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Internet forewarning effects on ratings of attraction

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Abstract

This study investigates interpersonal attraction and the use of forewarning messages on the Internet. Male and female participants observed four photographs of the opposite sex on-line. Half of the participants were given a forewarning about the use of deception on the Internet before they rated the person depicted in the target photo. The control group was not exposed to the forewarning but instead read a general statement describing the Internet. Participants rated the photos for attractiveness, how likely they would be to engage in an on-line conversation with the person in the photo, and how likely they would be to accept a date with the person in the photo. The target photo's attractiveness and socioeconomic status were varied. The results indicated that a forewarning message might induce cautiousness among those using the Internet. Experimental group participants rated target photos as less attractive compared to those who were not shown a forewarning message, and were less likely to want to converse with or date the people depicted in the on-line photos. The implications of these findings in regard to Internet social behavior are discussed.

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1. Introduction

The development of the Internet provides a new medium for psychological research. The Internet can be utilized to conduct research efficiently due to ease of

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implementation and the relatively limited resources that are required (Krantz, Ballard, & Scher, 1997). This medium is particularly intriguing because of its ability to present integrated images and sounds that can be used as stimuli for research purposes. Although methodological pitfalls common to traditionally conducted studies still exist (e.g. self-selected samples), administering studies on the Internet appears to be as valid as those produced in laboratory settings. For example, one recent study (Krantz et al., 1997) compared the results of laboratory and Internet samples on the determinants of female attractiveness and found that the two data sets were driven by the same psychological variables.

However, the Internet is not merely a new methodological tool, but a human-machine interface that is the subject of empirical work per se. Although a nascent field, work has already begun that explores how Internet use affects the emotional state of its users. Kraut et al. (1998) found that greater use of the Internet was associated with increases in depression, small but significant declines in social involvement (as measured by communication within the family and social network size) and increases in loneliness. Similarly, Young and Rodgers (1998), using an on-line survey, found significant levels of depression to be associated with pathological or excessive Internet use.

Examination of interactional behavior on the Internet is another potential way in which we can attempt to understand how this technology is transforming social culture. In essence, the Internet is a social technology used for communication with individuals and groups (Kraut et al., 1998). The most common method for people to communicate in real time on the Internet is the Internet Relay Chat (IRC). There are generally between 10,000 and 15,000 users on the IRC at any one time, operating as many as 5000 different chat channels from all over the world (Shaw, 1997). The format of the IRC resembles a playwright's script. Each line of text scrolls off the top of the screen to make room for the new lines of text being transmitted through the bottom of the screen. Within the IRC, there is no physical body language, physical appearance, change in tone of voice, or facial expression to enable the intended decoding of a typed message. Lacking these mostly visual cues, many argue that computer mediated communication (CMC) has a much narrower bandwidth (i.e. fewer cues to determine the correct reception of message meaning) than real face-to-face interpersonal communication or other forms of mass-mediated communication (Baym, 1995; Kiesler, Siegel, & McGuire, 1984; Walther, 1992).

Therefore, opportunities for deception on the Internet are plentiful. When given the opportunity, individuals may exaggerate and overstate their own personal characteristics, which are often slightly idealized or fanciful versions of one's own view of oneself (Schiano, 1997). For example, people in Multi-User Domains (MUDs) have claimed that on the Internet there is no limit to who you can be (Turkle, 1994, 1995). Internet users can pretend to be wealthier or more physically attractive than they actually are, and in the physical absence of the other, some try on different personalities and even genders (Rheingold, 1993).

Chat room use on the IRC and other areas of the Internet have become increasingly popular for entertainment purposes (Shaw, 1997). Since these "rooms" are used to socialize, dating rituals are often performed in them. One danger is that such

dating does not permit normal physical observation so it is more difficult to tell from the cues presented whether the other party is being truthful about their personal characteristics (Baym, 1995; Shaw, 1997). Providing less information than necessary on the Internet can effectively cover insecurities that would be apparent in a real life encounter. Having an Internet alter ego can be a polite way of saying you're lying or covering up an aspect of your true self. According to Adamse and Motta (1996), "cybernauts" who exaggerate real-life characteristics or develop full-blown Net alter egos invariably seek to enhance their image in a positive direction. They wish to appear younger, more attractive, thinner, richer, and more interesting than they are in reality. Initially, alter egos are harmless in chat rooms. However, they can become problematic when a relationship develops between two individuals based on false premises. The differences between how chat partners appear in cyberspace and how they appear in the real world surprise and disillusion many individuals who begin friendships or intimate relationships on the Internet (Adamse & Motta, 1996).

Thus, it seems that cautioning users about on-line deceptions in this unregulated and often unstructured context requires attention and evaluation. Of particular interest is the idea that individuals knowingly or inadvertently put themselves in danger of being deceived in certain Internet situations, so a central question becomes whether forewarnings regarding the virtual environment are effective reminders that this type of deception might occur. Informing Internet users about potential deceptions may alter on-line behavior in the direction of safety, a critical consideration especially for children, adolescents, and young adults who are likely to be more vulnerable to manipulation or predation.

1.1. Forewarning research

The early social psychological persuasion research on the use of warning statements found that when participants were forewarned they were less persuaded by subsequent messages than those who had not been forewarned (Allyn & Festinger, 1961), and that temporal placement of the information was crucial in determining the effect of a persuasive communication (Kiesler & Kiesler, 1964).

An important process mentioned in the forewarning literature is the stimulation of cognitive defenses in the form of counter-arguments (Dean, Austin, & Watts, 1971; Freedman & Sears, 1965; Fukada, 1986; McGuire & Papageorgis, 1962; Petty & Cacioppo, 1977). When individuals are forewarned that a communicator will advocate a position contrary to their own, the period following the warning may be used to rehearse, recall, or even construct arguments supporting their initial position and refuting arguments that the source may use against that position. For instance, Petty and Cacioppo (1977) asked participants to monitor their thoughts in the period following the warning and indeed found evidence of counter-arguing in the listed thoughts of these participants. Since recall of counter-arguments is not an instantaneous process, Freedman and Sears (1965) reasoned that the addition of a brief delay between the warning and the beginning of the message should facilitate the preparation of cognitive defenses and further reduce the amount of persuasion produced by the communication.

In contrast, some experiments have found evidence that forewarning may encourage change in the participants' opinion toward the position of the source of the message (Mills, 1966; Mills & Aronson, 1965), sometimes even before the message is presented (McGuire & Millman, 1965). Kiesler (1971) addressed some of the contradiction in previous forewarning research by experimentally demonstrating that manipulation of the participants' public commitment to their own point of view was an important determinant of the effects of forewarning. Specifically, greater commitment led to enhanced resistance of persuasive efforts. Consequently, forewarning effects may at least in part be explained by the interaction of the warning with other psychological variables in producing resistance to persuasion, such as commitment (Kiesler, 1971) or attractiveness of the source (Mills & Aronson, 1965).

Mills and Aronson (1965) found that an overt, frankly stated desire to influence would actually enhance the effectiveness of an attractive communicator. When the communicator was attractive, they were more effective if they announced their intention to persuade; when the communicator was unattractive their stated intention to persuade had no apparent influence on their effectiveness. The authors suggested that participants were eager to please attractive people; therefore attractive people are more effective when they express a desire to influence. If people think that someone whom they like very much wants them to do something, they may be motivated to do it, even if the admired person does not and might never know about it. Thus, a very attractive source may be more effective in changing opinions if they openly and honestly inform the participants that they want to change their opinions.

A more recent investigation by Loken and Howard-Pitney (1988) on cigarette advertisements directed at women showed that specific warnings on ads can act as a counter-influence to an ad's appeal by making it less attractive and less persuasive than ads that contain only a general warning. The authors suggested that human models in ads have a powerful influence on college women's evaluations of the attractiveness and persuasiveness of ads. The study found ads with models were rated as more attractive and persuasive but less credible than ads without a model. If attractive people can effectively change or influence opinions, then it seems likely that attractive people can be effectively deceptive about personal attributes such as wealth, occupation, and achievements in an on-line environment.

Finally, another potentially confusing factor has been the use of the term "forewarning" to describe different types of pre-communication information (Papageorgis, 1968). Forewarning has been used to refer both to notifying the message recipient of the source's topic and opposing position (Freedman & Sears, 1965), and to inform the subject that the communicator has persuasive or manipulating intent (Kiesler & Kiesler, 1964). Since forewarning effects range from significantly enhancing the persuasive impact of a message to significantly inhibiting opinion change, some have argued that the complexity of the results comes from differences in how forewarning has been defined (McGuire, 1966; Papageorgis 1968). Likewise, Hass and Grady (1975) point out that the danger of using a single term to apply to more than one type of manipulation is that even when forewarning inhibits subsequent persuasion, it may do so by way of different psychological processes.

1.2. *Personal advertisements in dating behavior*

How do forewarning messages affect on-line interpersonal situations such as meeting individuals in chat rooms? While there has been limited study of chat room experiences, there is an established literature on the use of personal advertisements (ads) for dating purposes. Meeting others or dating through personals is very similar to Internet dating because in both cases the parties describe themselves in a written manner before any face-to-face encounters take place. The literature on this type of self-advertising may give insight into how people behave on-line in a similar “blind” dating situation. For example, a content analysis was performed on 800 “lonely-hearts” advertisements that equally represented advertisers of both sexes. It was found that women were more likely than men to advertise attractiveness, seek financial security, express concerns about the potential partner’s motives, and seek someone who was older. Men were more likely than women to seek attractiveness, offer financial security, profess an interest in marriage, and seek someone who is younger (Harrison & Saeed, 1977).

Moreover, several studies on personal ads and dating behavior found that men and women’s behaviors and desires were consistent with traditional sex role stereotypes (Davis, 1990; Deaux & Hanna, 1984; Harrison & Saeed, 1977; Nevid, 1984; Urberg, 1979). To illustrate, Davis (1990) studied 328 personal advertisements sampled from a major daily Canadian newspaper. He found that gender differences for desired companion attributes were consistent with traditional sex-role stereotypes. The men were more likely to desire a particular physical attribute than women, and the women were more likely to specify that the companion be employed, intelligent, have a profession, or be in good financial condition.

Rajecki, Bledsoe, and Rasmussen (1991) content analyzed 281 newspaper personal ads of mostly older singles. Again, men were found to be looking for physical attractiveness in a partner and women were looking for status in their partner. Interestingly, women received far more replies than men. Jason, Moritsugu, and DePalma (1992) sent questionnaires to 400 people who used personal ads. The 88 respondents were well educated and successful financially, but felt disconnected from traditional modes of meeting others (e.g. family, friends, work). These individuals claimed that they advertised because they were highly mobile or recently single, and thus removed from more traditional means of meeting others. The advertisements were seen as an alternative to the difficulties of meeting others in an urban and potentially isolating social environment. Approximately 85% reported being new to the area, 69% had difficulty meeting people through social activities for singles, 61% had difficulty meeting people in singles bars, 59% had lack of familial contacts, and 48% had a lack of contacts through friends. Sexual encounters, casual dating, companionship, and meeting new people were high on their list of goals. The authors concluded that the self-advertisers did not seem to have other ways to explore relationships, or may have tired of trying more conventional means of meeting others.

As the computer age has progressed, many in our culture have become increasingly busy and the ability to meet others has been reduced. Personal ad dating is

ubiquitous because it has filled a social need and niche, and using the Internet for similar purposes (e.g. email, chatrooms) is now widespread as well.

1.3. Studies of physical attraction and SES

Physical attractiveness and socioeconomic status (SES) are important factors to consider in the study of Internet interactional behavior because they are two of the most likely attributes about which one would lie or exaggerate in a potential computer mediated dating situation. One reason why people would lie about their attractiveness or SES is to improve their chances of meeting someone they perceive as desirable.

Men and women differ in what they look for in potential dating partners. From an evolutionary perspective, the ideal mate for a male is a female with high reproductive capacity; in other words a young woman (Buss, 1987; Thornhill & Thornhill, 1983). Males can be expected to prefer relatively youthful, female facial characteristics (Buss, 1987; Symons, 1979). For a female, the ideal mate is a male who can compete successfully for resources (Sadalla, Kenrick, & Venshure, 1987) and provide protection for their offspring. Women may be expected to prefer extremes of detectable facial characteristics to the extent that these reflect a male's strength, health, and ability to provide resources or protection for their offspring (Buss, 1987). Therefore, the appearance of robust health, clear skin, and strong muscles in a male is likely to be more attractive to females than the appearance of average health, skin, and muscles (Alley & Cunningham, 1991).

Male assessment of sexual attractiveness is determined more by objectively assessable physical attributes; female assessment is more likely to be influenced by perceived ability and willingness to invest in them (e.g. partners' social status, potential interest in them). Men place more emphasis on physical attractiveness in choosing partners for sex or marriage, and women place more emphasis on SES, earnings potential, and college education in choosing their partners (Berscheid & Walster, 1974; Hatfield & Sprecher, 1986; Townsend & Wasserman, 1997).

Furthermore, studies have shown that those judged to be highly attractive are more desired in dating situations (e.g. Berscheid, Dion, Walster, & Walster, 1971; Brislin & Lewis, 1968; Brundage, Derlega, & Cash, 1977; Sprecher, 1989; Townsend & Wasserman, 1997). When studying interpersonal attraction, Green, Buchanan, and Heuer (1984) found significant differences between popularity and attractiveness. Physically attractive men were more popular, and the most popular women were found to be younger and more attractive than their unpopular counterparts. In addition, Kenrick and Gutierrez (1980) found that judgments of average females' attractiveness were adversely affected by previously exposing study participants to pictures of extremely attractive females (i.e. female stars from television's *Charlie's Angels*).

Attractiveness has also been associated with a number of other positive traits. In fact, some research has suggested that physically attractive persons are expected to lead lives that are happier and more successful than people of lesser attractiveness (Berscheid & Walster, 1974).

In a clear example of persuasion by attraction and attribute generalization (Landy & Sigall, 1972), male college students read an essay that supposedly had been written by a female college freshman. The participants then evaluated the quality of the essay and the ability of its writer on several dimensions. By means of a photo attached to the essay, one third of the participants were led to believe that the writer was physically attractive and another third were led to believe that she was unattractive. The remaining participants read the essay having no information about the writer's appearance. As expected, participants evaluated the writer and her work more favorably when they thought she was attractive than when they thought she was unattractive.

In summary, people often exaggerate their positive characteristics and conceal their negative characteristics when advertising themselves (Cameron, Oskamp, & Sparks, 1977). Physical attractiveness and indicators of wealth and social status are factors which humans consistently consider when evaluating potential intimate partners. Meeting others on the Internet may be problematic, especially if the expectation is to have eventual contact in real life, since chat rooms give more opportunity for users to change or exaggerate their personal characteristics on these and other dimensions (Adamse & Motta, 1996; Rheingold, 1993; Schiano, 1997; Turkle, 1994). Warning Internet users who may be searching for friendship or intimacy of such deception might make them less susceptible to those who manipulate their identities with malicious intent.

Therefore, the present study attempts to measure the influence of an on-line forewarning statement on subsequent ratings of attraction. It was predicted that participants in the forewarning group would rate target photos as less attractive than the participants not receiving the forewarning, and would be more cautious in their willingness to engage the target in on-line conversation or to date them off-line. Because attractiveness and SES were considered potential factors that might influence perceptions of the forewarning message, it was predicted that female participants would rate males with high SES more favorably than low SES males, and that males would favor the more attractive women.

2. Method

2.1. Sample

The sample for the study consisted of male ($n=94$) and female ($n=100$) undergraduates drawn from a university in a small Southeastern urban area. The mean participant age was 28 (median 24), reflecting the primarily commuter-based student population. The mean age for women was 27 (S.D.=8.7; range 18–51), while the mean age for men was 29.6 (S.D.=10.6; range 19–67). The sample was 82% Caucasian ($n=159$), 4.6% African-American ($n=9$), 2.6% Hispanic ($n=5$), 4.6% Asian ($n=9$), 2.1% Native American ($n=4$), and 3.1% Other ($n=6$). Of 200 originally agreeing to participate in the study, 194 students completed necessary elements of the study. Eliminated from the study were four participants who entered the same

number for every question. Additionally, two participants who did not complete a sufficient portion of the questionnaires were also eliminated.

2.2. Materials and instruments

Stimulus materials were comprised of photographs of young adult men and women posted on Web pages that contained accompanying descriptive information (fabricated) about the pictured individual (see Appendix). Participants answered a series of questions about the target photos on Web pages that were linked sequentially.

All participants were administered the Interpersonal Trust Scale (ITS) developed by Rotter (1967) to assess the potential confound of pre-existing low levels of trust that might be differentially represented in the control and experimental group. The ITS was designed to measure one's expectation that the behavior, promises, and verbal or written statements of others can be relied upon. It contains 25 items rated on a 5-point scale, ranging from "strongly agree" to "strongly disagree." Scores can range from 25 (low trust) to 125 (high trust), with a neutral or midpoint score of 75. Mean ITS scores typically fall between 64 and 75. Several studies have provided evidence for the scale's construct validity (Geller, 1966; Hamhser, Geller, & Rotter, 1968; Rotter, 1967). Split-half reliability for the ITS was 0.76, with 0.77 for males ($n=248$) and 0.75 for females ($n=299$). Test-retest reliability, across an average time interval of seven months, was 0.56 ($P < 0.01$, $n=24$). Across a 3-month interval, the test-retest figure was 0.68 (Wrightsman, 1991).

Finally, participants were given a manipulation check comprised of five questions that assessed for retention of content from the forewarning message. Questions included the following: Do you recall reading today that people on the Internet sometimes submit false or misleading information about themselves? Did you think the information about the Internet presented earlier emphasized the dangers of socializing on the Internet?

2.3. Procedure

Students from undergraduate psychology classes were asked to volunteer for a study investigating Internet use patterns and behavior. Incentives to participate included randomly awarded mall gift certificates and extra course credit. All participants were assessed in one of the University's computer labs where they completed an on-line informed consent form and were randomly assigned to either a control (no Internet forewarning) or experimental (Internet forewarning) group. Participants were then directed toward an introductory Web page. This page served as the manipulation with the control group exposed to general information about the Internet, and the experimental group exposed to a forewarning message in addition to the general statement as indicated below:

Experimental Group Forewarning (Control group statement in italics)

The Internet is a new, exciting tool used for many purposes. People can socialize and communicate on the Internet through e-mail and various chat programs

like ICQ and the IRC. Such programs consist of one individual typing a message and sending it to another person via the computer modem.

Chat rooms can be used on the Internet to meet new people. People have been known to meet in a chatroom and establish actual relationships. Chat rooms and email have been used not only for socializing but also for a variety of activities such as business conferences, advertising, college courses, and lectures. In addition, people play games on the Internet against human opponents, and can even communicate with the opponent during the game.

Families can keep in touch even when separated by long distances. Many chat programs come with an Internet phone, which transfers a person's voice through a computer microphone and sends it through a computer modem to the other party. For example, by using chat programs on the Net, Mom in Texas can communicate with her son Stan in Alaska.

There are also potentially negative aspects to Internet use. On the Internet, people can exaggerate or lie about their personal qualities to make themselves appear better than they believe they really are. People may be dishonest and give you misleading information about themselves.

In one instance, there was a report of a woman who was submitting a false photo to make herself seem more attractive. She would meet a man online, email him the false photo, and then arrange to meet him for a date offline. The men who met her were always surprised when they realized they had been conned. There have also been reports of people exaggerating their annual salary. One Internet user reported, "Whatever salary they tell you, subtract at least \$20,000 from it." It is very easy to be taken advantage of on the Net. In a chatroom, you are really talking to a person through the computer screen. You can't really see the person—you can't see their body language. If they post a picture of themselves, how can you tell if the photo is really them? If they claim they make \$75,000 a year, how can you tell if they are exaggerating or not?

To summarize, prudent Internet users are typically cautious about certain dangers in socializing on the Internet. The Net has its share of benefits also. It allows diverse and geographically separated people to meet who would never have met before, and it provides a way to quickly access enormous amounts of information. Finally, the Internet is used for displaying images and information. In the following Web pages, you will see a series of photos. Please answer the questions under each photo. Thank you for your participation.

At the bottom of the introductory message was a proceed button that led the participants through a series of four Web pages, each of which contained a photograph opposite in gender from the participant. Descriptive demographic information was listed below each photograph, reflecting high and low SES levels. The eight photos (four male and four female) used in the study were selected from a larger pool pre-rated for physical attractiveness by 12 psychology graduate students and placed into two groups, high and low physical attractiveness. Pictures rated near the median were not considered for inclusion.

All participants then responded to three questions, which served as measurable components of attraction, after viewing each photo. Participants were asked how attractive they found the person in the photo (1 = Unattractive to 7 = Extremely attractive), and how likely they would be to converse on the Internet with the person in the photo (1 = Definitely won't chat to 7 = Definitely will chat). The final dependent variable assessed how likely participants would be to accept a date with the pictured person after meeting them on the Internet (1 = Definitely won't date to 7 = Definitely will date).

For example, a male participant rated how attractive he found the woman in the target photo, how likely he would be to converse on the Internet with her, and how likely he would be to accept a date with her. The participant would then proceed to the next Web page and would see a new photo with a varied description (e.g. a woman apparently of moderate means and high-physical attractiveness). After responding to the target photos and descriptors, participants were led to additional Web pages that contained the ITS, demographic questions, and the manipulation check. Participants were then debriefed and excused from the computer lab.

2.4. Design

This study consisted of a 2 (Forewarning versus No-Forewarning) × 2 (Male versus Female) × 2 (High versus Low Attractiveness) × 2 (High versus Low SES) factorial design. Data were analyzed using descriptive statistics, ANOVA, and MANOVA from SPSS version 6.1.

3. Results

Prior to statistical investigation of the primary hypotheses, two separate one-way ANOVAs were performed. The first was a test to confirm the lack of a statistical difference in trust (measured by the ITS) between participants in the forewarned group and those in the control group so subsequent tests based on equivalency could proceed. The second tested participant retention of the forewarning statement. Evidence was not found for differences in interpersonal trust between the two groups, $F(1, 183) = 1.56, P = 0.214$. The manipulation check on retention of the forewarning showed that the forewarned group maintained significant recall as compared to controls, $F(1, 191) = 92.74, P < 0.0001$. In other words, the forewarned group received the message of warning intended for them while the control group was less successful because they had not received most of the information included on the manipulation check post-test.

A MANOVA was employed to test the overall hypothesis that there would be a significant difference between the forewarning and no-forewarning groups on ratings of attraction. It was predicted that participants' overall rating (consisting of the sum of ratings for physical attractiveness and the participant's willingness to converse with, and date, the person represented in the photograph) would be significantly lower for those participants exposed to the forewarning (Table 1).

As shown in Table 2, the hypothesis was confirmed. Those who were forewarned rated the four target photos as less attractive than those who were not forewarned (see Fig. 1). Similarly, they were less willing to converse with the individual displayed in the target photo, and were less willing to date that individual than those who were not forewarned.

Forewarned males had higher mean ratings than forewarned females for attraction, willingness to converse, and willingness to date ($M=16.92, 15.13, 11.38$, respectively for males and $M=15.51, 13.74, 8.79$, respectively, for females). Finally, the combined means across forewarning by gender for the three variables reflected the same pattern. Mean scores were higher for males than females (17.1, 17.0, 12.8, respectively, for males versus 16.6, 14.2, 9.0, respectively, for females).

Table 2 shows a significant multivariate effect (Wilks' Lambda) for gender, forewarning, and the interaction between the variables, and a significant univariate Fisher's F ratio for gender and forewarning main effects across all dependent variables. Both main effects (gender and forewarning) reveal a confirmation of the direction of the hypothesized relationships. The interaction effect (gender \times forewarning) is not significant for any of the three dependent variables.

Table 1
Whole sample means and standard deviations for key variables

Variable	M	S.D.	Valid n
Age of participant	28.20	9.71	193
ITS total	69.86	7.29	185
<i>Dependent variables</i>			
Attraction score	16.65	3.14	194
Converse score	15.57	6.09	194
Date score	10.85	5.60	193

Table 2
Multivariate analysis of variance for forewarning and gender conditions

Source	df	F			
		Total ^a	Attract	Converse	Date
Gender (G)	1	0.88***	4.00*	12.26**	26.19***
Forewarning (F)	1	0.95*	4.39*	9.08**	4.80*
$G \times F$	1	0.96*	1.34	3.32	2.75
S within-group error	186	(9.48)	(32.82)	(26.83)	

Values enclosed in parentheses represent mean square error. S , participants.

^a Wilks' Lambda.

* $P < 0.05$.

** $P < 0.01$.

*** $P < 0.001$.

The next set of analyses consisted of repeated measures ANOVA. Between participants independent variables were gender and forewarning. Within participants independent variables were their scores for each of the four pictures representing a score for each of the four conditions: High Attraction, High SES; High Attraction, Low SES; Low Attraction, High SES; Low Attraction, Low SES (Table 3).

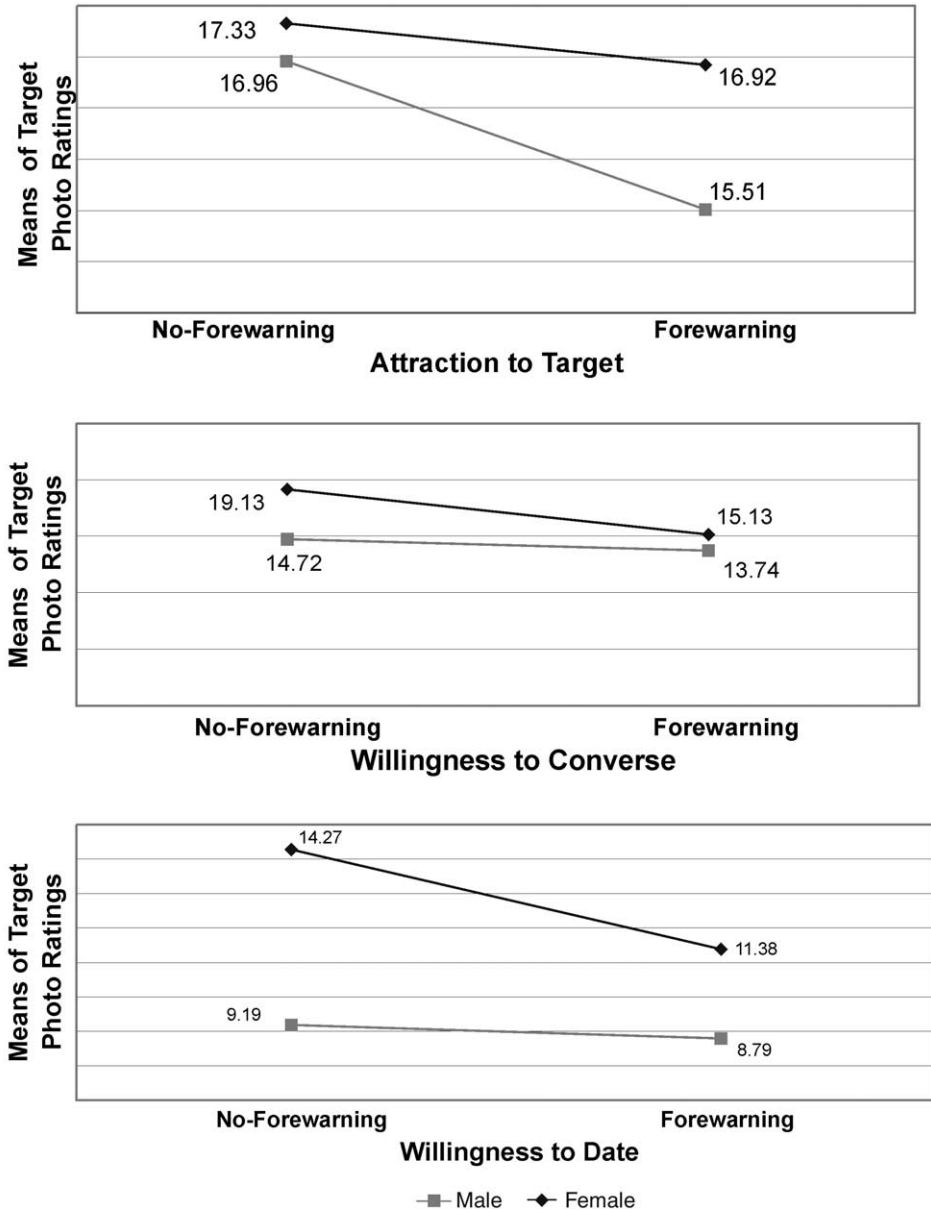


Fig. 1. Combined means of four target photos by group and gender.

Given independently pre-rated levels of attractiveness assigned to the target photos, there was a significant difference by both gender and forewarning on participants' attraction to the pictures. It was predicted that participants in the forewarning group would rate the target photos as significantly less attractive than the participants not receiving the forewarning. A significant difference for forewarning was found, $F(1, 189) = 4.19, P = 0.042$.

Considering within-participants effects, three sets of significant results were found: for the main effect of target photo attractiveness (as rated independently), for the main effect of assigned wealth to each target photo, and lastly for interaction effects involving gender, attraction, and relative social status. The first results indicate a significant difference across all participants in their ratings of the target photos in high and low attractiveness categories, $F(1, 189) = 51.72, P < 0.001$. In addition, the interaction of gender by attractiveness was significant, $F(1, 189) = 49.16, P < 0.001$.

In addition, a significant main effect for SES was detected, $F(1, 189) = 952.32, P < 0.001$, as well as a significant effect for gender by SES, $F(1, 189) = 6.57, P = 0.011$. Examination of relevant means indicated clearly that pictured individuals thought by participants to have higher social standing by virtue of their education and

Table 3
Repeated measures ANOVA for group, gender, attraction and SES

Source	df	<i>F</i>	<i>P</i>
Gender (<i>G</i>)	1	3.81	0.053
Forewarning (<i>F</i>)	1	4.19*	0.042
<i>G</i> × <i>F</i>	1	1.48	0.225
Within + residual	189	(2.37)	
Attraction ^a (<i>A</i>)	1	51.72***	< 0.001
<i>G</i> × <i>A</i>	1	49.16***	< 0.001
<i>F</i> × <i>A</i>	1	2.36	0.126
<i>G</i> × <i>F</i> × <i>A</i>	1	0.71	0.400
Within + residual (<i>A</i>)	189	(0.75)	
SES ^b (<i>S</i>)	1	952.32***	< 0.001
<i>G</i> × <i>S</i>	1	6.57*	0.011
<i>F</i> × <i>S</i>	1	0.71	0.400
<i>G</i> × <i>F</i> × <i>S</i>	1	1.16	0.283
Within + residual (<i>S</i>)	189	(1.37)	
<i>A</i> × <i>S</i>	1	6.53*	0.011
<i>G</i> × <i>A</i> × <i>S</i>	1	30.85***	< 0.001
<i>F</i> × <i>A</i> × <i>S</i>	1	3.81	0.052
<i>G</i> × <i>F</i> × <i>A</i> × <i>S</i>	1	0.01	0.920
Within + residual (<i>A/S</i>)	189	(0.81)	

Values enclosed in parentheses represent mean square error.

^a Attraction—high or low attraction rating.

^b SES—ratings of perceived social status based on stimulus photo descriptors (high or low).

* $P < 0.05$.

*** $P < 0.001$.

other personal characteristics were rated more favorably than those with seemingly lower social standing. Lastly, an interaction between target photo attractiveness and SES was found, with $F(1, 189) = 6.53$, $P = 0.011$, and a gender by target photo attractiveness and wealth three-way interaction was noted, $F(1, 189) = 30.85$, $P < 0.001$.

4. Discussion

The recent dramatic increase in the popularity and use of the Internet coupled with the relative freedom of access to information and the lack of regulation continues to make the issue of individual security and protection an important one. Deception occurs on the Internet with and without malicious intent. The main objective of this study was to assess the influence of an on-line forewarning message on measures of social attraction to target photos of opposite-gender models in four conditions: high SES with either low or high attractiveness and low SES with either low or high attractiveness. Participants rated the target photos on overall attractiveness, their willingness to have on-line conversations with the target, and their willingness to accept an actual date with each target. Additional objectives were to explore whether women participants would show greater attraction to higher SES males, and whether men would rate more attractive female models in the photos more favorably.

In congruence with expectations, forewarned participants rated target photos as less attractive, and were less likely to report a desire to chat online or date the target individual. This suggests that forewarned participants were concerned that the target photos were presenting a more positive image of the pictured individual than really existed, which would be a reasonable conclusion based on prior personal ad research (Cameron et al., 1977). Men in the sample produced higher scores on all three dependent variables regardless of the forewarning, which may indicate less caution with regard to Internet social behavior. However, this may simply reflect differences in the stimulus photographs (participants rated only opposite-gender photos). Female participants rated males of moderate means significantly lower than they rated males thought to possess more wealth and education. This is consistent with an evolutionary perspective in which the ideal mate for a female is a male who can compete successfully for resources and provide protection for his offspring (Sadalla et al., 1987). This is also consistent with personal ad dating research (Davis, 1990; Harrison & Saeed, 1977; Rajecki et al., 1991) where findings revealed women were looking for status and security in a partner.

Again in line with expectations, male participants rated females with high physical attractiveness more favorably than females with low physical attractiveness. Prior research suggests men are more likely than women to be seeking physical attractiveness in a partner (Davis, 1990; Harrison & Saeed, 1977; Rajecki et al., 1991). Similarly, men's perception of sexual attractiveness is determined in part by objectively assessable physical attributes (Townsend & Wasserman,

1997). Also, men place more emphasis on physical attractiveness in choosing partners for sex or marriage (Berscheid & Walster, 1974; Hatfield & Sprecher, 1986).

4.1. *Limitations*

One possible limitation is that the study used only college students. Given that the general public uses the Internet, caution is needed in making inferences from the present study. Also, the distribution of the ages of the participants was skewed as noted by the fact that although the mean age was approximately 28, the median was 24 and the mode was 22. Although the present sample may be more representative of young adults because the participants do not strictly represent a “traditional” college population, future studies would be strengthened by the use of a larger, more representative sample of ages of typical Internet users.

Another limitation is the large difference between the ages of the models as portrayed in the target photos (twenties) and that of some of the participants (maximum age was 67). A possible confound may have resulted in that some of the older participants might have rated the photos of a different age cohort without valid attention to issues of interpersonal attraction or potentially dating someone many years their junior. Likewise, this study included minority participants but none of the stimulus photographs reflected any ethnic or racial group other than Caucasian. Moreover, the study was designed assuming participants were heterosexual (rating opposite-gender photos), thus the potential effect of homosexual participants on the results cannot be assessed. A remedy for these concerns would consist of over-sampling a more ethnically diverse population and querying participants for their preferred characteristics with regard to attraction and intimate relationships, and then matching general preferences (e.g. heterosexual Latino; homosexual African-American) with appropriate stimulus materials.

A final limitation is that participants rated only one target photo in each of four conditions (four photos total) in the interest of time and efficiency. Future work in this area could include more target photos in each condition, or focus solely on forewarning effects and gender (e.g. comparing different methods of forewarning and varying content of message). It should be noted that a fair degree of experimental control was implemented in this study (i.e. random assignment to conditions; standardized computers and Internet browser; experimenter present as participant interacted with software), but future work on the use of forewarning to minimize negative consequences associated with Internet deception might fruitfully employ naturalistic observation methods.

4.2. *Implications for intervention*

The forewarning literature suggests that if a person is shown a cautionary message before exposure to a persuasive communication, they may be more resistant to the persuasion. In a similar manner, increasing Internet user awareness of the potential for inauthentic computer-mediated interaction and communication, as well as self-

expression and information exchange, is an important step in minimizing the misuse of this technology.

When Internet users engage in chatroom discussion for the purpose of meeting others, they expose themselves to the possibility of being deceived by a chat partner. Some types of deception that exist in chatrooms are lying about gender, age, wealth, and occupation. The forewarning in this study was effective on average as the experimental group participants presumably showed more caution after reading the forewarning. Given these findings, a warning message (e.g. pop-up box) before users enter into an Internet chatroom may offer some protection, or at least a reminder, for chatroom participants.

Another application of Internet forewarning messages that is growing in usage concerns Web pages with explicit content. Congress has been proposing legislation that would censure Web pages with adult content. Although this is logistically unreasonable, other harm reduction methods that fall short of censorship may be just as impractical. For example, the Child On-line Protection Act (COPA), recently passed into law by Congress, requires operators of commercial adult sites to confirm the identity and age of visitors. Those that do not comply face fines and prison for each time an underage surfer is exposed to “harmful” material. Opponents of this law say it is vague and has not adequately defined what is harmful material. They argue that the law would put a wide range of Web-site operators in danger of prosecution for what amounts to constitutionally protected content, such as information about safe sex, gay and lesbian issues, medical conditions, and even poetry. Rather than censure explicit content altogether, the development and implementation of persuasive cautionary messages before gaining access to Web pages or chatrooms with explicit content could be used to inform users (e.g. parents) about potentially offensive or psychologically harmful material or on-line interactions.

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Appendix. Examples of stimulus descriptors*(Female Photo 2)*

Name: Susan
 Age: 21
 Occupation: Department store clerk
 Education: GED degree
 Background: She grew up with very little money often having to wear her sister's hand-me-downs.
 Living Situation: Sharing a two-bedroom apartment with female roommate.
 Transportation: 1974 Chevette

- 1) How attractive would you rate this person?
 (Unattractive) 1 2 3 4 5 6 7 (Extremely Attractive)
- 2) How likely would you be willing to converse on the Internet with this person?
 (Definitely won't chat) 1 2 3 4 5 6 7 (Definitely will chat)
- 3) How likely would you accept a date with this person and agree to meet in person?
 (Definitely won't date) 1 2 3 4 5 6 7 (Definitely will date)

(Female Photo 3)

Name: Sandy
 Age: 20
 Occupation: College student
 Education: High school degree, AA degree.
 Background: Currently going to an Ivy League school.
 Living Situation: Two-story 5-bedroom homeowner
 Transportation: Favorite car is Porsche her parents gave her for graduation.

- 1) How attractive would you rate this person?
 (Unattractive) 1 2 3 4 5 6 7 (Extremely Attractive)
- 2) How likely would you be willing to converse on the Internet with this person?
 (Definitely won't chat) 1 2 3 4 5 6 7 (Definitely will chat)
- 3) How likely would you accept a date with this person and agree to meet in person?
 (Definitely won't date) 1 2 3 4 5 6 7 (Definitely will date)

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