

Evaluating the Risk and Attractiveness of Romantic Partners When Confronted with Contradictory Cues

Michael Hennessy · Martin Fishbein ·
Brenda Curtis · Daniel W. Barrett

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Abstract Research shows that people engage in “risky” sex with “safe” partners and in “safer” sex with “riskier” partners. How is the determination of “risky” or “safe” status made? Factorial survey methodology was used to randomly construct descriptions of romantic partners based on attractive and/or risky characteristics. Respondents evaluated 20 descriptions for attractiveness, health risk, likelihood of going on a date, likelihood of unprotected sex, and likelihood of STD/HIV infection. Respondents were most attracted to and perceived the least risk from attractive descriptions and were least attracted to and perceived the most risk from the risky descriptions. The differences between the “conflicting information” descriptions are attributable to a primacy effect: descriptions that began with attractiveness information but end with risk information were evaluated more positively than those that began with risk and ended with attractive information.

Keywords Sex partner selection · Factorial surveys · Sexual decision making

Introduction

People tend to engage in “risky” (i.e., condom unprotected) sex with “safe” partners and in “safer” (i.e., condom protected) sex with “riskier” partners (Misovich, Fisher, & Fisher, 1997). For example, condom use is more likely with casual or occasional partners than with main or regular partners and those who have had a main partner for less than 1 month use condoms more than those who have had a main partner for at least 3 months (Fishbein & Jarvis, 2000; Gebhardt, Kuyper, & Greunsven, 2003; Peterman et al., 2000). Similar results were found by Montano, Kasprzyk, vonHaefen, and Fishbein (2001) in their study of different high-risk groups. While male and female injecting drug users, commercial sex workers, and multi-partnered heterosexuals had strong intentions to use—and actually did use—condoms with their casual partners/clients, relatively few intended to use or actually did use condoms with their main partners. Presumably, they make this distinction because they believe that their main partners present less of a risk to them than do casual partners (Conley & Collins, 2002; Rhodes & Malotte, 1996). An important question not addressed in these epidemiological studies is how people make these risk assessments. That is, how do people determine that a potential romantic and/or sexual partner is “risky” or “safe”?

Knowing how people process limited information about a potential partner takes on additional importance as communication technology changes the way people find romantic and sexual partners. For example, there is evidence that internet dating agencies and bulletin boards are increasingly being used to meet other persons and, at times, to subsequently have sex

M. Hennessy (✉) · M. Fishbein · B. Curtis
Public Policy Center, Annenberg School for
Communication, University of Pennsylvania, 3620 Walnut
Street, Philadelphia, PA 19104, USA
e-mail: mhennessy@asc.upenn.edu

D. W. Barrett
Department of Psychology, Western Connecticut State
University, 181 White Street, Danbury, CT 06810, USA

(Bull & McFarlane, 2000; Bull, McFarlane, & Rietmeijer, 2001; Halkitis & Parsons, 2003). Using internet personal ads, bulletin boards, and chat rooms, people get information and make decisions about a potential partner in computer mediated communication (Nowak, 2003) even though the “information” about the potential partner may be exaggerated or falsified (Knox, Daniels, Sturdivant, & Zusman, 2001). Public health researchers predict that relationships arranged through the internet will contribute to the spread of sexually transmitted diseases (STD; McFarlane, Bull, & Rietmeijer, 2000).

Several studies have addressed, at a general level, the relationship between judgments of risk and attractiveness and intentions to engage in dating and mating behaviors. In one study (Agocha & Cooper, 1999), participants (especially men) tended to neglect risk-relevant information and relied on perceived physical attractiveness in deciding to date and have unprotected sex with a potential partner. However, regardless of whether the potential partner was at high or low risk (according to the provided sexual history), the higher the participants’ intentions to have sex, the lower were their intentions to use condoms. Similarly, Dijkstra, Buunk and Blanton (2000) studied heterosexual males in an experiment that manipulated physical attractiveness (assumed to be positively associated with attractiveness) and social dominance (assumed to be negatively associated with attractiveness) of potential female romantic partners. Participants viewed a picture that was either attractive or unattractive and received a personality description that was either high or low in social dominance. Then the potential romantic partner was assessed in terms of the respondent’s motivation to have sex with the person, her perceived promiscuity, and risk for STD infection. Analysis showed that physical attractiveness increased the respondent’s motivation to have sex, elicited higher estimates of the woman’s past promiscuity, and was positively (albeit non-significantly) associated with perceived risk of STD infection.

Although these studies give some insights into the relationships between physical attractiveness, perceived risk, and partner selection, they did not explicitly include features of the potential partner in addition to physical attractiveness (such as being a social drinker or a smoker, being self-confident, or expressing specific long term romantic expectations). Identifying which characteristics of a potential partner are correlated with assessments of risk and attraction and estimating the correlation between these risk and attractiveness judgments were not part of the research problem.

A recent study addressed these concerns. Fishbein, Hennessy, Yzer, and Curtis (2004) conducted a survey in which young adults evaluated 159 characteristics of a potential romantic partner in terms of both romantic attractiveness and health risk. For example, they rated characteristics such as self-confident, happy with myself, dependent, is a good listener, has tattoos, or wants to spend quiet evenings together. More than half of the rated characteristics were seen as “attractive” while less than 10% were viewed as “risky.” The statistically significant gamma association between average risk and average attractiveness evaluations for the 159 aspects was $-.61$, suggesting that the more one is attracted to some aspect of a potential partner, the less likely is one to view that aspect as “risky.”

A strength of the study was the use of an extensive list of possible indicators of risk and attractiveness. However, the design did not permit respondents to judge a potential partner’s risk and attractiveness in the face of reinforcing or contradictory cues: the respondents were never asked to make a decision about a romantic partner when more than a single piece of information was available. This is clearly a weakness because potential romantic partners, like all “social products” such as automobiles, appliances, educational institutions, and professional disciplines, reflect a mix of characteristics and features. Thus, individuals usually must come to a single conclusion about the quality of a romantic partner in the same way they come to a conclusion about the acceptability of a particular automobile model, a writing instrument (Tomkovick & Dobie, 1995), or the likelihood of unprotected sex (Gold, Skinner, Grants, & Plummer, 1991).

This article addresses three general research questions. First, how do young adults balance negative and positive information when making global assessments about romantic partners? Much research shows that decision-making about partner selection uses abstract or likely irrelevant information as inputs, what Misovich et al. (1997, page 88–89) term “AIDS-prevention heuristics.” For example, respondents often report that they “just know” whether a sexual partner is safe through observations of the partner’s appearance (e.g. Gold et al., 1991; Keller, 1993; Maticka-Tyndale, 1991; Williams et al., 1992) or such as how long they have known the other person (Kershaw, Ethier, Nicolai, Lewis, & Ickovics, 2003: page 524–525). Our specific concern is the relative weight of risky versus attractive characteristics and the respondent’s assessment of the partner’s risk and attraction given to their combinations of characteristics.

A second question is: what are the gender differences in risk and attractiveness judgments? Given that

males respond differently to risk information than females (Hoyle, Fejfar, & Miller, 2000; Millstein & Halpern-Felsher, 2003; Seto, Lalumiere, & Quinsey, 1995; Siegrist, Cvetkovish, Gutscher, 2002) it seems likely that gender differences might be systematically different for all types of potential romantic partners, resulting in a consistent “main effect.” Alternatively, gender could moderate the risk and attractiveness assessments depending on the type of description. That is, male or female respondents would respond differentially to “high risk” or “highly attractive” or to some other specific romantic partner profile. In this case, there would be an interaction effect between gender, partner description type, and risk/attractiveness assessments.

Finally, how does the order of the information presented in the romantic partner descriptions affect overall judgments? In communication research, the impact of order of information is framed in terms of “primacy” or “recency” effects. Under a model of primacy, initial information embedded in a persuasive message has greater impact than later information; if recency effects operate, later information has the greater impact (Hovland, 1958). As Ohanian and Cunningham (1987: page 101) summarize:

The idea behind primacy effect is that the initial set of arguments presented to an individual will interfere with the reception of the second set of arguments...recency states that the last material presented will be more effective than the first set...because it is assumed that the message is still fresh in the individual's mind. In a typical primacy-recency study, one side of an issue is presented and then followed by a presentation of the opposite side, or a person is first described negatively and then positively (or vice versa).

Information order should also be important in the case of romantic partner selection: certainly no one “leads off” with negative information about themselves in personal advertisements or in internet dating chat rooms and the same principle may apply to written descriptions, especially for descriptions that include negative information by design (as is the case here) or by misperceptions of the target audience's romantic partner preferences. In the case of romantic partner assessment, recency or primacy effects would be evident if descriptions that begin with attractive features and end with risk features are differentially assessed compared with those that lead with risky aspects and conclude with attractive ones. The partner descriptions used in this study were designed to differ exactly in this way.

In summary, how individuals weigh risk and attractiveness information in deciding about a romantic partner is a critical precursor of the decision to engage in “safer sex” behavior. The purpose of the present research was to investigate how, in a context analogous to an internet dating site where participants search for romantic partners (not necessarily sex partners), young people use the information available to make judgments about the romantic attractiveness as well as risk status. Using factorial survey methodology (Rossi & Nock, 1982), we seek to understand the impact of consistent and inconsistent combinations of attractive and risky characteristics of potential partners and the respondent's gender on judgments concerning overall romantic attractiveness and health risk as well as subsequent behaviors such as going on a date, having unprotected sex, and becoming infected with an STD/HIV.

What are the relationships among the potential partner assessments (risk, attractiveness, going on a date, having unprotected sex, and getting infected)? Previous research (e.g., Fishbein et al., 2004) suggests that the more one is attracted to a partner, the less likely one will see the other as a possible health risk. In addition, both perceived risk and attraction should act to influence one's decision to date and to have unprotected sex with a potential partner. Moreover, while partner risk should also be positively related to one's belief that unprotected sex would lead to the acquisition of an STD or HIV, it is not clear whether attraction will negatively influence this belief. Finally, we assume that the more one believes that unprotected sex with a potential partner will lead to a STD or HIV infection, the less one should be willing to have unprotected sex with that partner.

What are the effects of vignette type on judgments of risk, attractiveness and the other outcomes? We hypothesized that the consistent vignettes would produce the most disparate outcomes while the inconsistent partner profiles would produce intermediate values. That is, attractiveness ratings should be highest in descriptions that include no risky features and lowest in those that include no attractive characteristics while risk ratings should show the opposite pattern. The mixed descriptions (i.e., consisting of both high attractiveness and high risk information) should receive intermediate ratings. We also expect primacy or recency effects for the mixed pattern but have no prediction as to which will prevail. Absent an order effect, mixed descriptions should yield statistically equivalent average judgments because the random construction of the descriptions makes them essentially equivalent.

What are the effects of gender on judgments of risk and attractiveness and the other outcomes? We expect no gender differences in the consistently attractive descriptions but do expect gender differences as the descriptions of the potential romantic partner become dominated by risk information because males are known to be less risk averse than females. This would suggest an interaction between gender and description type such that males rate risky vignettes as less risky than females but attractive ones approximately the same as females.

Method

Participants and Procedures

Respondents were actively recruited to participate in the study on the campuses of two Philadelphia universities using pairs of students handing out flyers describing the study. The project was described as the “Romantic Partner Selection Study” with the purpose of finding out “...what kinds of information people like you look for when they choose a romantic partner.” Each respondent was compensated \$10 for their time after responding to the survey which typically took 30–45 min to complete. We limited the analysis sample to respondents between 18 and 28 years of age (Mean age = 20.7, Median age = 20) who indicated interest in other gender romantic partners (16 males and 22 females who indicated interest in same gender partners were dropped from the analysis). The original *N* was 711 and the age and sexual preference conditions reduced the respondent sample size to 655. Forty-nine percent were male. The respondents were predominantly Caucasian (34%) and African-American (30%) with 16% Asian/Pacific Islander and 4% Hispanic/Latino. The remaining 9% were of mixed ethnicity and 6.4% failed to indicate their ethnicity.

The survey was computer administered using the software *MediaLab* (Jarvis, 1998) and consisted of three sections. The first section asked for age, gender, and sexual orientation so that the potential romantic partner was the appropriate gender for the respondent. The second part presented the respondent with 20 different descriptions of a romantic partner using the factorial survey method. After each description, respondents were asked to rate each potential partner on each of the five assessments.

A factorial survey is a self-administered survey that presents hypothetical scenarios (i.e., vignettes) that are randomly constructed from mutually exclusive descriptive phrases. Respondents then make an

evaluative judgment or a decision based on the data presented in the vignette; this evaluation is the response variable given the vignette stimulus. Factorial surveys are often used to model individual decision-making processes and consumer preferences: Hennessy, Manteuffel, DiIorio, and Adame (1997) modeled adolescent decisions to have sex on the basis of randomly constructed social contexts. Some factorial survey examples eliciting preferences include contact-tracing programs to control STD infection (Hennessy, Williams, Mercier, & Malotte, 2002b), HIV vaccine trials (Hennessy et al., 1996), and features of STD/AIDs prevention programs (Hennessy et al., 2002a). The construction and analysis of factorial surveys has been described in detail elsewhere (Hennessy MacQueen, & Seals, 1995; Hox, Kreft, & Hermkens, 1991; Rossi & Nock, 1982).

The descriptions themselves were randomly constructed by *MediaLab* from the attributes listed in Appendix 1 based on results in Fishbein et al. (2004). *MediaLab* then displayed 20 romantic partner descriptions to the respondent in a random order. Each description of a potential romantic partner was constructed using an initial and then final section, which were one of two types. **A** sections included partner features that were high attraction-low risk while **R** sections were constructed from partner features that were high risk-low attraction. Each description was a combination of two sections: **AA** vignettes were high-attraction/low risk with high attraction-low risk, **AR** vignettes were high attraction-low risk with high risk-low attraction, **RA** vignettes were high risk-low attraction with high attraction-low risk, and **RR** vignettes were high risk-low attraction with high risk-low attraction sections.

As can be seen in Appendix 1, the first attractiveness section (**A**) consisted of a choice from high attractiveness attributes 1 and 2, a choice from low risk attribute 1, and a choice from the moderating attribute. The first risky section (**R**) consisted of a choice from high-risk attributes 1 and 2, a choice from the low attractiveness attribute 1, and a choice from the moderating attribute. The moderating attribute was randomly constructed from 3 elements: “is a social drinker”, “is open-minded toward new ideas,” or “carries a laptop most of the time.” Moderators were randomly assigned to all first sections (**A** or **R**) and are independent of all other manipulated features of the partner descriptions. Because our focus here is on the attractiveness and riskiness ratings, we do not analyze the moderating factors here.

The last half of the descriptions were constructed the same way: the second attractiveness section (**A**)

consisted of a choice from high attractiveness attributes 3 and 4 and a choice from low risk attribute 2 while the second risky section (**R**) was comprised of a choice from high risk attributes 3 and 4 and a choice from the low attractiveness attribute 2. Extreme examples at both ends of the risk/attractiveness rating scale were selected to make sure that the romantic partner descriptions were extremely contradictory when both high risk/low attractiveness and high attractiveness/low risk profiles (e.g., the **RA** and **AR** types) were presented to the respondent.

For internal consistency purposes, there were symmetric restrictions placed on some of the selections: the high risk aspect “more sexual experience the better” could not appear with the low risk aspect “believes that sex should be saved for someone really special” and the high risk aspects “uses drugs occasionally” and “smokes cigarettes” could not appear with the contradictory highly attractive aspects “does not use drugs” and “does not smoke.” In summary, attractiveness (**A**) sections presented high attractiveness and low risk information while risk (**R**) sections presented high risk and low attractiveness information. Each vignette was a combination of two sections and each respondent evaluated five each of the randomly constructed **AA**, **AR**, **RA**, and **RR** partner descriptions.

All the vignettes were uniform in one respect: all romantic partners were described as single and between the ages of 18 and 25 because this was both the general age range of respondents and preliminary research had shown that these two demographic aspects were highly valued in a romantic partner (Fishbein et al., 2004). When the selection rules, logical constraints, and gender specific pronouns were applied, a complete **AA** description displayed for a female heterosexual, bisexual female, or gay male respondent could be:

Paul is single between the ages of 18 and 25. He is faithful to friends and acquaintances and is supportive of others. He believes that sex should be saved for someone really special. One thing you should know about Paul is that Paul is open minded to new ideas.

Some other things that you should know include the following.....

Paul does not smoke and is self-confident. He likes to attend cultural events.

But an **AR** description for the same respondent could be:

Brian is single between the ages of 18 and 25. He is trustworthy in dealing with friends and

acquaintances and does not use drugs. He strives to live responsibly. One thing you should know about Brian is that Brian carries a laptop most of the time.

Some other things that you should know include the following.....

Brian believes that life is short and one should live life to the fullest and he can best be described as “living in the moment.” He is often pessimistic.

Measures

Partner Description Assessment Measures

The respondents assessed the romantic partner descriptions as to romantic attractiveness (i.e., “How attractive is this person as a potential romantic partner?”), perceived health risk (i.e., “How risky to your health is this person?”), the likelihood that the respondent would go on a date with the romantic partner (i.e., “How likely is it that you would go out on a date with this person?”), the likelihood the respondent would have unprotected sex with the partner (i.e., “If you were on a date with this person, how likely is it that you would have unprotected sex?”), and the likelihood that the respondent would become infected with an STD or AIDS after having unprotected sex with the partner (i.e., “If you have unprotected sex with this person, how likely is it that you would get a sexually transmitted disease or HIV?”). The item wordings were chosen to be consistent with similar questions used in the original study (Fishbein et al., 2004). All were coded on a 1–11 point scale. The attractiveness item used “extremely unattractive” and “extremely attractive” as end-points, the risk item used “extremely safe” and “extremely risky” as end-points, and the likelihood items used “extremely unlikely” to “extremely likely.”

Data Analysis

For descriptive analysis, we use summary statistics, *t* and *F* tests, and bar plots of averages. For all regression analyses, we use random effects regression combined with Huber-White adjustments to the standard errors (Kennedy, 1998, page 133) to correct for non-independence of the observations due to the nested nature of the data (i.e., the assessments are nested within respondents). As long as the White estimator is used in situations where the clustering variable has more than 20 values, it gives acceptable Type I error rates

(Donner & Klar, 2000, page 94; Murray, 1998, page 99). This is not a concern here, for our clustering variable—the respondent ID—has over 650 values. All tests of mean differences or between coefficients were based on difference between R^2 values with and without constraints imposed (Wonnacott & Wonnacott, 1986, page 184).

Our analysis strategy is the following. First, the three research questions are examined using descriptive graphs, plots, and correlations. Then the hypotheses are revisited using regression analysis to look more specifically at the details of the multivariate relationships, to formally test the equivalency of the **AR** and **MA** mixed descriptions for primacy or recency effects, and to investigate the appropriate functional form (e.g., linear or interactive) of the relationship between types of partner descriptions, gender of the respondent, and the assessment outcomes.

Results

Statistics of the Outcome Choices

Table 1 displays the means and standard deviations of the five outcome variables and Table 2 shows the correlations between the five outcomes. Because all assessments were scaled from 1 to 11, the median is 6 and we see that two of the average values are slightly above the midpoint (health risk and STD/HIV infection), two are essentially at the median (attractiveness and going on a date) and one is far below it (having unprotected sex).

What are the relationships among the outcome measures (risk, attractiveness, going on a date, having unprotected sex, and getting infected)?

Looking at the correlation matrix of the assessment outcomes in Table 2, there is a strong negative correlation between attraction and risk ($r = -.55$, $P < .01$) but both attraction and risk are significantly related to “going on a date” ($r = .88$ and $-.54$ respectively,

$P < .01$ for both) and to “getting infected” ($r = -.41$ and $.64$ respectively, $P < .01$ for both). Regression analyses indicate that consideration of both attractiveness and risk accounts for 78% of the variance in “going on a date” and going on a date is primarily determined by attraction ($b = .81$, $t = 76.11$, $P < .01$) not risk ($b = -.11$, $t = -10.23$, $P < .01$). In contrast, only 41% of the variance in “getting infected” was explained by risk and attractiveness assessments and getting infected is primarily determined by risk ($b = .53$, $t = 28.63$, $P < .01$) and not attractiveness ($b = -.10$, $t = -8.09$, $P < .01$). The have unprotected sex outcome is only moderately correlated with the other variables, due to its limited variance (see Table 1). As expected, having unprotected sex is positively correlated with attraction ($r = .21$, $P < .01$) and dating ($r = .22$, $P < .01$) and negatively correlated with risk ($r = -.17$, $P < .01$) and getting infected ($r = -.21$, $P < .01$).

What are the effects of vignette type on judgments of risk, attractiveness and the other outcomes?

Regression analysis using three dummy variables to capture the types of romantic partner vignette were estimated to test the null hypothesis of no significant differences on the assessment outcomes between the four types of vignettes. All χ^2 tests indicated statistically significant differences between types of vignette: for attractiveness, $\chi^2(3, N = 12,877) = 1211.74$, $P < .01$; for risk, $\chi^2(3, N = 12,877) = 1379.16$, $P < .01$; for going on a date, $\chi^2(3, N = 12,877) = 1061.62$, $P < .01$; for having sex, $\chi^2(3, N = 12,877) = 90.36$, $P < .01$, and for infection, $\chi^2(3, N = 12,877) = 804.95$, $P < .01$. Note that although statistically significant, vignette type made little practical difference for the unprotected sex outcome; the averages ranged from 2.24 (SD = 2.24) for the **RR** descriptions to 2.85 (SD = 2.56) for the **AA** ones, generally indicating that respondents would have a low likelihood of unprotected sex for all vignette types. As expected, there were large differences between the **RR** and **AA** vignettes and smaller differences between **RA** and **AR** vignettes because these

Table 1 Summary statistics of romantic partner vignette ratings

Outcome	N	Mean	SD
Attractiveness	13,047	5.98	3.03
Risk	13,008	6.31	2.71
Go on a date	13,050	6.01	3.04
Have unprotected sex	13,039	2.55	2.40
Infection	12,917	6.68	2.71

Note. The scale for all outcome items is 1–11. See text for exact item wording

Table 2 Correlation matrix of five assessment items

	Attraction	Risk	Date	Have sex	Get infected
Attraction	1.00				
Risk	−0.55	1.00			
Date	0.88	−0.54	1.00		
Have sex	0.21	−0.17	0.22	1.00	
Get infected	−0.41	0.64	−0.40	−0.21	1.00

Note. $N = 12,865$ rated vignette descriptions

mixed descriptions present essentially balancing information. Differences between the mixed vignette types were consistent with the *primacy* hypothesis: compared with **RA** vignettes, **AR** vignettes were rated higher for positive outcomes like attractiveness and going on a date and lower for negative outcomes like risk and getting infected. See Fig. 1 for the graphical display of the means.

What are the effects of gender on romantic partner judgments?

Table 3 presents the mean judgments on each outcome variable by gender. Asterisks indicate statistically significant differences between genders. This table shows that males are more attracted to and more likely to go on dates with their potential romantic partners than are females. Males also see their potential romantic partners as less risky overall and as representing a lower chance of infection. Thus it is perhaps not surprising that they are also more likely to indicate that they would have unprotected sex with their potential partners.

Regression Analysis of the Partner Assessments

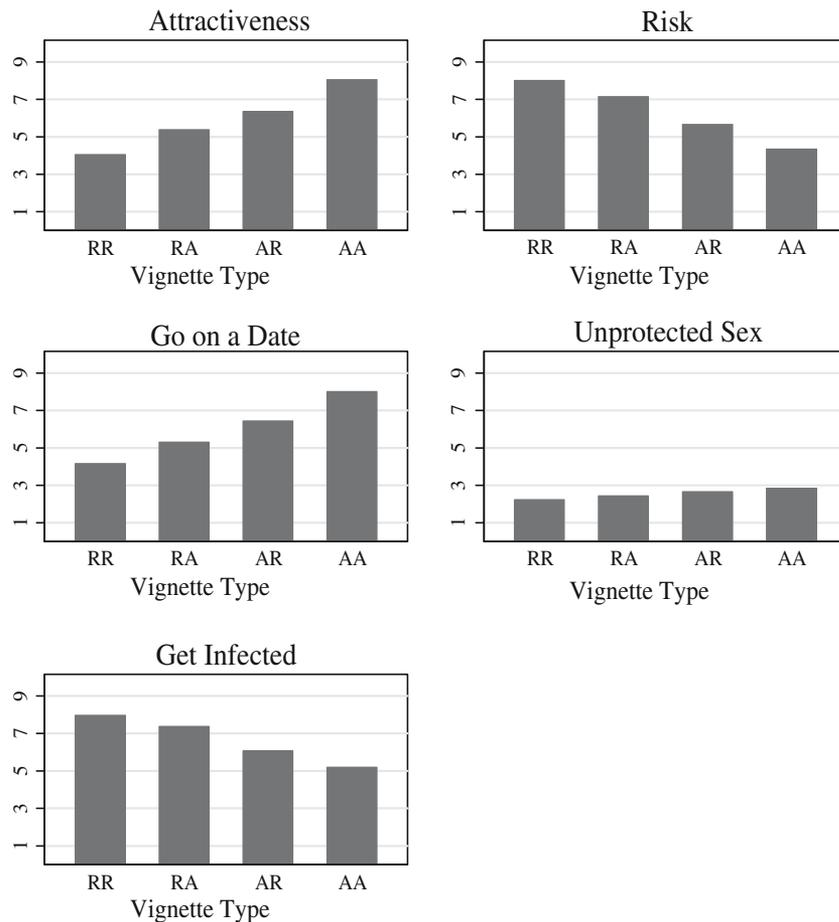
While the above analyses focused primarily on univariate displays, correlations, and mean differences, more detailed analyses of the research questions relating to the issues of primacy and the potential equivalence of the **RA** and **AR** vignettes and possible

Table 3 Averages of romantic partner assessment outcomes by gender

Outcome	Gender	
	Male	Female
Attractiveness	6.37* (6,416)	5.61 (6,631)
Risk	6.02* (6,397)	6.59 (6,611)
Go on a date	6.40* (6,416)	5.63 (6,634)
Have unprotected sex	3.12* (6,416)	1.99 (6,623)
Get infected	6.33* (6,364)	7.02 (6,553)

Note. All outcomes are on a 1–11 scale. Number of rated romantic partner descriptions is in parentheses. An * in Male column indicates that that difference between male and female rating is discernibly different from zero (all *P* are < .01) using regression implemented *t*-tests to adjust for non-independence of the observations

Fig. 1 Average assessment by vignette type partner description vignettes evaluated by five assessments. Notes: RR is Risky-Risky vignette type. RA is Risky-Attractive vignette type. AR is Attractive-Risky vignette type. AA is Attractive-Attractive vignette type. All outcome assessments are 1–11 scale. See text for more information



interactions between gender, partner description, and assessment require significance tests of equality of regression coefficients and of interaction terms. Because of the range restrictions apparent for the “unprotected sex” outcome (see Fig. 1), we only use four outcomes (attraction, risk, go on a date, and get infected) as dependent variables in the regression analyses. We use the dummy variables for the type of vignette describing the potential romantic partner and gender (male = 1) to quantify the combined effects of characteristics of the choice (i.e., the romantic partner) and the chooser (i.e., the respondent) on the outcomes.

Table 4 shows the results. The body of the table has the regression coefficients for each predictor with respect to each of the four assessments. Because these are unstandardized coefficients, they are the change in the assessment due to a single unit change in the predictor variables. These unstandardized coefficients are comparable across dependent variables (Greenland, Schlesselman, & Criqui, 1986). All results are in reference to the case where the intercept is the average assessment of an **AA** vignette by female respondent.

The regression results show that adding risk information to the description decreased attractiveness and the chance of dating and increased perceived risk and chance of infection. But the mixed types of descriptions (**AR** and **RA**) tend not to have the same regression coefficient as they should if these two types were essentially identical from the viewpoint of the respondents. In fact, there is a strong primacy effect when the vignettes are contradictory (i.e., **RA** and **AR**). Specifically, in comparison to the **AA** vignettes, mixed

partner descriptions with risk information first (i.e., the **RA** vignettes) decrease attractiveness by -2.70 scale points, while mixed descriptions with attractiveness information first (i.e., the **AR** vignettes) decrease attractiveness by -1.73 scale points. The same pattern is shown for the go on a date outcome: here the differences are -2.71 and -1.58 respectively.

The results for risk are just the reverse: risk information increases the risk assessment (both of general risk and risk of infection) more when it precedes than when it follows attractiveness information. For general risk the differences are 2.79 and 1.30, for risk of infection, they are 2.16 and .85. All these patterns are unlikely to be due to chance: the change in R^2 test that compares the null hypothesis of equal coefficients to the actual data show that the hypothesis of equivalency is not supported. All the F ratios testing this null hypothesis are large and statistically discernable from unity (see the bottom section of Table 4 for the details).

Finally, the gender effects in Table 4 are also consistent with the bivariate results presented above: after controlling for vignette type, males evaluate the same description as significantly more attractive and “date worthy,” less risky, and as indicating a lower chance of infection as females. But is there a gender and vignette interaction? Testing interactions requires the addition of three interaction terms (the dummy variables for the three vignette types multiplied by the “male” dummy variable) to the main effects regression model of Table 4. When this is done, eleven of the twelve terms are discernable from zero (only males in the **AR**

Table 4 Random effects regression results for (1) Attractiveness, (2) Risk, (3) Go on a date, and (4) STD/HIV infection outcomes using vignette type and gender as predictors

Predictors	(1) Attractiveness assessment	(2) Risk assessment	(3) Go on a date	(4) Get infected
RR description	-4.04 (34.19)**	43.65 (37.07)**	-3.88 (32.28)**	2.77 (28.34)**
RA description	-2.70 (25.66)**	2.79 (31.26)**	-2.71 (25.22)**	2.16 (25.11)**
AR description	-1.73 (22.47)**	1.30 (22.56)**	-1.58 (21.33)**	0.85 (16.75)**
Male	0.77 (6.95)**	-0.59 (5.90)**	0.79 (6.95)**	-0.67 (5.14)**
Intercept	7.73 (82.89)**	4.67 (51.16)**	7.67 (80.76)**	5.56 (49.98)**
Observations	12,877	12,877	12,877	12,877
Number of respondents	653	653	653	653
ICC	.26	.27	.27	.42
R^2	.26	.28	.24	.18

Tests of *RA* and *AR* regression coefficient equivalency:

Attractiveness: $\chi^2 = 121.33$, $df = 1$, $P < .01$

Risk: $\chi^2 = 397.77$, $df = 1$, $P < .01$

Go on a date: $\chi^2 = 164.53$, $df = 1$, $P < .01$

Get infected: $\chi^2 = 346.00$, $df = 1$, $P < .01$

Note. All outcomes are on a 1–11 scale, all predictors are dummy variables. Robust Z statistics in parentheses. ICC = Intraclass correlation coefficient. **Significant at 1% or less

vignette for the risk outcome show the same vignette effect as females) and χ^2 tests on the R^2 change show significant increases in the regression sums of squares compared with the error sum of squares for all four assessments. The results for the interaction term tests are as follows. For attractiveness, $\chi^2(3, N = 12,977) = 44.46, P < .01$; for risk, $\chi^2(3, N = 12,877) = 11.46, P < .01$, for going on a date, $\chi^2(3, N = 12,877) = 41.83, P < .01$, and for getting infected, $\chi^2(3, N = 12,877) = 13.02, P < .01$. Thus, it appears that male and female respondents do differ in their responses depending on the type of romantic partner description.

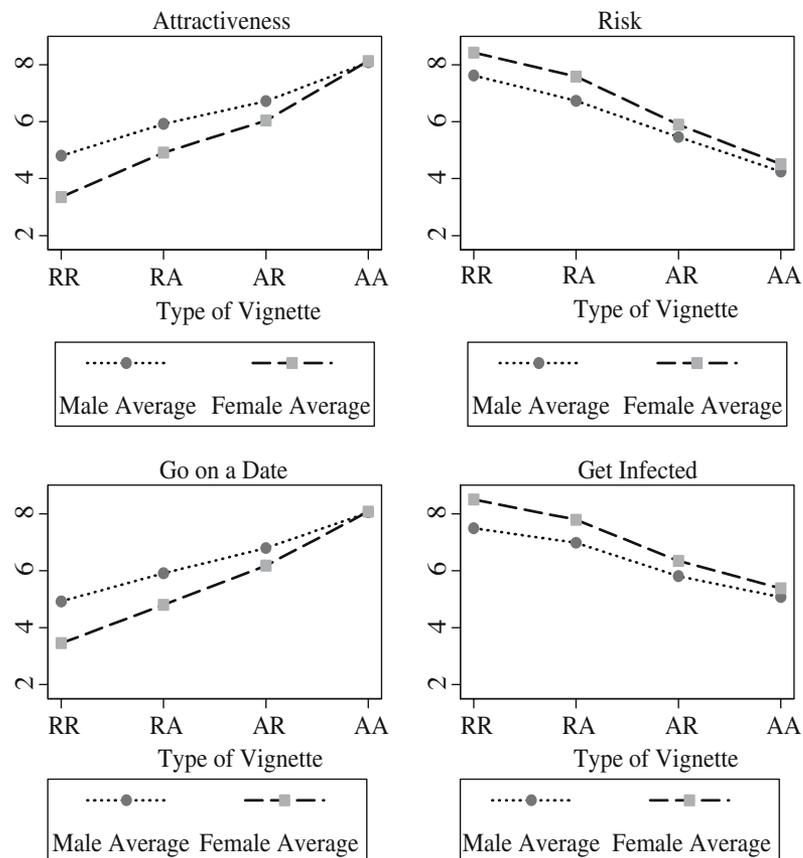
While these regression results tell the statistical story, a better way to display the results is through plots. Figure 2 shows the predicted means, by vignette type, for the four assessment outcomes from the regression analysis that included the three gender*vignette type interaction terms. Note that for all assessments there are virtually no differences between male and female respondents for **AA** vignettes: males and females agree that attractiveness and going on a date is highest and riskiness and chance of infection is lowest compared with the other descriptions. In contrast, males see **RR** romantic partners as more attractive, more “dateable”, less risky, and posing less of a

chance of infection than do females even though all the information in **RR** descriptions are of high risk and low attractiveness.

Discussion

As expected, the more one was attracted to a potential partner, the less they perceived that person as a health risk. Moreover, although both perceived risk and attraction were significantly correlated with the intention to go on a date with the potential partner, this judgment was based primarily on attraction. It is of interest to note that neither risk nor attraction was strongly related to one’s intention to have unprotected sex. This finding is probably due, at least in part, to the low variance associated with the unprotected sex variable. Not surprisingly in the AIDS era, young adults do not have strong intentions to engage in unprotected sex with a new partner. While one could argue that this is merely a socially desirable response, it seems more likely that young adults have learned the public health message. The important question, which cannot be answered by our present study, is whether they successfully act on those intentions (Fishbein, Hennessy,

Fig. 2 Romantic partner assessments by gender predicted interactions Notes: RR is Risky-Risky vignette type. RA is Risky-Attractive vignette type. AR is Attractive-Risky vignette type. AA is Attractive-Attractive vignette type. All outcome assessments are 1–11 scale. These results derived from Table 4 with Gender*Vignette type interactions added. See text for more information



Yzer, & Douglas, 2003). Although self-reports of condom-use intentions may be inaccurate (DeVisser & Smith, 2004), meta-analyses of condom use studies and intervention research show moderate to large correlations between condom use intentions and behavior (Albarracín, Johnson, Fishbein, & Muellerleile, 2001; Sheeran, Abraham, & Orbell, 1999).

Vignette type—which systematically varied romantic partner characteristics—makes a large difference in the outcome evaluations. This is not particularly surprising in the extreme cases of **AA** and **RR** because they were designed to be maximally different, but the results imply that the differences between the “conflicting information” descriptions (i.e., the **RA** and the **AR** cases) are attributable to a primacy rather than a recency effect: descriptions that begin with positive information but end with negative information are evaluated more positively than those that begin with negative information and end with positive. Note that the information order hypothesis and the empirical findings of a specific primacy effect noted here is incompatible with a reaction to negative versus positive information postulated under a model of “automatic” information processing (Spielman, Pratto, & Bargh, 1988; Pratto & John, 1991). That is, if mixed vignettes evoked merely an affective reaction to negative rather than positive information, the **RA** and **AR** descriptions should have equivalent average assessments. But they do not, and this finding implies that the respondents are actively processing the information in the partner descriptions, a finding that is consistent with qualitative studies that show young people have predictable expectations about future sexual behavior as well as about their preferred romantic (and sexual) partner (e.g., Eyre & Millstein, 1999) and even “casual sex” may be planned for in the same way as that with regular or “main” partners (Paul & Hayes, 2002).

Participant gender also predicted partner description assessments. This is no surprise and the gender differences should not be overstated. Males still ranked **RR** descriptions as riskier and less attractive compared with other types of descriptions; their risk and attractiveness rankings were just not as high or low as those assigned by females for these types of descriptions. The interesting finding is the interaction of gender with vignette type and assessments (see Fig. 2). Males and females agree on **AA** descriptions, but there is a gradient of disagreement on both the risk and attractiveness values: as the partner descriptions become dominated by more risky and less attractive features, the risk and attractiveness evaluations by gender

diverge. It is interesting to note that comparisons of high and low sensation-seekers also show the same interactive pattern relative to risk and attractiveness assessment (Henderson et al., 2005) but the association between sensation-seeking and male gender was only .34 so it is unlikely that sensation seeking tells the entire story.

This study still leaves some questions unanswered. We do not know how physical attractiveness (e.g., communicated by a picture attached to the romantic description) would change the assessment of the profile. Consistent with the primacy effects found, it seems likely that strong positive presentations of self in personal advertisements may “blind” an individual to some risky aspects of a relationship. We would also like to know much more about the subsequent data search process after reactions to the initial profile of romantic partners are established. For example, after a positive initial assessment of a potential partner (i.e., a high attractiveness rating and a low riskiness rating), what sorts of additional information would be desired? Would negative information be sought after to “balance” or “test” the initial assessment or would more positive information be the goal in order to “validate” or “confirm” the initial decision? The most biased case—and the worst scenario in terms of sexual risk behavior—would be an information search strategy where risk related information was purposively avoided and just evidence designed to confirm the initial decision is actively sought (Nickerson, 1998).

Finally, one fundamental problem with all factorial survey studies is their hypothetical nature, although a recent study of an actual romantic partner search process (Kurzban & Weeden, 2005) shows that “superficial” (i.e., observable) aspects of the potential partners were considered the most important in romantic partner selection: for men, it was attractiveness and the Body Mass Index (BMI) of the female and for females it was a number of male characteristics focusing on general male attractiveness such as attractive face, body, height, and BMI (Kurzban & Weeden, 2005, page 234). Nonetheless, the internally consistent findings presented here still need to be corroborated by a similarly focused study of actual, as opposed to hypothetical, romantic partners.

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Appendix

Attributes and aspects used to construct the romantic partner descriptions

Male partner's name	High risk attribute 4
1. Brian	1. can be described as a "free spirit"
2. Michael	2. can be described as "living in the moment"
3. Paul	Low attractiveness attribute 1
4. Tony	1. thinks that cleanliness is over-rated
5. James	2. smokes cigarettes
6. Jason	Low attractiveness attribute 2
7. Mark	1. is often pessimistic
8. Peter	2. often feels unfulfilled
9. Ray	3. is agnostic in religious orientation
10. David	Moderators attribute
11. Richard	1. is a social drinker
12. Vance	2. is open minded toward new ideas
Female partner's name	3. carries a laptop most of the time
1. Julia	High attractiveness attribute 1
2. Kim	1. is faithful to friends and acquaintances
3. Debby	2. is trustworthy in dealing with friends and acquaintances
4. Jane	High attractiveness attribute 2
5. Carmen	1. is supportive of others
6. Leslie	2. does not use drugs
7. Terri	High attractiveness attribute 3
8. Lily	1. does not smoke
9. Nicole	2. wants to go on to graduate school
10. Pam	High attractiveness attribute 4
11. Rebecca	1. is self-confident
12. Sharon	2. is generally happy with life
High risk attribute 1	Low risk attribute 1
1. enjoys sexual experimentation	1. strives to live responsibly
2. believes that the more sexual experience, the better	2. believes that sex should be saved for someone really special
High risk attribute 2	Low risk attribute 2
1. can be described as	1. strives to live cautiously
"secretive and mysterious"	2. wears glasses
2. wants to spend exciting nights together	3. likes to attend cultural events
High risk attribute 3	
1. uses drugs occasionally	
2. believes that life is short and one should live life to the fullest	

Note. The name of the potential partner plays no role in the analysis or study. It was merely included to make the descriptions more realistic and less redundant. Similarly, the moderator variables play no role in the analysis here

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