships. However, online daters' deceptive behavior should also be guided by the specific capabilities and limitations of the medium in which self-presentation occurs. For instance, computer-mediated communication offers resources (e.g., the ability to edit one's presentation and fix potential mistakes) and deterrents (e.g., a record of the presentation is preserved) for deceptive self-presentation that are absent in face-to-face interaction.

Several specific factors should constrain patterns of deceptive self-presentation in online contexts, including

(a) the features of online communication and (b) the connection between one's online and offline self. The hyperpersonal model (Walther, 1996), which addresses the nature of relational development in online contexts, provides a useful framework for understanding how these factors may influence deception in online dating. One of the key propositions of the hyperpersonal model is that computer-mediated communication enables *selective self-presentation*, a strategic, controlled, and optimized version of face-to-face self-presentation. In the context of online dating, the *asynchronicity* of computer-mediated communication allows people to formulate their ideas into more composed and thoughtful messages. They can plan, create, and edit their self-presentation, including deceptive elements, much more deliberately than they would in face-to-face first encounters. The *reduction of communication cues*, especially nonverbal and visual cues (with the exception of photographs), spares online daters some of the common predicaments faced by traditional daters trying to make a good first impression. While deciding how to present themselves in their profiles, online daters do not have to worry about their apparel or body language, or about saying the right thing at exactly the right moment. Similarly, through the *reallocation of cognitive resources*, online daters can put all their mental efforts into creating flattering profiles instead of having to juggle the many mental tasks required by face-to-face interaction.

These features of computer-mediated communication facilitate selective self-presentation and prevent potentially undesirable nonverbal cues from being expressed. This is particularly important in the context of deception, because nonverbal behavior is often assumed to be the least controllable and the most likely to betray deception (Ekman, 1985; Vrij, 2000). Moreover, communicators have been shown to rely on nonverbal cues when attempting to detect deception (DePaulo, Zuckerman, & Rosenthal, 1980; Vrij, 2000). In online dating, where nonverbal behavior is filtered out, the lack of nonverbal cues should enhance the use of deception as a resource in self-presentation and potentially make deception difficult to detect.

There are, however, social and technical aspects of computer-mediated communication that may *discourage* deception. *Recordability*, or the ability to save and archive a profile, can preserve evidence about deception (Hancock, Thom-Santelli, & Ritchie, 2004). Daters may not feel comfortable knowing that a record of their lie is contained in their profile. Online daters' judgments about whether to deceive should also be guided by relational considerations. For instance, the *anticipation of future interaction* (Walther, 1996), or online daters' expectation of meeting potential partners in person, should be a deterrent against deception. Blatant deception about physical appearance, for example, will be readily detected in a face-to-face meeting. Regardless of whether they pertain to one's physical appearance, big lies (e.g., a married man stating that he is single) should be detectable in the long run. Recent research suggests that online daters are sensitive to this constraint. The more online daters desired a face-to-face relationship, the more honest they reported being in their online interactions (Gibbs et al., 2006). Because establishing relationships is the raison d'être of online dating, anticipated future interaction should constrain the magnitude of deceptions in online dating profiles.

Similarly, *warranting*, or the connection between the self and a given self-presentation (Walther & Parks, 2002), may also constrain deception in online dating profiles. Because warrants act as a link between online and offline personae, they increase the possibility of deception detection and should curb deception online. Two possible warrants in online dating include (a) profile photographs and (b) awareness of the profile within a dater's social network. First, assuming that photographs are accurate, the posting of photographs makes daters recognizable and therefore accountable for their statements. Because online dating services protect the anonymity of their subscribers by omitting names and contact information, the profile photograph is often the only unambiguous source of information tying daters to their identity. Daters who post accurate photographs should be more honest than those who do not because they become recognizable to friends and acquaintances who see the profile. Second, and relatedly, the more members of daters' social networks are aware of their online dating activities, the less daters should engage in deception. Online daters who are open to their friends and family about engaging in online dating should be more concerned that deceptions in their profiles will be detected by people who know the truth about them (Donath & Boyd, 2004).

Gender and Deception

Patterns of deception in online dating profiles may also be explained through gender differences. Extensive research in sociobiology and evolutionary psychology suggests that men and women use different strategies for enhancing their reproductive fitness, according to the requirements of their biological makeup (Ahuvia & Adelman, 1992; Buss, 1988; Buss & Schmitt, 1993; Hirschman, 1987; Hitsch, Hortacsu, & Ariely, 2004; Jagger, 2001; Lynn & Bolig, 1985). In brief, men seek youth and physical attractiveness, whereas women look for ability to provide and indicators of social status, such as education and career (Lance, 1998; Woll & Cozby, 1987).

Research in the dating arena has confirmed that men with higher status occupations are more successful in attracting women, although the same is not true for

women (Hitsch et al., 2004). When reviewing personal advertisements, women have been shown to prefer older and financially secure partners, whereas men seek physical attractiveness and youth (Lynn & Bolig, 1985). Similarly, in newspaper personal advertisements, men emphasized their financial resources, status, and occupation, whereas women drew attention to their physical attractiveness and body shape (Ahuvia & Adelman, 1992; Hirschman, 1987; Jagger, 2001). Because daters sometimes engage in deception to meet the expectations of the opposite sex (Buss & Schmitt, 1993), we may expect men to enhance their social status indicators (e.g., education, occupation, career) and women to enhance their youthfulness and physical attractiveness.

The Present Study

In the present study, we invited online daters to the lab and asked them to assess the accuracy of their profile information and the acceptability of deception in online dating profiles. We then measured their height and weight and recorded their age from their driver's licenses, which allowed us to establish ground truth about those characteristics for each participant. Establishing ground truth permitted the cross-validation of participants' online self-presentation with their actual height, weight, and age.

Given the previously mentioned social and technical tensions faced by online daters, we expected that participants would engage in deception frequently but that the magnitude of the deceptions would be relatively small. The content of the lies should also be guided by gender-based goals. Specifically, we expected men to lie about indicators of social status, including education and occupation, and to find lying in these categories more socially acceptable than for women. Physically, we expected men to lie more about their height than women, as height is often associated with higher status in men. We expected women to lie more about their age and physical attractiveness indicators, such as weight, and find it more acceptable to lie about these characteristics. Finally, we predicted that the more warranting information is available in a profile, the more accurate the profile. Specifically, profiles that include photographs and that are known to members of the daters' social circle should be more accurate than profiles that do not have these characteristics.

It is important to note that there is a conceptual difference between deception and inaccuracy; the former term encompasses *intent* to misrepresent, whereas the latter does not. Arguably, participants in the present study may have been inaccurate simply because they did not know the truth, not because they had the intent to misrepresent themselves (i.e., someone truly believes he weighs 165 lb, when in fact he weighs 170 lb). Strictly speaking, the cross-validation method we employed in the current study allowed us to establish the degree to which profiles were *inaccurate* but not necessarily *deceitful*. However, by comparing ground truth data with participants' ratings of their own accuracy, we sought to determine the extent to which participants were aware of their own inaccuracies and therefore engaged in intentional deception.

METHOD

Participants and Recruitment

Data collection took place in New York City, a location that was chosen because it provided access to participants across a variety of socioeconomic and ethnic strata. Participants were recruited through print and online advertisements in the *Village Voice*, the area's most prominent weekly newspaper, and on Craigslist.org, a popular classifieds portal. The advertisements called for participation in a study of self-presentation in online dating profiles. Deception was not mentioned at any point during recruitment, nor were potential participants given any direct indication that their online dating profiles would be viewed by the researcher. This procedure was meant to offset potential self-selection bias, whereby deceptive daters would avoid signing up.

Online daters were eligible to participate if they were a subscriber to one of four popular online dating services in the United States: Match.com, Yahoo! Personals, Webdate, and American Singles. We included only traditional dating sites, where individuals create their own profiles and initiate contact with others directly, and excluded sites that rely on matching systems to pair users based on their responses (e.g., eHarmony). A total of 479 online daters signed up for participation through the study's Web site. At sign-up, they provided information about the online service they used, their user name, and their e-mail address. User names served to locate online dating profiles and identify participants across the demographics of gender, age, and sexual orientation. Online daters were invited to participate in the study if we could confirm that they had a profile in one of the four services listed and that they were heterosexual.[2] We also attempted to match participants' age as closely as possible to the demographics of a national sample of online daters (Fiore, 2004).

Of the 479 online daters who signed up, 251matched our age demographics and sexual orientation criteria and were invited to participate in the study. From these invitations, 84 participants set up an appointment to visit the lab. Four participants were excluded from analysis after determining that they did not meet the previously described criteria.[3] The final sample included

80 participants (40 men, 40 women), of whom 45 (53.3%) were Match.com/MSN Match.com users, 29 (34.5%) were Yahoo! Personals users, 4 (4.8%) were Webdate users, and 2 (2.4%) were American Singles users. Relative to the demographics of a national sample (Fiore, 2004), young men and women (ages 21-30) were overrepresented in the present sample, whereas older men and women (ages 51-65) were underrepresented.

Procedure

Participants were interviewed individually, using a procedure that involved several phases. First, participants were presented with a printed copy of their online dating profile that had been downloaded before they came to the lab. The profiles of each of the dating services were composed of a combination of responses to open-ended questions (e.g., "About Me," "In My Own Words") and closed-ended questions (e.g., activities/interests, hair color), as well as optional profile photographs. Participants were asked to rate the accuracy of their responses on each of these profile items, including the accuracy of their profile photograph. Accuracy was defined as "the extent to which the answer reflects the truth about you now," and was operationalized on a scale from 1 (*least accurate*) to 5 (*most accurate*). If participants had selected "I'll tell you later" or "No answer" for a specific question, they were asked to report what they would have answered had the question been mandatory (i.e., "The profile doesn't make it mandatory for you to specify your weight, but if it did, what would you say?") and then rate the accuracy of that answer.

Once participants had rated the items for accuracy, they rated the social acceptability of lying on each of the profile items. Social acceptability was defined as "the degree to which you believe it is acceptable to lie on this topic" (e.g., "Generally, how acceptable is it to lie about your weight?"), rather than how acceptable their particular lies had been. Participants rated social acceptability on a scale from 1 (*completely unacceptable to lie*) to 5 (*completely acceptable to lie*). All profile categories were scored for acceptability, not just those on which participants had lied.

Note that because the profiles featured on the four dating services (i.e., Match.com, Yahoo! Personals, Webdate, and American Singles) differed slightly from each other, we focused on the 15 profile items that are common to all four services and that constitute the most relevant descriptors for online daters. These items are: age, height, body type, hair color, eye color, occupation, education, income, relationship status, have children, smoking, drinking, interests, politics, and religion. The responses to these items were aggregated into five composite categories as follows: physical appearance (height, body type, hair color, eye color), social status (occupation, education, income), relationship information (relationship status, have children), habits and interests (smoking, drinking, interests) and beliefs (politics, religion). Age did not fit in any of these categories and was examined separately. The scores for the composite categories were calculated by averaging participants' item ratings included in that category. For example, a participant reporting the accuracy of his politics item as 3 and his religion item as 4 would have a 3.5 score for the accuracy of his beliefs.

After scoring their profile for accuracy and social acceptability, participants completed several questionnaires. To assess warranting, one of these questionnaires asked how many people in daters' social circle were aware of their profile through the following item: "How many people whom you know personally are aware of your online dating profile?" The other questionnaires assessed personality characteristics that are not discussed in this article.

In the last phase of the procedure, independent verification of participants' height, weight, and age (referred to as *observed characteristics*) was performed. Height and weight was measured by the researcher using a standard measuring tape and weight scale, and age was recorded from drivers' licenses. All participants were required to remove their shoes and outerwear to obtain accurate height and weight measurements.

Upon completion of the study, participants were debriefed and paid $30 as compensation for their time.

RESULTS

Accuracy

The accuracy of participants' profiles was assessed using two approaches: self-report and cross-validation. First, participants reported the accuracy of their profile items. Second, the accuracy of some of these items (height, weight, and age) was independently verified. In the following we report the results obtained through both approaches.

Self-report accuracy. Recall that the five composite categories were physical appearance, social status, relationship information, habits and interests, and beliefs (see Table 1). Note that the accuracy score reported for each of the categories falls above 4.5 on the 5-point scale and that the mean accuracy score across all composite categories is 4.75, indicating a high degree of self-reported accuracy.

A 5 (category) × 2 (gender) mixed general linear model, with category as the repeated measure and

TABLE 1: Self-Report Accuracy Means and Standard Deviations for Men and Women

	Overall		*Men*		*Women*		
	M	SD	M	SD	M	SD	p
Physical appearance	4.75	0.41	4.78	0.43	4.72	0.38	.54
Height	4.66	0.66	4.59	0.79	4.73	0.50	.34
Body type	4.62	0.74	4.72	0.56	4.53	0.88	.25
Hair	4.83	0.57	4.89	0.51	4.77	0.62	.35
Eyes	4.91	0.33	4.97	0.16	4.85	0.42	.10
Social status	4.64	0.66	4.58	0.70	4.71	0.63	.38
Income	4.51	1.21	4.42	1.31	4.61	1.10	.56
Occupation	4.56	1.03	4.59	0.86	4.53	1.18	.78
Education	4.77	0.76	4.64	0.99	4.90	0.38	.13
Relationship history	4.94	0.33	4.90	0.45	4.98	0.16	.30
Relationship status	4.95	0.45	4.90	0.64	5.00	0.00	.31
Have children	4.92	0.50	4.90	0.64	4.95	0.32	.65
Habits and interests	4.59	0.59	4.60	0.60	4.58	0.58	.85
Smoking	4.41	1.19	4.49	1.19	4.35	1.21	.61
Drinking	4.62	0.77	4.67	0.62	4.58	0.90	.60
Interests	4.75	0.55	4.69	0.67	4.82	0.39	.33
Beliefs	4.79	0.54	4.88	0.45	4.70	0.60	.15
Politics	4.73	0.75	4.84	0.51	4.62	0.89	.22
Religion	4.81	0.68	4.88	0.54	4.74	0.79	.38
Age	4.48	1.22	4.43	1.30	4.53	1.16	.74
Average across profile items	4.65	0.25	4.65	0.28	4.65	0.24	.99

NOTE: Ratings are reported on a 5-point scale (1 = *completely inaccurate*, 5 = *completely accurate*).

gender as the between-subjects factor, examined whether self-reported accuracy scores differed across composite categories and between men and women. Self-reported accuracy varied significantly across the different categories, $F(4, 300) = 5.66$, $p < .001$. Post hoc pairwise comparisons (Bonferroni corrected to $p < .005$) revealed that participants reported lying about relationship information significantly less than all other categories. This pattern of results suggests that participants claim to be most accurate about their relationship information (i.e., their relationship status and whether they have children).

Men's and women's self-reported accuracy scores did not differ from each other, $F(1, 75) < 1$, nor did gender interact with the category factor, $F(4, 300) = 1.31$, $p = .26$, suggesting that men and women did not report lying differently across categories. As described in Table 1, univariate comparisons across males and females in each category revealed no gender differences in self-reported accuracy. To ensure that the categories were not masking gender differences at the individual item level (e.g., height, body type, eye color), independent *t* tests were used to compare male versus female accuracy for each item. Again, no gender effects were observed. Taken together, these data suggest there were no significant differences between men's and women's self-reported accuracy scores.

Observed accuracy. The first question of interest addressed the frequency of observed deception in online profiles. We assessed deception frequency by comparing profile information with observed characteristics, classifying participants as either lying or not lying on the categories of height, weight, and age. For height, only discrepancies greater than .5 in. were considered deceptive to allow for rounding (e.g., a 5 ft 4 1/2 in. woman reporting she is 5 ft 5 in. would be considered an accurate answer). For weight, only deviations greater than 5 lb were considered deceptive to allow for rounding up, daily weight fluctuations, and clothing weight. Age was considered accurate if the age in years reported in the profile matched the observed age.

As shown in Table 2, fully 81% of participants provided information in their online profile that deviated from at least one of their observed characteristics. This suggests that some degree of deception was employed by a substantial number of online daters. Within the three characteristics examined, a higher percentage of participants lied about their weight than either height or age, $\chi^2(2, N = 71) = 25.22$, $p < .001$. In fact, the weight of almost two thirds of the participants' was inaccurate by 5 lb or more. Age was the least lied about characteristic, whereas almost half of the participants lied about their height. Surprisingly, no reliable gender effects were observed, suggesting that the same proportion of men and women were inaccurate on each characteristic.

TABLE 2: Percentage of Participants Providing Deceptive Information

	Overall	*Males*	*Females*
Lied about height	48.1	55.3	41.5
Lied about weight	59.7	60.5	59.0
Lied about age	18.7	24.3	13.2
Lied in any category	81.3	87.2	75.6

The next question of interest addressed the magnitude of the inaccuracies. First, consider height. The average absolute deviation of reported height from the height observed in the lab was .77 in., with true measured height ranging from 3 in. taller to 1.75 in. shorter than participants reported in their profile. The relationship between the height information presented in the dating profile and participants' observed height is presented in the top panel of Figure 1. Points below the line represent participants whose profiles describe them as being taller than their lab measurements indicated. Points above the line indicate the opposite. A regression model including gender, profile height (centered), the Gender × Profile Height interaction term, and a quadratic term for profile height accounted for a significant amount of the variance in observed height ($R^2 = .96$). Although profile height was a significant predictor ($B = .94$), $t(77) = 16.66$, $p < .001$, it did not account for all of the variance in actual height, indicating that some inaccuracy was present in the online profiles. As expected, men ($M = .57$ in., $SD = .81$ in.) tended to overstate profile height more than women ($M = 0.03$, $SD = 0.75$), $t(77) = 3.08$, $p < .01$. In addition, as both men's and women's observed height departed from the sample mean, their profile height tended to deviate more from their observed height, as indicated by the significant quadratic term ($B = .02$), $t(77) = 1.80$, $p < .05$ (one-tailed).

Next, consider weight. The average absolute deviation between observed and profile weight was 9.04 lb, and participants' observed weight ranged from 35 lb heavier to 20 lb lighter than they reported in their profile. The same regression model applied to the weight variables accounted for a significant amount of the variance ($R^2 = .95$). Once again, profile weight was a significant but imperfect predictor of observed weight ($B = 1.14$), $t(77) = 14.20$, $p < .001$, suggesting some inaccuracy in the profiles for weight. As can be seen in the middle panel of Figure 1, women tended to underreport their weight ($M = –8.48$ lb, $SD = 8.87$ lb) significantly more than men ($M = –1.94$, $SD = 10.34$), $t(74) = 2.97$, $p < .05$. Once again, as both men's and women's weight departed from the sample mean, their profile height tended to deviate more from their observed height, as indicated by the significant quadratic term ($B = –.02$), $t(77) = 2.39$, $p < .05$.

Finally, the average absolute deviation between observed age and profile age was .55 years, and participants' actual age ranged from 3 years younger to 9 years older than they reported in their profile. The same model applied to the age variable accounted for a significant amount of the variance ($R^2 = .96$). As can be seen in the bottom panel of Figure 1, participants' reported age tended to match their actual age, and no difference in age inaccuracy was observed between males ($M = –0.51$ years, $SD = 1.61$ years) and females ($M = –0.37$ years, $SD = 1.96$ years), $t(73) < 1$. Although Figure 1 suggests that older participants were more likely to lie about their age, the quadratic term revealed that this trend was not significant ($B = –.002$), $t(77) < 1$.

Relationship between self-report and observed accuracy. As noted previously, the cross-validation procedure assesses only the discrepancies between profile and observed characteristics, and not whether these discrepancies represent intentional deception or unintentional deviations on the part of the participants. Unintentional deviations could be due to (a) self-deception (i.e., participants truly believe that their weight, height, or age is different from what it actually is) or (b) measurement error (e.g., due to naturally occurring fluctuation in height and weight). To determine whether the discrepancies between measured and reported characteristics could be accounted for by self-deception, we examined the correlations between participants' self-reported accuracy ratings and the discrepancies between measured and reported weight, height, and age. If participants were aware of the inaccuracies in their profiles, their self-reported estimations should correlate with observed discrepancies (e.g., the more participants diverge from their true weight, the lower they would rate the accuracy of their weight statement). In contrast, if self-deception was behind the inaccuracies, self-report and observed discrepancies should not be correlated (e.g., participants would still rate their weight statements as high in accuracy in spite of their measured weight diverging significantly from their reported weight).

Participants' self-reported estimations of their accuracy for height ($r = –.22$, $p < .05$), weight ($r = –.30$, $p < .01$), and age ($r = –.73$, $p < .001$) were all significantly correlated to the deviations between profile and measured characteristics (negatively correlated because lower accuracy scores correlated with bigger discrepancies). These results suggest that participants were aware of the inaccuracies in their profiles and that the discrepancies were most likely intentional. Thus, self-deception is an unlikely candidate for explaining the differences between measured and reported weight. Note that the correlations for age are much higher than the correlations for weight and height. This could be due to the

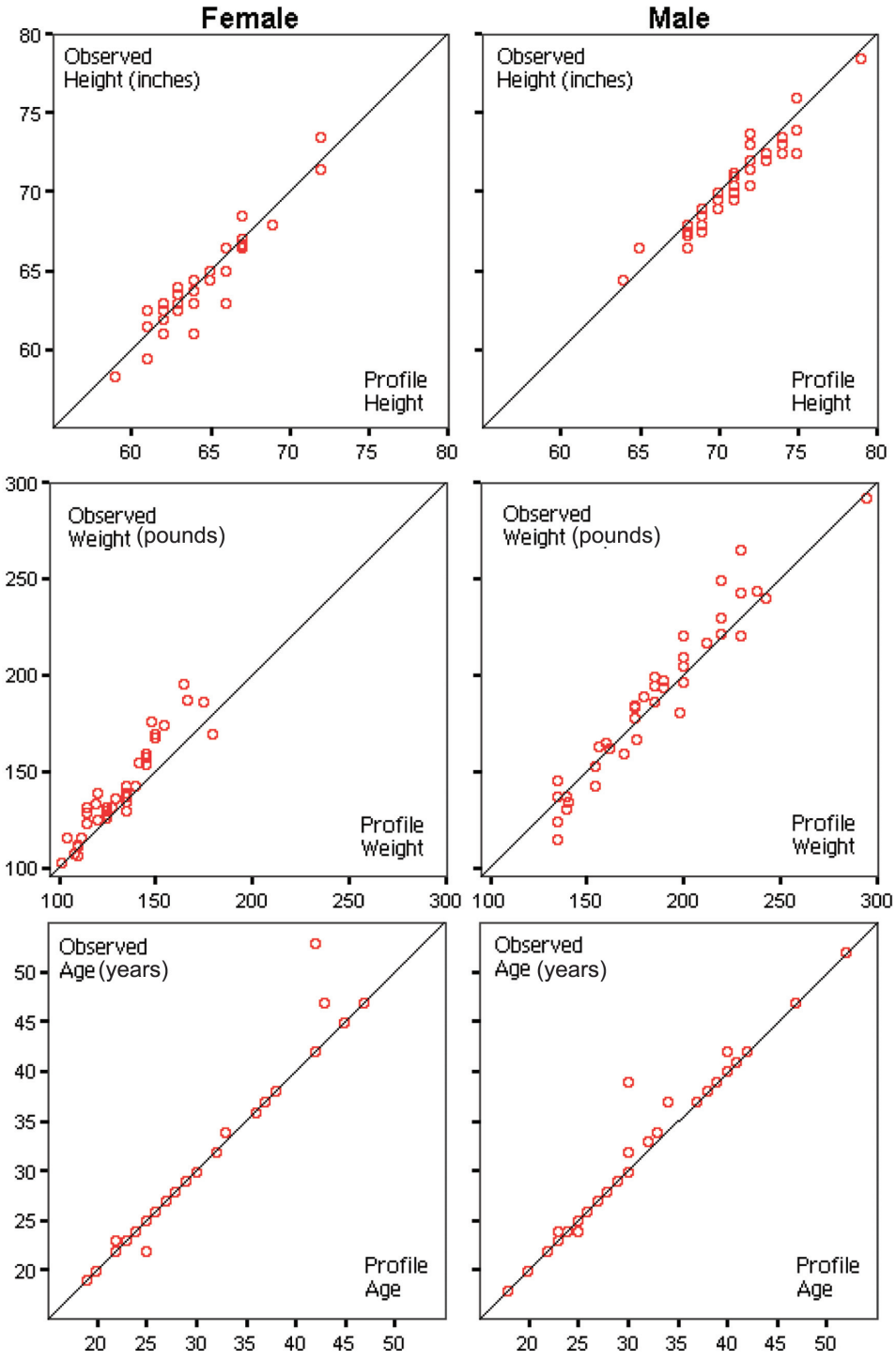

Figure 1 Profile by observed characteristics for height (inches), weight (pounds), and age (years) across gender

fact that age is a stable characteristic that does not fluctuate (as weight does), cannot be altered (as height can—by wearing heels, e.g.), and does not need to be constantly checked.

If measurement error, perhaps due to daily or weekly fluctuations of weight and height, accounted for the discrepancies between measured and reported characteristics, these discrepancies should be randomly distributed

TABLE 3: Social Acceptability Means and Standard Deviations for Men and Women

	Overall		*Men*		*Women*		
	M	SD	M	SD	M	SD	p
Physical appearance	2.29	1.03	2.15	1.10	2.42	0.95	.26
Height	2.30	1.13	2.30	1.12	2.31	1.06	.97
Body Type	2.17	1.11	2.13	1.32	2.21	0.87	.76
Hair	2.45	1.42	2.23	1.46	2.68	1.36	.16
Eyes	2.28	1.36	2.08	1.34	2.48	1.36	.20
Social status	2.19	1.06	2.41	1.18	1.97	0.88	.07
Income	2.56	1.37	2.47	1.44	2.67	1.30	.57
Occupation	2.08	1.28	2.42	1.44	1.75	1.00	.03
Education	1.97	1.23	2.26	1.37	1.68	1.00	.04
Relationship history	1.66	1.12	1.86	1.28	1.46	0.92	.12
Relationship status	1.76	1.30	2.03	1.50	1.49	1.02	.07
Have children	1.56	1.28	1.69	1.47	1.44	1.05	.38
Habits and interests	2.30	1.05	2.34	1.16	2.27	0.95	.75
Smoking	2.04	1.19	2.20	1.32	1.86	1.02	.21
Drinking	2.23	1.22	2.28	1.36	2.18	1.09	.73
Interests	2.59	1.31	2.54	1.37	2.66	1.26	.70
Beliefs	2.16	1.24	2.22	1.39	2.10	1.08	.68
Politics	2.34	1.34	2.45	1.48	2.24	1.21	.52
Religion	2.14	1.36	2.22	1.49	2.06	1.22	.62
Age	2.03	1.25	2.15	1.42	1.91	1.06	.43
Average across profile items	2.36	0.87	2.32	0.95	2.39	0.81	.74

NOTE: Ratings are reported on a 5-point scale (1 = *completely inaccurate*, 5 = *completely accurate*).

around zero (i.e., positive and negative errors should be equally likely). This was not the case. For men, profile height was consistently overreported compared to their actual height (M = 0.51 in., SD = 0.88 in.), profile weight was underreported (M = –2.81 lb, SD = 11.52 lb), and age was underreported (M = –0.51 years, SD = 1.61 years). For women, profile height was slightly overreported (M = 0.17 in., SD = 0.98 in.), weight was underreported (M = –8.48 lb, SD = 8.87 lb), and age was underreported (M = –0.37 years, SD = 1.96 years). Again, this suggests that the discrepancies between profile and observed characteristics represent intentional deception.

Social Acceptability of Deception

Participants' ratings of the social acceptability of deception across the composite categories and the individual items that constitute each category are displayed in Table 3. Generally, social acceptability scores indicated disapproval of deception across the composite categories, with all scores falling below the midpoint of the scale (recall that 1 = *deception is completely unacceptable*, 5 = *deception is completely acceptable*). Indeed, the mean of all social acceptability scores across the composite categories was 2.12, suggesting that participants believed it is relatively unacceptable to lie in online dating profiles.

A 5 (category) × 2 (gender) mixed linear model, with category as the repeated measure and gender as the between-subjects factor, revealed that the social acceptability of deception varied significantly across the different categories, $F(4, 304) = 8.04$, $p < .001$. Post hoc pairwise comparisons (Bonferroni corrected to $p < .005$) on the category factor revealed that participants believed that lying about relationship information is less socially acceptable than lying about any other category. Men and women's social acceptability scores did not differ from each other, $F(1, 76) = 0.69$, $p = .41$, although gender interacted marginally with the category factor, $F(4, 304) = 2.23$, $p = .07$. Men considered it more acceptable than women to lie about their social status ($p = .07$). As described in Table 3, men found it more acceptable than women to lie about their occupation ($p < .03$), education ($p < .04$), and marginally about their relationship status ($p = .07$).

Warranting

Perhaps the most important connection between the online and embodied self consists of profile photographs. On average, the self-reported accuracy of photographs (M = 4.28, SD = 0.91) was significantly lower than the average of the composite categories (M = 4.75, SD = 0.03), $t(56) = –3.11$, $p < .01$), suggesting that photographs contained more deception than the categories describing the self. It is important to note, however, that not all participants included photographs in their profile. If photographs are important warrants, participants who do not post photographs should be

more likely to engage in deception than those who do post photographs. As expected, participants who posted photographs reported being more accurate ($M = 4.79$, $SD = 0.24$, $N = 59$) than those who did not ($M = 4.62$, $SD = 0.40$, $N = 21$), $F(1, 75) = 4.19$, $p = .04$. Specifically, participants who posted photographs reported being more accurate about their relationship information (e.g., relationship status, children) than those who did not ($p < .005$). Note that there were no observed instances of participants using photographs of other people, in which case photographs could not have served as warrants.

A second important warrant is the number of people in participants' social circle who are aware of the dating profile. The more friends and family who are aware of the online dating profile, the more accurate it should be. On average, participants reported that about seven people from their social circle were aware of their profile ($M = 7.05$, $SD = 7.85$). The only component of the profile that appeared to be sensitive to this measure was the accuracy of the photograph. The more people aware of a participant's profile, the more accurate participants reported their photograph to be ($r = .41$, $p < .01$). Although photographs were rated as the least accurate element of the profiles, profiles with photographs tended to be more honest. Furthermore, the more people who were aware of a participant's online dating profile, the more accurate the photograph.

DISCUSSION

A major challenge to studying deception is the need to rely on participants to report the truth about their own lies. Typically, social psychological approaches to examining deception consist of either instructing participants to lie in an experiment or to report their own lies honestly in a diary. This raises questions about whether participants' lying behavior is affected by the fact that they are attending to their lies or whether they feel comfortable with reporting their lies to the experimenter. One of the goals of the present study was to introduce a novel cross-validation approach to deception research that establishes ground truth through direct measurement instead of relying exclusively on self-report data.

As noted earlier, the cross-validation method only establishes the *accuracy* of a profile and not whether any observed inaccuracies are necessarily intentional. To address this limitation, we paired the objective measurements with self-report measures to assess participants' awareness of the accuracy of their profiles. The significant correlations between the self-report accuracy scores and observed discrepancies in the profiles suggest that participants were indeed aware of their inaccuracies, which argues against the interpretation that these inaccuracies represent self-deception. Also, the fact that the discrepancies between the profile and observed characteristics were systematic (e.g., men overestimated their height, women underestimated their weight) and not random suggests that these discrepancies were not simply the result of measurement errors associated with daily or weekly fluctuations in physical characteristics. Considered together, these data suggest that the inaccuracies observed in the profiles were intentional and can be operationalized as deception.

Frequency and Magnitude of Online Dating Deception

The results reveal that the widespread concern regarding the pervasiveness of deception in online dating is only partly justified. Deception was indeed frequently observed: Approximately 8 of 10 (81%) of the participants lied on at least one of the observed characteristics. Weight was the most frequently lied about attribute, followed by height, and least of all age. For those identified as lying on an item, the magnitude of the deception was usually small. The average deception for height was only 2.09% of the participants' actual height, 5.5% of the participants' actual weight, and 1.4% of the participants' actual age. Note that many of these deceptions would be difficult to detect face-to-face.

Although the large majority of observed deceptions were subtle, there were nevertheless a few extreme lies in the sample, including a 3-in. lie about height, a 35-lb lie about weight, and an 11-year lie about age. These rare but extreme lies would be highly salient and memorable when encountered. This may be one reason why people believe lying is rampant in online dating profiles, especially because these extreme lies are more likely to be circulated and discussed among the online dating community.

Also noteworthy is that participants who lied on one measured characteristic (height, weight, age) were not necessarily more likely to lie on another characteristic. No correlations were observed between the amount by which participants lied about their height, weight, and age, suggesting that lying in online dating profiles is not undifferentiated across the elements of the profile. Instead, participants appeared to lie only on some characteristics, perhaps those they believed would make them appear more attractive (e.g., height for men, weight for women). It is also possible that lying about height may render lying about weight superfluous and vice versa. For instance, if participants make themselves taller, they might not need to diminish their weight to appear slender. Again, this underlines the strategic nature of online dating deception.

What other aspects of their self-presentation did participants lie the most and least about? Participants reported being most accurate about their relationship information, a category that assesses their relationship status (single, divorced, separated, etc.) and whether they have children. In developing romantic relationships, accurate reporting about this kind of information is critical, which may explain the high levels of accuracy observed for this category. Participants reported being least accurate about their photographs, a profile element that allows for considerable editability. Indeed, photographs can be easily enhanced before and after the photo shoot through framing, posing, lighting, makeup, or design software (e.g., PhotoShop). Additional research is required to advance our understanding of how and why visual deception is used in profile photographs.

Factors Affecting Deception

The observation that deception in online dating profiles is frequent yet small in magnitude illustrates how online daters go about resolving the fundamental tensions they experience when creating their profiles. As reviewed earlier, these tensions result from online daters' desire to (a) augment their attractiveness in comparison with competitors yet stay true to themselves in the hopes of finding partners who will love them for who they are, (b) engage in enhanced self-presentation yet consider the possible consequences of future face-to-face interaction in which deceptions can be spotted, and (c) take advantage of the properties of computer-mediated communication that allow for deception (e.g., editability, rehearsability, reallocation of cognitive resources) but bear in mind its constraints on lying (e.g., recordability).

This pattern of results, in which deceptions in online profiles were frequent, subtle, and intentional, supports the hyperpersonal model's concept of selective self-presentation online (Walther, 1996). The model assumes that online communicators are savvy about the self-presentational opportunities (editability, rehearsability, reduced communication cues) and limitations (recordability, anticipated future interaction) afforded by computer-mediated communication and use them in a strategic way to maximize interaction goals. Inherent in Walther's (1996) concept of selective self-presentation are sociotechnical considerations, according to which online communicators do not engage in deception simply because they can but rather take into account their self-presentational and relational goals. That is, online daters may edit their profiles to fine-tune their self-presentation, resulting in frequent deceptions, but may consider the detrimental effect of creating unequivocal records of deception that can be easily detected in a face-to-face encounter. In fact, one strategy employed by online dating participants to identify deception in others is to save early correspondence and to compare it with later messages, looking for conflicting information (Heino et al., 2005).

The intentional, or strategic, aspect of online daters' deception is also underscored by their awareness of warranting outlets. Warranting (Walther & Parks, 2002), or the connection between the disembodied online self and the physical self, was hypothesized to decrease deception. This hypothesis was partially supported. Participants who posted photographs were significantly more accurate about their current relationship information than those who did not post a photograph. As noted earlier, deception was considered the least acceptable in this category, suggesting that warrants constrain the most unacceptable types of lies. Similarly, the number of people who were aware of a participant's online dating profile was correlated with the accuracy of the profile's photograph. Taken together, social considerations, such as warrants between the online profile and the real world, significantly affected deception and self-presentational choices.

Finally, gender played an important role in determining some types of deception and where they occurred in the profile. Consistent with expectations that men and women should lie to enhance the specific characteristics potential mates find attractive, men systematically overestimated their height, whereas women consistently underestimated their weight. For both men and women, the quadratic relationship between profile and observed height and weight suggested that as participants departed from physical norms (e.g., very short, very heavy), they tended to lie more. Surprisingly, age-related deception was minimal and did not differ by gender. This result may reflect the fact that age is a stable characteristic that cannot be altered. In contrast, both weight and height can fluctuate (by losing or gaining weight, or wearing heels) and can be adjusted. It is also possible, however, that the overrepresentation of younger participants in the sample limited our power to detect age-related deception, which may be more frequently practiced by older participants, as indicated by the trends in our data.

It is worth noting that the gender differences found in the objective measurement data were not mirrored in the self-report data. Even though men portrayed themselves as taller in their profiles and women portrayed themselves as thinner, men and women's self-reported ratings of their accuracy did not differ from each other. There are several possible explanations for this finding. The social desirability response bias might have prevented both men and women from acknowledging the full extent of their lies (Paulhus, 2002), although this seems unlikely given the significant correlations between

the self-report and observed accuracy data. The self-report data may also have been constrained by a ceiling effect (the average accuracy rating was 4.65 of 5). Regardless, this observation highlights the potential limitations associated with relying solely on self-report data in the context of deception.

Self-reported gender differences did emerge in the social acceptability data, where men indicated more tolerance for deception about social status indicators, such as education and occupation, whereas women did not. Perhaps men wanted to give themselves more leeway in deceiving about characteristics that would make them more sought after by women. In what may be a surprising finding, women did not report more tolerance for lying about age or physical attractiveness, characteristics that are considered important for women in attracting men. Also, men indicated more tolerance for lying about their relationship status (e.g., single, divorced, separated). This finding is consistent with propositions from evolutionary psychology (Buss & Schmidt, 1993), according to which men are more likely than women to increase their chances of passing on their genes by engaging in intercourse with multiple partners. Men might resolve this potential conflict by concealing the fact that they are pursuing multiple relationships at the same time. The results from our sample support this hypothesis, with men finding it more acceptable to lie about their relationship status than women.

Implications for Self-Presentation Theory and Research

Research in self-presentation and impression management has been criticized for failing to produce a unifying theory or sufficient testable hypotheses (for a review, see Schlenker & Weigold, 1992). However, theorists converge on several key ideas regarding the use of deception in self-presentation (see Leary, 1996; Schlenker & Weigold, 1992). Generally speaking, people tend to self-present accurately, even when deception is an alternative, for at least three reasons: (a) it is anxiety producing and cognitively demanding to create and maintain false public images, (b) it is possible to portray oneself *both* positively *and* accurately by strategically selecting the kinds of information one wishes to convey from the repertoire of accurate self-images, and (c) there are significant social sanctions associated with being caught lying.

The data from the present study suggest that virtual, online self-presentations tend to follow these long-standing principles for the use of deception in self-presentation. Despite the fact that the lack of a corporeal presence gave participants more freedom to embellish descriptions of their physical characteristics, participants tended to use deception in their profiles in ways predicted by previous research concerned with face-to-face self-presentation, namely, sparingly and tailored to their audience (e.g., DePaulo et al., 2003; Leary, 1996). One conclusion might be that deception in online self-presentation does not differ from deception in self-presentations that take place in our everyday face-to-face social interactions, at least insofar as *embodied* future interaction between online communicators is expected. As noted earlier, anticipated face-to-face interaction, which is the primary goal of online dating, is a key constraint for deception in self-presentation. However, the venues for online self-presentation vary widely (ranging from personal Web sites to anonymous chat rooms), and they often do not include the expectation of future face-to-face interaction. An important question, therefore, is what happens when an online self-presentation takes place in a context in which participants are expected to be honest but in which no future embodied interaction is expected (e.g., online support groups, social networking sites). Will self-presenters maintain their propensity for relatively accurate self-presentation?

Emerging research from a variety of fields, including social psychology (Mazar & Ariely, 2006), economics (Andreoni, Harbaugh, & Versterlund, 2003), and neuroscience (Rilling et al., 2002), suggests that dishonesty may be constrained by *internal reward mechanisms* that operate even in the absence of external constraints, such as anticipated future interaction. For instance, Mazar and Ariely (2006) report on several studies that demonstrate that even under conditions in which it is impossible to be caught cheating, dishonest behavior tends to be small in magnitude. In these studies, when participants are given the opportunity to cheat on a test with varying conditions of possible accountability, dishonesty tends to be only a fraction of the possible maximum amount, even when it is impossible that the dishonesty will be discovered. These authors argue that it is our own self-concept that limits deceptive behavior because we seek to avoid triggering a self-concept shift from that of a virtuous person to that of a liar or cheater. Small lies below a certain threshold do not trigger this self-concept shift, but large lies might.

There is no reason to expect that this type of internal constraint does not operate in online behavior. When engaging in online self-presentation, this self-concept perspective on dishonesty would argue that we should try to avoid lies that cause us to reconceptualize ourselves as liars. Although additional research is required regarding contexts in which there are no consequences to how we present ourselves online, the conceptualization of the self-concept as a shackle on dishonesty suggests that deception in online self-presentation should remain limited even when external constraints are absent.

Limitations

Although the present study makes several theoretical and methodological advances, it suffers from some important limitations. Perhaps the most important is the nature of the sample. Participants were recruited by offering a small amount of cash for 1 hr of their time. It is unlikely that wealthier participants were proportionally represented in the sample. Another important limitation is a possible self-selection bias, which possibly constrains the generalizability of the results. For instance, online daters engaging in extreme forms of deception may have been less willing to take part in a study on online dating, although a small number of participants with extreme deceptions did participate.

Also noteworthy is that we cross-validated only three variables among the dozens that make up an online dating profile. Future analyses should apply similar cross-validation techniques to a wider range of profile elements (e.g., income, occupation, education) to flesh out our understanding of deception in online dating. We also did not examine how the structure of online dating profiles may affect deception. For instance, because many users tend to search using age ranges that are rounded up or down (25-35 as opposed to 27-32), users may feel compelled to subtract a year or two from their ages so as not to get "filtered out" of the search results (Ellison et al., 2006).

Conclusion

The current study offers some important insights into the practice of deception in the novel but increasingly important social arena of online dating. Deception in online profiles is frequently observed but generally subtle and small in scale. Both social and technical opportunities and constraints determine the nature of deception in online dating, with deceptions reflecting users' self-presentation and relational goals, as well as the features of the communication environment. As expected, online daters in the present study used deception strategically as a resource in the construction of their online self-presentation and in the engineering of their romantic lives.

NOTES

1. Deception is defined here as the intentional misrepresentation of information (Knapp & Comadena, 1979).

2. Participants presenting a homosexual orientation in their profile were excluded from the sample to eliminate the potential confounding effect of sexual orientation.

3. Four participants presenting a heterosexual orientation in their profile were excluded from analyses because, when interviewed, two of them reported being homosexual and two reported being bisexual.

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