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"Out of My League": A Real-World Test of the Matching Hypothesis

**Lindsay Shaw Taylor[1], Andrew T. Fiore[1],
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Abstract

The matching hypothesis predicts that individuals on the dating market will assess their own self-worth and select partners whose social desirability approximately equals their own. It is often treated as well established, despite a dearth of empirical evidence to support it. In the current research, the authors sought to address conceptual and methodological inconsistencies in the extant literature and to examine whether matching occurs as defined by Walster et al. and more generally. Using data collected in the laboratory and from users of a popular online dating site, the authors found evidence for matching based on self-worth, physical attractiveness, and popularity, but to different degrees and not always at the same stage of the dating process.

Walster, Aronson, Abrahams, and Rottman's (1966) *matching hypothesis* posits that when initiating romantic relationships, individuals seek out partners whose social desirability approximately equals their own. When choosing a partner, individuals in the dating market assess their own "value" and select the best available candidates who, upon making a similar assessment, are also likely to be attracted to them. Thus, they actually *opt* for partners of similar social desirability because by selecting partners who are "in their league," they maximize their chances of a successful outcome. (For a similar argument, see Murstein's [1970] stimulus-value-role theory.)

Judging from its treatment in textbooks, the matching hypothesis is widely accepted as confirmed (e.g., Gleitman, Reisberg, & Gross, 2007; Myers, 1996). This is probably because at the theoretical level, the matching hypothesis is compatible with established theories such as social exchange theory (Thibaut & Kelley, 1959) and equity theory (e.g., Walster, Berscheid, & Walster, 1973; Walster, Walster, & Berscheid, 1978), which argue that individuals are motivated to form and are most satisfied in relationships in which partners bring approximately equal contributions to the table. Evolutionary theorists also argue that men and women select each other based on their perceived mate value, specifically seeking others of equivalent value (Buss & Shackelford, 2008). Furthermore, it is well documented that similarity is related to interpersonal attraction (Montoya, Horton, & Kirchner, 2008) and that long-term partners tend to be similar on a wide array of dimensions (e.g., Luo & Klohnen, 2005; Watson et al., 2004). However, evidence in support of the matching hypothesis itself, which deals specifically with initial partner *selection*, not with attraction or similarity between long-term partners, is scarce. In fact, most studies designed to test the matching hypothesis, including the original experiment (Walster et al., 1966) and a replication (Brislin & Lewis, 1968), have not found that individuals select similarly desirable partners. Rather, the consistent finding from this body of research is that most people, regardless of their own appeal, prefer highly desirable partners.

We argue that, despite how it is often presented, the matching hypothesis has not been empirically validated; moreover, in important ways it has not been tested. To substantiate the matching hypothesis as it was set forth, research must verify three key features of the hypothesis: first, that individuals' *self-assessments* of their social worth (as distinct from others' judgments of them) predict matching; second, that romantic partners are matched on *social desirability*; and third and most importantly, that individuals actually *seek out and voluntarily select* partners of similar social worth. Past research has failed to demonstrate each of these elements.

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The first two points are both conceptual and methodological. The matching hypothesis states that individuals consider their own self-worth when deciding how desirable a partner to aim for in the dating pool. However, the original tests of the hypothesis (Brislin & Lewis, 1968; Walster et al., 1966) focused on matching based on physical attractiveness, for reasons that were apparently more pragmatic than theoretically driven. In those studies, experimenters randomly assigned dates for college students attending a dance. So as not to reveal the true purpose of the dance, raters surreptitiously judged participants' physical attractiveness as a measure of social worth. Since those studies, researchers have focused almost exclusively on physical attractiveness (except Huston, 1973, and Walster, 1970, although neither found evidence of matching). Consequently, Sprecher and Hatfield (2009) explain,

> Although the original matching hypothesis proposed that people would pair up with someone as "socially desirable" as themselves—choosing people who were equal in a panoply of assets—over time the matching hypothesis has come to be associated specifically with matching on *physical attractiveness* [italics original]. (p. 1067)

This is a significant departure from the original intent, and it leaves open an important question about whether matching in fact occurs with regard to social desirability more generally. Moreover, in some studies attractiveness has been measured by self-judgments, in some by the judgments of others, and in others by both, but these different measurements can lead to different outcomes (e.g., Montoya, 2008). Since the matching hypothesis is about how individuals' *self*-assessments of their own worth affect their choice of dating partners, studies that use others' ratings, especially others' ratings of physical attractiveness, are not consistent with the hypothesis.

The third point, that individuals will voluntarily select similarly desirable partners, is at the heart of the matching hypothesis and leads to the most striking prediction derived from it, namely, that undesirable individuals will actually *choose* undesirable partners. The matching hypothesis predicts a crossover interaction such that highly desirable individuals select desirable partners and reject undesirable partners, whereas low-desirability individuals select undesirable and reject desirable partners. At present there is almost no evidence to support this prediction. In fact, we know of only two studies that report a crossover interaction. In one (van Straaten, Engels, Finkenauer, & Holland, 2009), participants were videotaped while conversing with a high- or low-attractive opposite-sex confederate. Independent raters judged unattractive men to be more engaged with unattractive female confederates and attractive men to be more engaged with attractive female confederates. However, all women were more engaged with the attractive male confederates,

both attractive and unattractive participants self-reported that they preferred the more attractive confederates, and the setting was not clearly romantic. In the other, Montoya (2008, Study 4) reported that participants who were more objectively physically attractive (i.e., as judged by others) thought it more likely that they would be in relationships with attractive others, whereas less attractive participants thought it more likely that they would be in relationships with less attractive others. However, this does not necessarily speak to whom they would choose for a partner, only with whom they expect to end up (see Kalick and Hamilton's, 1986, model that demonstrates how matching can occur even when individuals are not motivated to select similar partners). Also, the same analyses using participants' self-assessed physical attractiveness did not yield a crossover interaction.

Except for these, studies that are cited as being consistent with the matching hypothesis have reported not crossover interactions but instead strong main effects of partner attractiveness that were moderated by participants' own attractiveness (e.g., Berscheid, Dion, Walster, & Walster, 1971, Study 1; Stroebe, Insko, Thompson, & Layton, 1971). These studies found that all participants preferred attractive to unattractive partners, but this tendency was somewhat stronger among attractive participants. They did not find that unattractive participants preferred unattractive partners over attractive ones. Moreover, many studies designed to test the matching hypothesis do not support it at all. Instead, they report only that all participants prefer attractive partners (Berscheid et al., 1971, Study 2; Curran & Lippold, 1975; Walster, 1970). Even in the original experiments (Brislin & Lewis, 1968; Walster et al., 1966), the only significant predictor of participants' attitudes toward their dates at the end of the dance was the dates' physical attractiveness; irrespective of their own attractiveness, participants liked highly attractive dates more.

When most studies find that even unattractive individuals prefer attractive partners, it is not accurate to say that the matching hypothesis has been definitively supported and that, for example, "people seek partners who are roughly at the same level of attractiveness that they are" (Gleitman et al., 2007, p. 69). Kalick and Hamilton (1986) made this point more than 20 years ago, but until recently empirical interest in the matching hypothesis waned, probably because it was regarded as already well confirmed. The lack of follow-up might also be due to the enormous difficulties faced by researchers in creating a realistic dating setting in which to test the matching hypothesis. Because it deals specifically with choices made by individuals about whom they will "attempt to date," the ideal test of the matching hypothesis involves a dynamic dating situation in which individuals choose partners from a large pool of candidates. Instead, past studies paired up participants for dates (Brislin & Lewis, 1968; Curran & Lippold, 1975; Walster et al., 1966) or participants rated hypothetical partners (e.g., Stroebe et al., 1971) or partners whom they had no expectations of

actually dating (e.g., Huston, 1973). Studies such as these assess *attraction* to or *preferences* for attractive partners, but we cannot know whether participants' ratings of hypothetical partners, for example, reflect whom they would actually choose to date (Eastwick & Finkel, 2008). This is particularly problematic because Walster and colleagues (1966) were careful to distinguish between "fantasy" partners, whom they assume will be highly desirable, and "realistic social choices," whose desirability should match one's own.

The popularity of Internet dating sites now provides an opportunity for researchers to observe dating behavior unconstrained by the laboratory. Available studies of actual dating behavior online have yielded mixed results with regard to the matching hypothesis. For example, one recent study of online dating found that individuals with more attractive profile pictures garnered more emails from other users, independent of the senders' own attractiveness (Hitsch, Hortacsu, & Ariely, 2010). Other studies suggest that individuals strike a balance between wanting a highly attractive partner and the "reality constraints" proposed by the matching hypothesis, at least when it comes to physical attractiveness. Lee, Loewenstein, Ariely, Hong, and Young (2008) report that users of the website HOTorNOT.com preferred others who were slightly more attractive than they but also that there was a significant relationship between individuals' own physical attractiveness (as rated by other users) and the attractiveness of the people they wanted to meet. Related to this, Heino, Ellison, and Gibbs (2010) interviewed online daters and concluded that they consider their own "value," compared to the value of others on the site, when deciding whom to pursue.

The goal of the current research was to take advantage of the opportunity offered by online dating to take a fresh look at the matching hypothesis, addressing each of the three critical points we raised earlier. First, we used multiple measures of social desirability: self-worth, physical attractiveness, and popularity on an online dating site. Second, we used both self-evaluations and others' evaluations of social worth to predict dating behavior. Third, we gathered data from an online dating site to examine actual partner selection.

Overview of the Current Research

We conducted four studies with two purposes in mind. The first was to test the matching hypothesis, staying true to its original prediction that individuals' self-assessments of their worth predict whom they select (and reject) as dating partners. The second was to test whether matching, more broadly defined, is present at the partner selection stage; that is, we examined whether individuals select and are selected by others who are similarly desirable, using metrics other than self-worth.

Study 1 was a laboratory study along the lines of those previously used to test the matching hypothesis, but using a measure self-worth that incorporated self-esteem and positive

self-views, rather than simply physical attractiveness. After viewing online-dating-style profiles belonging to individuals ("targets") varying in social desirability, participants rated their interest in dating each of the targets (similar to Berscheid et al., 1971, Study 2; Stroebe et al., 1971; Walster, 1970). We evaluated the extent to which interest in dating a target was a function of the interaction between the self-worth of the participant and the social desirability of the target. We also examined the possibility, originally suggested but not supported by Berscheid and colleagues (1971), that the relationship between self-worth and interest in dating a target was mediated by expectations of being accepted by the target.

Studies 2 through 4 were designed to look at whom people *actually select* as dating partners by examining the choices made by users of a popular online dating site. Using the site's activity logs, we were able to identify communicating dyads—pairs of people who corresponded with one another on the site—to see if they tended to be similarly desirable, using several indices of social desirability. In Study 2, we assessed communicating partners' physical attractiveness, as judged by outside raters (similar to Brislin & Lewis, 1968; Walster et al., 1966), whereas in Study 3, online daters completed ratings of their own self-worth. Studies 3 and 4 also included a novel assessment of social desirability, participants' popularity on the site, measured by the number of unique users who initiated contact with them. We also computed the popularity of all the people with whom participants had communicated on the dating site. Therefore, across these three studies we could test whether individuals who were more desirable—according to self-assessments or others' judgments—actually contacted and were contacted by more desirable others.

Study 1

Participants in Study 1 were asked to imagine that they were trying to meet a new romantic partner on an online dating site. They created dating profiles for themselves and viewed profiles belonging to potential dates ("targets") of varying social desirability, and they rated their interest in contacting each target for a face-to-face date. The matching hypothesis predicts that lower-self-worth participants should prefer to date low-social-desirability targets whereas higher-self-worth participants should prefer the high-social-desirability targets.

In this study, we also tested whether expectations of a successful outcome would mediate the relationship between participants' self-worth and their interest in the low- versus high-desirable targets. Berscheid and colleagues (1971) suggested that individuals will expect to be accepted by similar others and rejected by nonsimilar others and that this is the mechanism that explains matching. Two previous tests of this mediator failed to find the predicted effects, but those studies used only physical attractiveness as the measure of participants' social worth (Berscheid et al., 1971; Huston, 1973).

Method

Participants. Participants were 182 (117 female, $M_{age} = 20.2$) undergraduates who participated in exchange for psychology course credit. Most participants were either Asian or Asian American ($n = 93$) or White or European American ($n = 52$), with smaller numbers of Hispanic or Latino/a ($n = 14$), Middle Eastern or Arab American ($n = 6$), Black or African American ($n = 1$), and "other" ($n = 16$) participants.

Procedure. This study took place entirely online. We posted a URL on the website used by the psychology department to publicize studies. The URL directed students to an informed consent page and the study materials. Participants first rated the degree to which they have high self-esteem, are physically attractive, are likable, are warm and kind, and are trustworthy using 7-point Likert-type scales ($-3 = disagree strongly$, $3 = agree strongly$). We selected these items to tap into diverse dimensions of self-worth; "trustworthy" is also particularly important with regard to online social interactions (Cook, Cheshire, Gerbasi, & Aven, 2009). Then we asked participants to imagine that they were looking for a new dating partner using an online dating site and to create an "online dating profile," which we assured them would never actually be posted online. The profile included the Ten-Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003), which assesses one's standing on the Big Five dimensions of personality: extraversion, conscientiousness, agreeableness, openness, and neuroticism. We computed a self-worth score for each participant by taking mean of the five self-evaluation items (e.g., self-esteem) and the TIPI items with neuroticism reverse scored ($\alpha = .79$).

Once they completed their own profiles, participants viewed profiles consisting of photos and self-descriptions of potential dates. The photos and self-descriptions were selected on the basis of separate samples' ratings ($n_{photo\ raters} = 93$, $n_{self-description\ raters} = 36$) of their physical and social attractiveness, respectively. We selected low-, medium-, and high-attractive photos and self-descriptions for male and female targets, purposely avoiding the most extremely unattractive and attractive. Participants in the current study rated nine target profiles in a 3 (photo attractiveness: low, medium, high) × 3 (text attractiveness: low, medium, high) within-subjects design. For the current report, we selected the low–low, medium–medium, and high–high profiles for comparison.[1] Participants rated how likely they would be to contact each target and whether the target "would probably respond favorably to me if I contacted him/her." All ratings were made on the same 7-point Likert-type scale (-3 to 3). Finally, they were debriefed and credited.

Results

Preliminary self-worth analyses. The mean self-worth was 1.56 for women and 1.67 for men. Analyses presented below use the composite measure. Analyses using only the
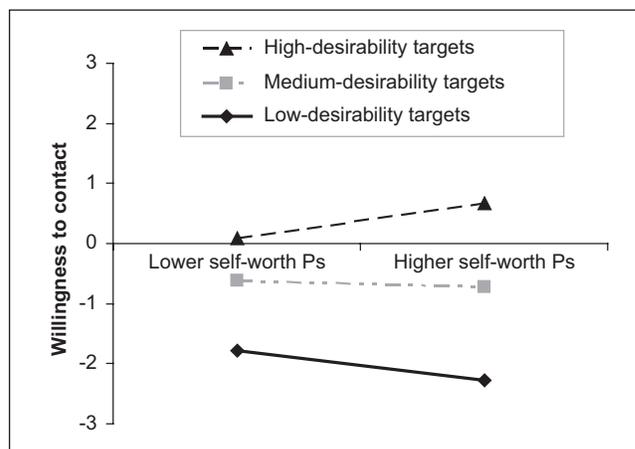
Figure 1. Participants' willingness to contact targets, Study 1
Ps = participants. Self-worth graphed at one standard deviation below and above the mean.

self-evaluation items, with or without the "attractiveness" item, or only the TIPI items yielded the same pattern of results.

Judgments of targets as potential dates. We began by examining whether self-worth was related to participants' likelihood of contacting each of the three targets. A 2 (participant self-worth: high vs. low, median split) × 3 (target: high vs. medium vs. low desirable) repeated measures analysis yielded first a main effect of target desirability, $F(2, 352) = 124.20$, $p < .001$. Conceptually replicating past studies, there was an overall preference for the high-desirability target (willingness to contact $M = 0.39$). The average willingness-to-contact ratings for the medium- and low-desirability targets were considerably lower and below the midpoint of the scale ($Ms = -0.66$ and -2.03, respectively).

This main effect was qualified by a significant self-worth × target interaction, $F(2, 352) = 5.92$, $p < .01$ (see Figure 1). To test the simple effect of self-worth, we separately regressed willingness-to-contact ratings for each of the three targets on participant self-worth. Consistent with the matching hypothesis, there was a significant positive relationship between self-worth and likelihood of contacting the high-desirability target, $b = .34$, $t(179) = 2.02$, $p < .05$, and a significant negative relationship between self-worth and likelihood of contacting the low-desirability target, $b = -.30$, $t(179) = 2.18$, $p < .05$. The simple effect of self-worth in the medium-desirability condition was nonsignificant, $t(179) = 0.37$, ns.

In other words, as predicted by the matching hypothesis, higher-self-worth participants were more interested than lower-self-worth participants in contacting the high-desirability targets, whereas lower-self-worth participants were more willing than higher-self-worth participants to contact the low-desirability target (although nobody was enthusiastic about doing so). Note, however, that we did not find a crossover interaction between self-worth and partner desirability such that lower-self-worth individuals preferred undesirable

to desirable partners. Rather, similar to some past research (Berscheid et al., 1971, Study 1; Stroebe et al., 1971), we found a slope interaction in which even lower-self-worth participants were most interested in dating the highly desirable partner.

Mediation by expectations of a favorable response. The 2 (self-worth) × 3 (target desirability) repeated measures analysis on participants' expectations of a favorable response from the three targets first yielded a significant main effect of target, $F(2, 352) = 41.35$, $p < .001$. All participants expected the most favorable response from the high-desirable target ($M = 0.81$) and the least favorable from the low-desirable target ($M = -0.39$). There was also a significant main effect of self-worth such that higher-self-worth participants expected more favorable responses than lower-self-worth participants, $Ms = 0.53$ and -0.04, $F(2, 352) = 16.14$, $p < .001$.

In this case, the predicted self-worth × target interaction did not reach significance, $F(2, 352) = 2.17$, $p < .12$. However, we did test our a priori hypothesis that participants' expectations of being accepted by a target would mediate the relationship between their self-worth and their interest in contacting the target. We could test the mediation only in the high-desirability target condition, since there was no effect of self-worth on likelihood of contacting the medium-desirable target, and there was no effect of self-worth on expecting a favorable response from the low-desirable target, $t(176) = 1.12$, *ns*.

The simple effect of self-worth on expectations of a favorable response from the high-desirable target was significant, $b = .63$, $t(179) = 4.86$, $p < .001$. Furthermore, expecting a more favorable response was associated with being more likely to contact the high-desirable target, $b = .77$, $t(178) = 9.68$, $p < .001$. When entered simultaneously with expectations of a favorable response, self-worth no longer significantly predicted willingness to contact, $b = -.14$, $t(178) < 1$, *ns*, and this was a significant mediation, $z = 4.33$, $p < .001$.

Gender differences. We conducted each of these analyses again, including participant gender as a factor. Overall, men and women acted quite similarly. Where significant effects involving gender existed, they were differences in the magnitude, not the direction, of the effects. Men tended to have a slightly lower threshold for seeing targets as potential matches.

Discussion

The primary goal of Study 1 was to test the matching hypothesis in a laboratory setting, as has been done most often in past research, while expanding on the operationalization of self-worth used most frequently, that is, physical attractiveness. Using a broader measure of self-worth that encompassed a variety of self-assessments, we found support for the matching hypothesis in that higher-social-worth participants said they were more likely than lower-self-worth participants to contact high-desirability targets, whereas the opposite was

true for low-desirability targets. Note that in this study, targets' desirability was manipulated in such a way that it, too, encompassed both physical and social attractiveness.

However, we did not find evidence of the strongest form of the matching, that is, a crossover interaction between self-worth and partner social desirability. Higher- and lower-self-worth participants both reported that, overall, they would prefer to date a person who is (consensually) judged to be highly desirable. This pattern of results is similar to some past reports of matching based on physical attractiveness (Berscheid et al., 1971, Study 1; Stroebe et al., 1971).

The data also suggest that one reason why higher-self-worth individuals might be more likely than lower-self-worth individuals to pursue highly desirable partners is because they are more optimistic about a successful outcome. Lower-self-worth participants were not especially optimistic about their chances of success with the low-desirability targets (perhaps they felt apathetic about being successful), but their greater willingness to contact them might reflect the fact that they recognize, somewhat begrudgingly, that low-desirability targets are closer to being "in their league." We should note that none of the participants in this study rated themselves as extremely low in self-worth (the lowest self-worth rating was -1.2, whereas the lowest possible was -3), so it is still possible that individuals with very low self-worth would prefer a socially undesirable partner.

Thus, using a more expansive, and self-assessed, measure of desirability, our results were in line with the matching hypothesis but did not provide strong support insofar as lower-self-worth participants did not prefer a low- to a high-desirable partner. It does not seem to be the case that the lack of strong support for the matching hypothesis in the extant literature is attributable to its focus on physical attractiveness alone. However, the methodology of the current study was modeled after laboratory-based studies of the past, which we earlier argued might tap into interpersonal attraction or partner preference, whereas the matching hypothesis is really about partner *selection*. Therefore, we conducted additional studies that aimed to investigate the selection process more directly.

Study 2

The goal of Study 2 was to test for matching using actual dating behavior. To be consistent with prevailing studies, the independent variable in this study was physical attractiveness. Independent raters judged the attractiveness of (a) profile pictures posted by users of a popular online dating site and (b) pictures of people whom those users had contacted through the site. The matching hypothesis predicts a positive correlation between users' attractiveness and the attractiveness of the people they contact.

A particularly puzzling aspect of the lack of previous evidence for attractiveness-based matching is that there *is* evidence that established romantic partners tend to be similarly

physically attractive (e.g., Mckillip & Redel, 1983). This suggests that perhaps individuals do not initially select partners based on matching but rather that homophily happens by some different process (e.g., Kalick & Hamilton, 1986). The nature of our data allowed us to explore the possibility that matching emerges at a subsequent step in the dating process, after the initial contact is made and is either successful (i.e., the recipient responds) or unsuccessful (i.e., the recipient does not respond). At this stage, both partners have gone through the decision-making process, and among successful pairs, both individuals have deemed the other to be a suitable potential partner. We conjectured that matching might be more apparent among these pairs.

Method

We began by randomly selecting 60 heterosexual male and 60 heterosexual female profiles from an online dating site. For those 120 "initiators," we used the site's activity logs to detect other users whom the initiators contacted and who did respond ("reciprocating contacts") or who did not respond ("nonreciprocating contacts"). We then collected the profile pictures from the initiators' profiles and from their reciprocating and nonreciprocating contacts' profiles, up to six of each.

In total, we collected 966 photos (527 female, 439 male). Judges recruited from the authors' departmental email lists rated the attractiveness of the photos belonging to the gender they preferred to date using a 7-point scale (-3 = *very unattractive*, 3 = *very attractive*). Each photo was rated by 14 to 43 judges. In the current sample, women's photos were rated to be more attractive than men's on average: M_{women} = -0.02, $SD = 1.06$; $M_{men} = -0.61$, $SD = 1.05$, $t(964) = 8.54$, $p < .001$. Therefore, we separately standardized men's and women's attractiveness scores and used the standard scores in the analyses below. For each initiator, we computed his or her own mean attractiveness, the mean attractiveness of all his or her contacts, and separate attractiveness means for his or her reciprocating and nonreciprocating contacts.

Results

Matching based on physical attractiveness. Overall, there was no evidence for matching based on physical attractiveness. Initiators' physical attractiveness was not correlated with the mean physical attractiveness of all the people they contacted for male, $r = .17$, $p > .19$, or female initiators, $r = .01$, *ns*. Thus, looking at actual behavior, we replicated the past null results reviewed earlier.

Instead, people tended to contact others who were more attractive than they. A repeated measures analysis with initiators' attractiveness versus all their contacts' attractiveness as a within-subjects variable and initiator gender as a between-subjects variable yielded only a significant effect of initiator versus contacts, $F(1, 118) = 9.49$, $p < .01$.
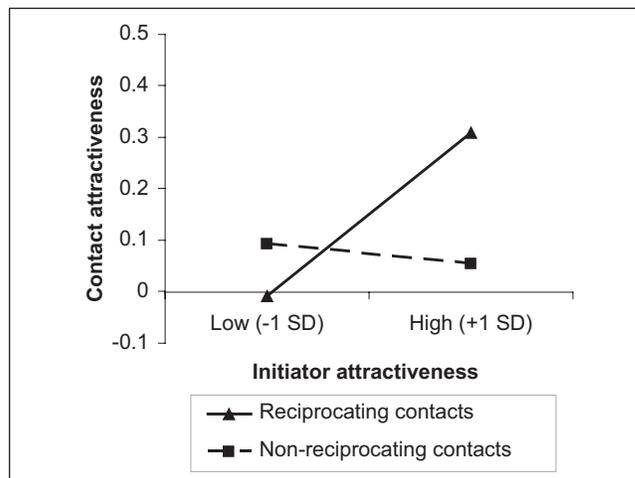
Figure 2. Attractiveness of reciprocated versus unreciprocated contacts, Study 2

Initiators' attractiveness ($M = -0.24$) was significantly less than their contacts' ($M = 0.09$). This replicates the overall preference for attractive partners that we found in Study 1 and that has been often reported previously (e.g., Berscheid et al., 1971; Brislin & Lewis, 1968; Hitsch et al., 2010; Lee et al., 2008; Stroebe et al., 1971; Walster et al., 1966).

Reciprocating versus nonreciprocating partners. When we compared reciprocating to nonreciprocating partners, evidence of matching emerged. In a repeated measures analysis with initiator attractiveness and gender as between-participant factors, and the attractiveness of participants' reciprocated versus unreciprocated contacts as a within-participant factor, there was a significant initiator attractiveness × contact attractiveness interaction, $F(1, 116) = 4.19$, $p < .05$, that was not moderated by gender. The interaction is shown in Figure 2. Follow-up regression analyses found that there was no relationship between initiators' attractiveness and that of their nonreciprocating contacts, $b = -.02$, $t(119) = 0.30$, *ns*. However, the relationship between initiators' and their reciprocating partners' attractiveness approached significance and was in the direction expected on the basis of matching, $b = .16$, $t(119) = 1.83$, $p < .07$. Among successful pairs, more attractive initiators paired with more attractive others and less attractive initiators paired with less attractive others.

Success rate. Next, we examined whether the magnitude of the difference between initiators' and their partners' attractiveness was related to their chances of success (i.e., receiving replies from their contacts). First, for each initiator, we computed the mean absolute difference between his or her own attractiveness and his or her contacts' attractiveness. The absolute, not the raw, difference scores are appropriate because the matching hypothesis predicts that a mismatch in either direction should lower one's chances of success. Then we used the dating site's log files to compute a success rate for each initiator by dividing the total number of contacts he or she initiated (denominator) by the number

of contacts that received replies (numerator). Finally, we correlated the mean absolute difference scores with the success rates. The result was significant, $r = -.18$, $p < .05$, indicating that individuals who contacted others whose physical attractiveness was similar to their own were more likely to receive replies. This effect was not significantly moderated by gender or by the attractiveness of the initiators.

Discussion

Study 2 moved beyond studies of interpersonal attraction to examine whether individuals who are similarly attractive are likely to actually select one another from the dating pool. Overall, Study 2 does not provide evidence for appearance-based matching, at least as predicted by the matching hypothesis. There was no evidence that daters' decisions about whom to contact were driven by the similarity between their own and potential partners' physical attractiveness. Study 2 instead corroborated past reports of an overall preference for attractive partners. The online daters in this study contacted people who were more attractive than they, suggesting that everyone was aiming for partners somewhat more desirable than themselves (similar to Lee et al., 2008). We would have to conclude, then, on the basis of this and past studies that individuals do not strongly take their own physical attractiveness into account when deciding whom to contact initially; at least, they do not base their decisions on matching.

One reason researchers have largely failed to find evidence of appearance-based matching might be that they have been looking too early in the dating process. Our results also showed that although individuals did not specifically target similarly attractive others, those who did were more likely to receive replies to their messages, and members of couples in which both partners "approved" the other (by choosing to communicate) tended to be more similar than couples in which one person's interest was unreciprocated. So although matching on physical attractiveness is not a strong predictor of who initially reaches out to whom, mutual interest is apparently determined in part by matching. Perhaps this is because by the reciprocation stage, poorly matched pairs have had two opportunities to be weeded out. However, the matching hypothesis cannot explain why this would not happen from the get-go. Therefore, although this supports the idea of matching in a broad sense, it should not be taken as evidence of the *matching hypothesis* specifically.

The mediation analysis from Study 1 showed that whether people believe they will be accepted or rejected by highly desirable others differs as a function of their own social desirability. Study 2 suggests that, in fact, more attractive people were more likely to accept overtures from other attractive people. A limitation of the current study, however, is that most photos were judged to be of average (around the midpoint of the scale) or below average attractiveness. Therefore, our ability to talk about highly attractive individuals' behavior is somewhat hampered. We would expect, though, that the same pattern would hold at the more extreme ends of the distribution.

Study 3

In Study 3, we again examined the matching hypothesis in the context of online dating, this time using as our independent variable participants' self-assessments of self-worth, in accordance with the original hypothesis. Via a partnership with a large, national online dating site, we recruited users of the site to complete a questionnaire about their online dating experiences that included a measure of self-worth. Respondents who reported that they were currently talking to someone through the site whom they intended to meet face-to-face also described that partner.

In this study we also introduce a new variable called *popularity*, which is the number of unique individuals who sent an unsolicited message to a user via the site's messaging system. Using the site's activity logs, we computed the popularity of the participants who completed our questionnaires, along with the popularity of people with whom they communicated on the site. In this context, popularity is a measure of social desirability because it reflects the number of people who, presumably after reading users' profiles and deciding they are appealing, reach out to them. This variable does not include messages sent in response to contacts initiated by a user, nor does it include any messages sent after the first one if a couple engages in an ongoing exchange. Therefore, there is no way for individuals to inflate their popularity, for example by sending out a lot of messages themselves to garner more responses. The only way to increase one's own popularity is to appear more alluring to other users on the site, thereby attracting more contacts. Also, there is no way for users to know which other users are more or less popular, so it is not the case that popular users could generate more interest based on their popularity per se.

This array of measures allowed us to test several variations of matching. The first is that individuals with greater self-worth will select partners whom they deem to be more desirable, whereas lower self-worth individuals will judge their partners to be relatively less desirable. The second is that individuals' self-worth will be positively related to the social desirability (i.e., popularity) of their chosen partners. The third is that self-worth will be positively related to the social desirability of the people in individuals' communication networks more broadly. Each of these can be taken as a direct test of the matching hypothesis as originally presented.

Method

Participants. Participants were 1,635 heterosexual female and 1,439 heterosexual male users of the online dating site from across the United States. They were recruited by web advertisements displayed to users who had been active on the site within the past two to three months. In exchange for

participating, respondents received gift cards for a popular online retailer.

The 3,074 participants in this sample are those who clicked on the recruitment ad, provided informed consent, and completed at least the first questionnaire. The mean age was 44 for both men and women (*SD* = 10.5, range = 18−76). Most participants identified themselves as Caucasian or White (*n* = 2,262), African American or Black (*n* = 408), or Hispanic or Latino/a (*n* = 174); no other racial/ethnic group composed more than 2% of the sample.

Procedure. Questionnaires were administered via custom web-based survey software. When users clicked on the recruitment ad, they were taken to an introductory page that explained the purpose and method of the study. Interested participants provided informed consent and were redirected to the first questionnaire (Q1). Q1 included a single-item self-esteem measure, which has been validated in prior research (Robins, Hendin, & Trzesniewski, 2001). Respondents rate their agreement that "I have high self-esteem" using a 5-point Likert-type scale (1 to 5). Q1 also included the TIPI (Gosling et al., 2003), with an additional 11th item, the degree to which participants see themselves as genuine and trustworthy. Responses were made using a 7-point Likert-type scale (−3 to +3). Akin to Study 1, we operationalized participants' self-worth in terms of their self-esteem ratings and how positively they described themselves on the TIPI (α = .66). Analyses using the two measures separately yielded similar results to the composite measure.

Approximately 4 days after completing Q1, participants received an email informing them that their next questionnaire was ready. Questionnaire 2 (Q2) asked participants if they were currently talking to someone through the site whom they intended to meet face-to-face. Those who responded yes (*n* = 616) were forwarded to the rest of the items, which asked about the specific person they intended to meet ("partner"). Included in Q2 was the modified 11-item TIPI, on which participants rated their partners' characteristics using the same 7-point scale.

In addition to responses collected through Q1 and Q2, we also used the site's activity log files to compute participants' popularity, as well as the popularity of their communication partners, as measures of social desirability.[2] First, we retrieved the number of unique users who contacted each participant to index his or her own popularity. Next, we computed the mean popularity of the participant's contacts. That is, we retrieved the number of people who had contacted each of the people whom the participant himself or herself had contacted and took the mean. By the same process, we computed the mean popularity of all the users who initiated contact with each participant. Finally, when we were able to locate through participants' responses and log files the communication statistics of the specific partner whom participants rated in Q2, we calculated those partners' popularity (*n* = 251).

Results

Preliminary analyses. Descriptive statistics are presented in Table 1. The distributions of the popularity variables were strongly right skewed, so we log transformed each of these variables for analyses, but we present nontransformed means for easier interpretation.

In online dating, men tend to contact women much more often than women contact men, and that was true in this sample, *t*(3072) = 20.85, *p* < .001. Accordingly, we made an a priori decision to conduct all analyses involving popularity separately for women and men. In the current sample, women's self-worth was also higher than men's, *t*(3072) = 7.24, *p* < .001, so we included gender as a factor in self-worth analyses.

Self-worth and popularity were correlated very modestly, *r* = .11, *p* < .001 (r_{women} = .08, r_{men} = .06, both *p*s < .05), suggesting they tap into different aspects of social value.[3]

Participant self-worth. Individuals with higher self-worth described the partner they intended to meet face-to-face in more positive terms on the TIPI than individuals with lower self-worth, *r* = .16, *p* < .001. Gender did not significantly moderate this effect.

For women, self-worth was positively correlated with the popularity of the people with whom they communicated through the site. Higher self-worth women contacted and were contacted by more popular others (*r*s = .14 and .15, respectively, *p*s < .001). We also looked separately at their "successful" contacts (i.e., those that garnered a response) and their "unsuccessful," or nonreciprocated, contacts, akin to Study 2. Self-worth was positively correlated with both reciprocating and nonreciprocating partners' popularity, *r*s = .12, *p*s < .001. None of these correlations was significant for men (*r*s = .00 to .03, *ns*). In other words, women, but not men, communicated with more popular people to the degree that they themselves had higher self-worth. However, neither women's nor men's self-worth correlated with the popularity of their specific dating partners described in Q2 (*r*s = .10 and .01, *ns*, respectively).

Matching at the extremes. To test whether matching occurs at the extremes of self-worth, we used quintile splits to set up contingency tables. We divided male and female participants into approximately equal groups on the basis of their self-worth, divided those who contacted them and those whom they contacted into quintiles based on their popularity, and conducted chi-square analyses.

For the women, both analyses were significant ($\chi^2_{contactors}$ = 53.96, $\chi^2_{contactees}$ = 52.25, *p*s < .001). For the men, neither were (χ^2s = 19.30 and 14.11, *p*s > .25). Examining the tables of observed and expected frequencies for the women showed that the most extreme differences were among the lowest self-worth women, who contacted and were contacted by the most unpopular men much more than expected; the observed frequencies were 62% greater than would be expected

Table 1. Descriptive Statistics, Study 3

		M	Mdn	SD	Range	
					Min	Max
Participant self-worth	Females	2.91	2.96	0.63	0	4
	Males	2.73	2.79	0.71	0	4
Participant popularity	Females	44.19	27.00	51.63	0	477
	Males	16.04	12.00	16.66	0	192
Positivity of actual partner description (Q2)	Females	0.94	0.83	0.83	−1.00	3.00
	Males	0.89	0.83	0.77	−0.50	3.00
Actual Q2 partner's popularity	Females	29.11	20.00	28.09	0	201
	Males	77.20	61.00	74.38	0	452
Mean popularity of users whom participants contacted	Females	29.44	24.43	41.51	1.00	1078.33
	Males	85.54	78.35	50.47	1.00	827.00
Mean popularity of users who contacted participants	Females	17.00	16.50	7.76	0.33	112.30
	Males	27.72	23.78	21.94	0.00	250.00
Mean popularity of users who responded to participants' contacts	Females	30.21	26.00	30.01	1.00	660.80
	Males	83.34	73.08	64.93	3.00	1418.50
Mean popularity of users who did not respond to participants' contacts	Females	29.24	23.62	47.26	1.00	1078.33
	Males	86.97	79.48	53.63	1.00	827.00

Q2 = Questionnaire 2.

if self-worth were unrelated to popularity. On the other hand, the highest self-worth women were decidedly *un*likely to communicate with unpopular men (the observed differences were 34% and 28% *below* the expected frequencies for contactors and contactees, respectively). In the opposite corners, the differences were also in the predicted directions. Low-self-worth women were less likely than expected (by 32% and 21%), and high-self-worth women were more likely than expected (by 23% and 16%), to have popular contactors and contactees. The men showed no such clear-cut pattern. For the women, however, this would appear to be strong evidence in favor of the matching hypothesis, particularly because it shows that the least desirable people in the dating pool were voluntarily selecting each other at greater than chance rates.

Discussion

In Study 3, we tried to remain true to the original matching hypothesis and test whether individuals' self-assessments of their worth predict the desirability of their chosen dating partners. The answer appears to be a qualified yes. Both women and men described the person they intended to meet face-to-face in more desirable terms to the degree that they themselves had higher self-worth. This admittedly might be subject to some distortion or bias since higher self-worth participants might be more motivated to see

their partners positively or might be projecting their own positive characteristics onto their partners. However, it was also the case that for women only, self-worth was positively correlated with the average popularity of all their communication partners.

Examining individuals at the more extreme ends of the social desirability spectrum, we found matching at both ends. Importantly, the results showed that the lowest self-worth women contacted the least popular men at greater than expected rates. Presumably the least popular men received relatively few contacts overall because their profiles portrayed them as undesirable, but women who judged themselves to be undesirable as well chose nevertheless to contact them. This is the first evidence we know of to show that lower-social-desirability individuals will willingly select undesirable partners. Although men's self-worth was not related to the popularity of the women they contacted, unpopular men tended to contact low-self-worth women and popular men tended to contact high-self-worth women.

Altogether, Study 3 provides some of the first evidence that matching does occur in the "real world." Moreover, it is, in our opinion, the most direct test of the matching hypothesis to date, and it provides direct evidence that individuals in the earliest stages of dating will actually select relatively undesirable partners if they, too, have low social desirability. It is not clear why men's self-worth did not more strongly predict their partner selections. More research is needed to

Table 2. Correlations Between Users' Popularity and the Popularity of Individuals With Whom They Communicated, Study 4

Correlation between:		Male users	Female users
Users' popularity and:	Mean popularity, people who contacted users	.37	.27
	Mean popularity, people whom users contacted	.17	.26
	Mean popularity, people who responded to users' contacts	.15	.23
	Mean popularity, people who did not respond to users' contacts	.14	.26
Mean popularity, people who contacted users, and:	Mean popularity, people whom users contacted	.16	.29

All correlations are significant at *p* < .001.

examine whether aspects of self-worth other than those we measured might be better predictors for men or whether, simply, self-worth is a more powerful determinant of women's than men's behavior. Also, participants' self-worth was not linked to their specific Q2 partners' popularity. Thus, we found that a woman's self-worth was a modest predictor of the average popularity of all of the men with whom she communicated, but not of a specific man with whom she was in contact at a particular point in time. Taken as a whole, the evidence points to the matching hypothesis feasibly describing women's dating behavior, but the results for males remain inconclusive.

We postponed analyzing the relationship between contactors' and contactees' popularity until Study 4 because we were able to analyze the popularity data for a larger proportion of users on this online dating site. It is to those analyses we turn now.

Study 4

In Study 4, we used the online dating site's activity logs to gather popularity data for more than one million users on the site to test the hypothesis that more popular individuals would select and would be selected by others whose popularity matched their own. Note that this prediction is derived from the matching hypothesis, but it is a twist on the original hypothesis since popularity is not self-assessed. In some ways, though, popularity can be considered a more "complete" measure of social desirability in that it encompasses a person's physical attractiveness and other aspects of desirability (e.g., having desirable traits) as reflected in their online profiles.

Following Study 2, we also hypothesized that we would find stronger evidence of popularity-based matching among successful pairs than among unsuccessful pairs. Note, however, that the evidence from Study 3 suggests that this might not be the case; women's self-worth in Study 3 correlated equally with reciprocating and nonreciprocating partners' popularity.

Method

We used the site's activity logs to identify users who were active between March 2009 and February 2010.[4] For each

individual, we computed his or her own popularity, the average popularity of all the unique individuals he or she contacted, and the average popularity of all the individuals who contacted him or her. As in Study 3, we also separately computed the average popularity of all the people whom users contacted who did respond and who did not respond.

Results

Preliminaries. The popularity variables were strongly right skewed, so we log transformed the data. Because men initiate more contacts than women, women's popularity was substantially higher than men's overall (*M*s = 8.11 and 26.06, respectively, *SD*s = 12.43 and 44.32). Thus, we conducted all analyses separately for women and men. Because of the extremely large number of observations in the analyses, all statistical tests we ran were highly significant.

Popularity-based matching. We began by correlating users' popularity with the popularity of the people in their dating networks. Table 2 presents the correlations. An examination of the results shows first that popularity-based matching does seem to occur. Across the board, the correlations between users' and communication partners' popularity were positive for both men and women. Second, in contrast to Study 2, the current data show comparable correlations between users' popularity and the popularity of both their reciprocating and nonreciprocating partners. There is no suggestion of an interaction. Third, when we took this one step further and compared the average popularity of the people who contacted and who were contacted by users (see row 5 of Table 2), we found positive correlations among all the people in users' communication networks.

Success rate. Finally, the matching hypothesis predicts that individuals should be more successful—that is, should receive more responses—when they contact people of similar desirability. To test this, we standardized men's and women's popularity (because their distributions differed substantially) and computed the mean absolute difference between users' own popularity and the popularity of the people they contacted. As in Study 2, we took the absolute rather than the raw differences because the matching hypothesis predicts that a deviation in either direction should be disadvantageous. Next, we computed individuals' success rate by dividing the number of responses they received into the

number of people they contacted. Finally, we correlated those two variables. However, the correlations for both men ($r = -.01$) and women ($r = .00$) were essentially zero.

Discussion

These findings indicate that individuals tend to select and be selected by other users whose relative popularity is similar to their own; that is, the more popular men and women tended to communicate with each other, as did the unpopular men and women. Although this supports the matching hypothesis, we also did not find that individuals who contacted similarly popular others were more likely to be successful than those who contacted dissimilar others. This suggests that although people do tend to stick to others who are "in their league," it would not be detrimental to their chances if they did not, at least when it comes to popularity.

General Discussion

Despite a lack of evidence that individuals, especially less desirable individuals, actually seek out and select dating partners whose social desirability approximates their own, the matching hypothesis is often treated as a well-established tenet of social psychology. With the current research, we were consequently in the unusual situation of testing a theory that is already widely accepted. In our studies, we aimed to address shortcomings in the extant literature by measuring self-worth and social desirability in multiple ways and by examining whether individuals' actual dating behavior supports the matching hypothesis. Across the four studies, we tested the matching hypothesis in its original form—that is, that self-assessments of self-worth guide dating partner selection—as well as examining a more general prediction that similarly desirable individuals will select each other from the dating pool.

In the introduction, we laid out three key elements that must be demonstrated if the matching hypothesis is to be substantiated: (a) that individuals self-assessments, as distinct from others' judgments of them, predict their behavior; (b) that individuals select partners who are similar to them in terms of social desirability, defined more broadly than physical attractiveness; and (c) that individuals actually seek out and select similarly desirable partners from among a diverse pool of potential partners. Each received some support in the current research. In Studies 1 and 3, individuals' self-worth predicted their interest in dates of varying social desirability, where social desirability was manipulated via physical *and* social attractiveness (Study 1) or was indexed by people's popularity on an online dating site (Study 3).

We also found that even in a populous online dating environment, individuals voluntarily selected similarly desirable partners from the very beginning of the dating process. Individuals' own popularity was correlated with the popularity of the people with whom they communicated through the online dating site in Study 4, and women's self-worth

predicted the popularity of the men whom they contacted and who contacted them in Study 3. Importantly, we found that this was the case for both the lowest self-worth women and the highest self-worth women, showing that low-self-worth individuals will voluntarily select undesirable partners. This is contrary to Kalick and Hamilton's (1986) suggestion that perhaps long-term partners are similar because highly desirable individuals first select each other out of the dating pool, leaving undesirable individuals to select among themselves.

These findings should give proponents of the matching hypothesis something to cheer. Nevertheless, the current research also shows that the degree to which matching is apparently an important factor in dating behavior depends very much on (a) the way social desirability is measured and (b) the stage at which it is measured (abstract preferences vs. selecting among viable options vs. reciprocating another's overture). For example, although we found no notable gender differences when examining matching based on physical attractiveness (Study 2) or popularity (Study 4), the findings from Study 3 suggest that self-worth might differently affect men's and women's dating behavior. Also, the findings of Study 2, along with a sizable extant literature, lead to the conclusion that matching based on physical attractiveness is not related to partner selection. Were researchers to focus on only physical attractiveness (as they largely have done, in fact), it would be reasonable to conclude that matching does not occur, but our studies using different assessments of social value suggest the opposite. Moreover, our data provide evidence that matching based on physical attractiveness becomes increasingly important at successive steps of dating initiation. This literature could benefit greatly from longitudinal studies in which couples are followed from the initial contact through later stages of their relationship to see whether individuals who are matched (or mismatched) on different dimensions tend to succeed and for how long.

Longitudinal studies could also be of use in clarifying the inconsistencies between the success rate analyses from Studies 2 and 4. In Study 2, daters received more replies to their messages when they contacted similarly physically attractive others; in Study 4, individuals were no more successful when they contacted similarly popular others than when they did not. Although physical attractiveness is easy to judge quickly, popularity, because it reflects a wider spectrum of characteristics, is consequently a far more complex assessment. It might well be the case that couples who are mismatched on popularity are indeed unsuccessful in the long run, but it simply take longer for that effect to appear.

Overall, our findings suggest that one reason that established couples tend to be similar (e.g., Luo & Klohnen, 2005; Montoya et al., 2008; Watson et al., 2004) is that matching is at play from the earliest stages of dating. Although the data support the notion that individuals' self-assessments do, in part, drive matching, that does not rule out the possibility that there are other more elusive, external "market forces" pushing similarly desirable people together (Kalick &

Hamilton, 1986); the factors we investigated explained only a modest portion of the variance in individuals' behavior. It is a challenge for researchers to disentangle the various forces behind the complex choice of whom to select from the pool of potential dating partners. Along those lines, it would also be useful for researchers to make direct comparisons between different operationalizations of social desirability. For example, we have reported elsewhere that physical attractiveness is the strongest predictor of romantic attraction in online dating (Fiore, Shaw Taylor, Mendelsohn, & Hearst, 2008), but what if a physically unattractive person contacts an attractive person who is otherwise well matched in terms of social desirability? Or what if two highly physically attractive individuals have markedly different self-worth? Are those individuals likely to contact each other, and if they do, will their interest be mutual and their relationship enduring? Thanks to online dating, researchers can begin to answer these questions.

For those who might be concerned about whether our results derived from online dating would generalize to more traditional dating situations, we expect that they would, although that is an empirical question. Online dating is a contemporary social reality for millions of people, not just a fringe or anomalous subset of the population, and dating sites very much constitute "real-world" environments in which to study these phenomena. It is now common for couples to meet online, more common even than meeting through work, family, or religious institutions (Rosenfeld & Thomas, 2010). Online behavior is "real" behavior, and romances that begin online are every bit as real as those that begin offline. Finally, we wish to reiterate the importance of studying the matching hypothesis using actual dating behavior. It is only in situations in which real risk and uncertainty are present that we can expect individuals to relinquish their "fantasy" aspirations and make "realistic social choices."

Authors' Note

Andrew T. Fiore was at the School of Information at the University of California, Berkeley, when this research was conducted. He is now at the Department of Telecommunication, Information Studies, and Media at Michigan State University.

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Notes

1. We chose to do so in the interest of brevity, and because the goal of the current research was not to examine the relative importance of text and photo in perceptions of online dating profiles (see Fiore, Shaw Taylor, Mendelsohn, & Hearst, 2008).

2. The log files contained data on the number of messages sent and received by users from March to November 2009 but no information about the content of the messages. Note that we did not collect any personally identifiable information from the log files.

3. Popularity is also related, predictably, to physical attractiveness. Among the individuals whose photos were rated in Study 2, the correlation between physical attractiveness and popularity was .53 ($p < .001$) for women and .28 ($p < .001$) for men. This indicates that men took physical attractiveness into account more than did women when deciding whom to contact (Buss & Shackelford, 2008; Hitsch, Hortacsu, & Ariely, 2010). For both men and women, considerable variance in popularity is still attributable to factors other than physical attractiveness.

4. Our confidentiality agreement with the site prevents us from reporting the exact number of users.

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