

ORIGINAL ARTICLE

The Role of Friends' Appearance and Behavior on Evaluations of Individuals on Facebook: Are We Known by the Company We Keep?

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This research explores how cues deposited by social partners onto one's online networking profile affect observers' impressions of the profile owner. An experiment tested the relationships between both (a) what one's associates say about a person on a social network site via "wall postings," where friends leave public messages, and (b) the physical attractiveness of one's associates reflected in the photos that accompany their wall postings on the attractiveness and credibility observers attribute to the target profile owner. Results indicated that profile owners' friends' attractiveness affected their own in an assimilative pattern. Favorable or unfavorable statements about the targets interacted with target gender: Negatively valenced messages about certain moral behaviors increased male profile owners' perceived physical attractiveness, although they caused females to be viewed as less attractive.

doi:10.1111/j.1468-2958.2007.00312.x

Forming and managing impressions is a fundamental process, and one that has been complicated by new communication technologies. As computer-mediated communication (CMC) has diffused, successive technological variations raise new questions about interpersonal impressions. For example, with people meeting via text-based CMC—e-mail, discussion groups, or chat spaces of various kinds—a variety of questions arose about impression formation and management. These included whether and at what rate impressions are formed online (Walther, 1993), how online impressions may be like or unlike offline impressions (Jacobson, 1999), and how people judge the authenticity of self-presentation online (Donath, 1999). With further developments of Internet-hosted technologies, however, people can garner

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information about one another in other ways than direct online give-and-take. As Ramirez, Walther, Burgoon, and Sunnafrank (2002) noted, information seekers can mine static repositories of individuals' prior interactions or deliberate profiles in archives of group discussions or in personal and institutional Web pages. Add to the mix that many individuals are now "Googleable" and the possibilities grow. The relative value of various kinds of online information may depend on the extent that any item appears to be involuntarily associated with the person to whom it refers (Walther & Parks, 2002).

The newest forms of online communication complicate matters in ways that are unique with respect to the kinds of information they offer for observers to draw impressions, and they raise different theoretical issues than those formerly applied to interactive uncertainty reduction online. Social networking technologies, such as Facebook (<http://www.facebook.com>), offer a blend of interactive and static features in any one individual's online "profile." Moreover, what complicates these sites from an impression formation perspective is that people other than the person about whom the site is focused also contribute information to the site. Such postings may or may not include secondhand descriptions about the target individual and his or her conduct. More importantly, whereas postings by other people on one's own profile reflect the character of the individuals who made the postings, it is also possible that observers' reactions of those others may affect perceptions of the target profile maker as well, even though the profile maker his- or herself did not initiate or condone the postings. This makes participative social networking technologies different from Web pages, e-mail, or online chat because all those technologies allow the initiator complete control over what appears in association with his- or herself. The possibility that individuals may be judged on the basis of others' behaviors in such spaces prompts this question: Are we known by the company we keep?

This research examined the question of how other individuals' contributions to one's own online profile affect observers' impressions and evaluations of the profile maker. We discuss several approaches to impression formation online with respect to personal characteristics and draw upon offline research specifically related to context effects on judgments of physical attractiveness and interpersonal evaluations in order to form hypotheses about online perceptions that can be tested on the basis of judgments resulting from different characteristics on Facebook profiles. An original experiment involved mock-up Facebook profiles that alternately featured attractive or unattractive elements surrounding invariant central profile material. These variations affected observers' impressions of credibility and attractiveness, all without the target of these judgments having changed.

Facebook

Facebook is a social networking Web site initially built for college communities. It is organized around social networks corresponding to schools and, recently, other institutions and locales. Like other online social networking sites (see for review, Donath & Boyd, 2004; Stutzman, 2006), Facebook provides a formatted Web page

profile into which each user can enter a considerable amount of personal information in response to stock questions about his- or herself. On Facebook, this may include birthdate, e-mail address, physical address, hometown, academic demographics (year, major), hobbies, sexual orientation, relationship status, course schedule, favorite movies, music, books, quotations, online clubs, and a main picture (or other graphic) chosen by the user. Within and across social networks, users are allowed to search for other registered users and can initiate requests to other individuals to be *friends*. The implicit definition of friends on Facebook ranges from established intimate relationships to simply being acquainted (boyd, 2006). Once accepted as a friend, not only the two users' personal profiles but also their entire social networks are disclosed to each other, and new friendships often evolve via friends' friends. One's social network snowballs rapidly across institutions in this fashion, and this is the very function of Facebook that has fascinated millions of students and other users in the United States so far. The number of registered Facebook members was recently purported to be 19 million (Facebook Customer Support, personal correspondence, March 7, 2007).

In addition to his or her own profile, all users have a "wall" on their Facebook profiles, where their friends can leave messages to the owner in public. In other words, those peer-to-peer messages can be viewed by other registered users. These postings contain the friend's default photo from his or her own profile, as well as a verbal message. The messages may express sentiments or reflect common or individual activities between the target and/or the friend. They may even reflect a desire to embarrass the profile owner, according to a popular press account (Haskins, 2005). Individuals may not know, for some interval of time, that particular comments have been posted to their walls. Even if they do, they tend not to remove friends' postings from their profiles. Doing so is possible but defeats the spirit of Facebook's very utility and implicitly challenges the rules of friendship. Therefore, even if people question what has been said about them, they may follow Facebook norms and leave questionable posts on display. Half of the Facebook users in Tufekci and Spence's (2007) survey reported the discovery of unwanted pictures posted by other people, linked to their own profiles. It is these postings, which are not initiated by the profile owner but that nevertheless connect to that individual's profile, that make social networking technologies such as Facebook unique. This investigation focuses on the impression-connoting potential of these postings.

Do people garner interpersonal impressions from Facebook materials? It appears they do both for acquainted and for unacquainted targets. People already know many of the individuals they view on Facebook. More than 90% of Facebook users employ Facebook to stay in touch with or stay abreast of the activities of longtime acquaintances such as high school friends (Ellison, Steinfield, & Lampe, 2007). According to Tufekci and Spence (2007), more than half of the Facebook users reported having found out something very important about friends from their profiles. With respect to previously unacquainted individuals, some system creators promote their sites as a means for "making new friends" (Donath & boyd, 2004,

p. 71). In such cases, Facebook may provide the primary basis for impressions. According to Ellison et al. (2007), approximately 80% of one college's Facebook-using sample indicated that total strangers on their own campus view their Facebook profiles, and nearly 40% believe that total strangers from other universities view their profiles as well. Even when previously unacquainted individuals meet offline at college, they check the other's Facebook profile to learn more about that person and whether there are any common friends or experiences. This checking may happen when such newly met individuals return home to their computers or, we have been told anecdotally, is even done almost immediately after meeting, surreptitiously, using Web-enabled mobile phones.

Others are using Facebook to garner information about users as well. *The Yale Daily News* created shock waves when it reported that numerous employers have utilized Facebook to seek information about potential employees (Balakrishna, 2006). The shock was due in part to Facebook users' presumption that Facebook, like other virtual communities, is or should be private, if not technologically then by convention. Users often expect that the messages they leave about themselves and others are secluded to other college students or college personnel. Although a wider audience than expected may have technical access to their systems, users of many types of virtual communities develop a strong expectation of privacy about their online postings and exchanges. Research has documented that both online community participants (Hudson & Bruckman, 2004) and teenagers (Rifon, Vasilenko, Quilliam, & LaRose, 2006) feel quite negatively about having their messages studied in research. Individuals often feel that they should be free from observation online and that they have legal and/or ethical rights to such freedom (no matter how technologically or legally misplaced those expectations may be; see Walther, 2002). Thus, the nature of some messages on Facebook is such that they might not have been posted had the writers expected a wide and diverse audience to access them.

As we will show, garnering impressions from online information is nothing new, although the kinds of information social networking technologies present and the manner in which impressions form may be.

Impression formation and online venues

People spend considerable effort in order to form and to manage impressions, especially when anticipating or engaging in the initial stage of interactions (Berger & Calabrese, 1975; Goffman, 1959). Being able to self-present in a positive manner has been tied to social (and even physical) survival (Hogan, Jones, & Cheek, 1985). Nearly two decades of research has focused on the impressions people garner among those who they initially encounter via interactive CMC, that is, CMC in which participants' discourse—synchronous or asynchronous—is the basis for impressions. The central issue in that research tradition is that the nonverbal features that typically stimulate impressions offline are unavailable through text-based e-mail, group discussions, or real-time chat. Whereas early research suggested that

interpersonal impressions were occluded by CMC, alternative positions established contrary findings. For instance, social information processing theory (Walther, 1992) posits that CMC users readily translate the production and detection of affective messages from nonverbal behavior to verbal equivalents, although doing so may require more time and message exchanges in order to achieve normal levels of impressions (see, for review, Walther, 2006).

The impressions garnered via CMC, however, may or may not be just like those that occur from face-to-face encounters. In online interaction, there are fewer cues to observe and those that remain are under greater control of the persons to whom those cues pertain. Jacobson (1999) found that the initial impressions that individuals held about their partners through interactions in a multiplayer chat environment were discordant with later offline impressions of the same people, usually with respect to physical features. Hancock and Dunham (2001) found that participants in an online task-focused discussion of limited duration tended to make fewer judgments about the personalities of their partners, but more intense ratings on the judgment scales to which they did respond, than in comparable face-to-face discussions.

Because online impressions are controllable, they are often suspect. Online users can organize the information flow and enhance self-image by strategically selecting how and what to convey to the receiver (Herring & Martinson, 2004; Walther, 2007; Walther, Slovacek, & Tidwell, 2001). Inflating or even manipulating others' perceptions of oneself has come to be expected, and no small portion of online users' disclosures involves a modicum of exaggeration, even with good chances of meeting offline observers of their online portraits (Ellison, Heino, & Gibbs, 2006).

One way in which Facebook differs from other online sites for self-presentation has to do precisely with the degree to which some personal information is presented by means other than disclosure by the person to whom it refers. In many other communication settings, as Petronio (2002) notes, people make active decisions about when and how they will self-disclose. These decisions involve a complex process in which people set rules about how and when they will divulge private information, negotiate those rules with other people, and make decisions on disclosure based on violations of those rules. However, social networking sites to some extent obviate an individual's rules, negotiations, and disclosure decisions by placing discretion at the mercy of their social networks: "While (individuals) may have control over the content they disclose on their university-housed webpages, friends ... can post discrediting or defamatory messages on users' Facebook websites," according to Mazer, Murphy, and Simonds (2007, p. 3).

Walther and Parks (2002) considered the interplay of online self-generated claims and other-generated clues in their formulation of the "warranting" value of information, or the perceived validity of information presented online with respect to illuminating someone's offline characteristics. The warranting value of information is hypothesized to be a function of the degree to which that information is perceived to be immune to manipulation from the target to whom the information pertains. Several forms of high-warrant information have been nominated that meet

this classification. Information gained about someone through others in that person's social network is one example. People try to find out about one another via common nodes in overlapping social networks for several reasons: to reduce uncertainty about the partner, for example, and to do so without direct knowledge of the target that s/he is being inquired after (Parks & Adelman, 1983). Moreover, the objectivity and validity of third-party information should be considered more reliable than self-disclosed claims of the same nature. Thus, in a Facebook profile, things that others say about a target may be more compelling than things an individual says about his- or herself. It has more warrant because it is not as controllable by the target, that is, it is more costly to fake.

Aside from interactive exchanges, people leave and make impressions via the Internet by the intentional and unintentional characteristics conveyed by home pages on the World Wide Web (www). Although there are numerous studies focusing on personal Web sites and their creators (see Marcus, Machilek, & Schütz, 2006), much of the literature relies on speculation or anecdotal evidence. Miller (1995), for instance, suggests that users intentionally present themselves on the Web through self-description, photographs, links to other Web pages, and by the style and format (text, font, color, and background choices), structure, and vocabulary of their Web pages. More systematic evidence has identified several elements that raise or lower Web sites' credibility, including being recommended by others and being linked to from another credible Web site (Fogg, 2003; Fogg et al., 2001).

People use various features to assess personalities of the Web site creators (Vazire & Gosling, 2004). They rely both on things that site creators deliberately display and on things that creators unintentionally display to assess the character of the creator of the original site. These elements are important in understanding how observers appraise Facebook profiles: how they take in the intentionally built profile material as well as the unintentional, that is, the material left on one's profile site by friends in one's electronic and/or physical social network. These benchmarks, however, do not enhance our theoretical understanding of the matter. By examining some theories related to person perception via the artifacts that surround them, we gain more focused insights not only into perceptions of individuals in general but also how those perceptions are affected by context effects, that is, by concurrent information about an individual's associates and how, by assimilation, one's associates affect one's image.

The Brunswikian lens model

Brunswik's lens model (Brunswik, 1956; Gigerenzer & Kurz, 2001) describes one process by which individuals make inferences about the characteristics of others. According to this approach, individuals produce behaviors and generate artifacts that reflect their personalities. These personality "by-products" are available for observers to judge. In other words, the model supposes that environmental cues function as a lens through which observers make inferences about the underlying characteristics of a target. The lens model discusses the utility of various cues in

terms of cue validity, cue utilization, and functional achievement. When a particular cue is accurately reflective of a target's underlying personality characteristics, that cue is said to have *cue validity*. Brunswik conceptualized that observers do not rely on all possible cues in making their judgments about others, thus establishing the link between an environmental cue and an observers' utilization of that cue as *cue utilization*. Finally, *functional achievement* is defined as the co-occurrence of both cue validity and cue utilization. When functional achievement occurs, an observer should make an accurate judgment about a target.

Research has used Brunswik's lens model as a framework to understand others' personality judgments of a target based upon elements in the space that targets more or less control. Gosling, Ko, Mannarelli, and Morris (2002) used the lens model in their study of personality judgments based on personal offices and bedrooms. They proposed four mechanisms that linked individuals to the environments that they inhabit: *self-directed identity claims*, *other-directed identity claims*, *interior behavioral residue*, and *exterior behavioral residue*.

Self-directed identity claims are "symbolic statements made by occupants for their own benefit, intended to reinforce their self-views" (p. 380). Other-directed identity claims are "symbols that have shared meanings to make statements to others about how they would like to be regarded" (p. 380). Gosling et al. (2002) conceptualize interior behavioral residue as "physical traces of activities conducted in the [immediate] environment" (p. 381). Gosling et al. note that though interior behavioral residue generally refers to past behaviors, they may reflect anticipated future behaviors that may occur in the immediate environment. Exterior behavioral residue is conceptualized as a "residue of behaviors performed by the individual entirely outside of those immediate surroundings" (p. 381).

Using these elements, research has extended Gosling et al.'s (2002) use of Brunswik's lens beyond physical space to include Web space, that is, by using the lens approach to study how observers make personality judgments about target individuals based upon the targets' personal Web pages (Marcus et al., 2006; Vazire & Gosling, 2004). Although previous research has examined static personal Web pages the creators of which had editorial control of the information presented therein, Vazire and Gosling analyzed elements of users' Web pages as those that were intentionally created (identity claims) as well as those that were not (behavioral residue). Although they describe personal Web sites as a "highly controlled context" where self-expression consists almost exclusively of identity claims, they also note that "no real-world environment can be completely free of behavioral residue" (p. 124). Inadvertent elements such as broken links, spelling and grammar errors, and other "unintentional cues" exist and impact the judgments people make. Using a random selection of personal Web pages from the Yahoo! directory, observers rated each personal Web page on the personalities of the Web page authors along the dimensions of the five-factor model (FFM) of personality (see McCrae & Costa, 1999). The authors of those Web pages also completed self-report FFM instruments, and there were high levels of interrater and rater-author consensus on all the factors of the FFM.

These applications of the lens model to home pages, including both “other-directed identity claims” and “interior behavioral residue,” in that the information presented is deliberately or incidentally associated with the sender and interpreted by observers as such, provide insights to the potential effects of information forms on Facebook. From this perspective, information left by others on one’s interactive profile site may be utilized as cues about the profiler and, if so, may function as exterior behavioral residue if they present clues about the profiler’s behavior in some context other than Facebook. Although such clues are not emitted by the target himself or herself, their association by observers with the targets is consistent with the lens model approach, which focuses on the associations observers draw in any judgmental context. It may be especially true in this context because the presence of wall posts (comments left by other individuals) on a Facebook profile may implicitly connote approval by the target. When profilers choose to associate with the other users, or “friends,” they allow them “user privileges” to post to their profile walls. Thus, the behavioral residue left by their Facebook friends can be construed as sanctioned, at least in the eyes of observers.

Context effects

In addition to the Brunswikian lens, research focusing on “context effects” in person perception also suggests that characteristics of other people who appear together with a target affect perceived attractiveness of the target. In this case, research has focused on physical attractiveness judgments. Melamed and Moss (1975) demonstrated context effects by showing pairs of photographs to research participants. A photo depicting an individual of average attractiveness was shown along with a very attractive or a very unattractive individual in the other of the pair. When participants were told nothing about any relationship between those individuals in the photo, a *contrast* effect occurred: Average faces were rated less attractive when paired with a more attractive face, and average faces rated more attractive when paired with a less attractive face. However, in their second experiment, Malamed and Moss presented average faces along with two attractive ones or two unattractive ones, and told half the subjects that an association existed between the individuals in the pictures, or did not. When there was a presumed relationship, an *assimilation* effect took place: Average-attractiveness photos were rated more attractive than neutral when they appeared alongside attractive faces; average-attractiveness photos appeared less attractive when presented along with low-attractive faces. Research by Geiselman, Haight, and Kimata (1984) tested whether these effects occurred in combinations of four photos and two photos; assimilation effects persisted across these conditions. Kernis and Wheeler (1981) extended these effects to observation of live interaction, where results were similar. In the present case, however, the assimilation of ostensible friends’ photos surrounding the target’s photo on that target’s perceived attractiveness describes very well the potential of Facebook profiles to arouse these effects and influence perceptions of a target’s attractiveness.

H1: The presence of physically attractive friends' photographs on a target profile raises targets' physical attractiveness perceptions whereas physically unattractive friends reduce targets' physical attractiveness.

In addition to the potential assimilation of perceived physical attractiveness from the presence of others' photos, there may be second-order effects on social evaluations that are also inferred from the apparent attractiveness of one's Facebook friends. There is a long-standing association between physical attractiveness and positive personality impressions, leading researchers to conclude that "what is beautiful is good" (Dion, Berscheid, & Walster, 1972). Whether or not the attribution of goodness transfers from one's friends to one's self is unknown but could be a potent effect of Facebook representations. This, too, is likely to exhibit an assimilation effect, as with the transfer of physical attractiveness perceptions predicted in H1. That is, a profile holder may seem "better" as a result of appearing to have physically attractive friends (assimilation). However, as in the case of physical attractiveness perceptions, it is also possible that a profile owner may be perceived as "worse" in comparison to one's presumably desirable, physically attractive friends, constituting a *contrast effect*. Notwithstanding this possibility, the second hypothesis is directional but the precise directionality is contingent on the effect for H1 such that social attractiveness may change as a result of friends' photos' attractiveness in the same positive or negative direction as physical attractiveness ratings change.

Rather than focus on global "goodness" in the present case, we will focus on common interpersonal evaluations that are sensitive to communication variations. Although any number of attributes might be examined, the nonphysical aspects of interpersonal attractiveness—social and task attractiveness—along with source credibility are common evaluative dimensions in impressions of interaction partners, and their factor-based measures have been used in communication research for over 3 decades (see Burgoon, Walther, & Baesler, 1992). According to McCroskey and McCain (1974), *social attractiveness* represents liking, for example, the degree to which a target is seen as a likely friend, whereas *task attractiveness* connotes the degree to which a target is seen as a valued and respected task partner (see, for review, Rubin, Palmgreen, & Sypher, 1991). *Source credibility* pertains to how people evaluate others as acceptable information sources, and generally pertains to their expertise and trustworthiness, although the precise factors comprising credibility may vary due to a variety of reasons (see, for review, Rubin et al., 1991).

With regard to the effect of friends' apparent physical attractiveness on a profile owner's task attractiveness and credibility, we hypothesize the opposite direction than we do for physical and social attractiveness. Physical attractiveness has been associated with lower observers' perceptions of competence. "Physical beauty... can impose limitations on the kinds of performances others view as credible. Beautiful people may be considered unapproachable or unintelligent," according to a review by Burgoon and Saine (1978, p. 263). Once again, it is likely but not certain whether such an attribution of an individual's abilities is bestowed due to or in contrast to

one's friends' attractiveness. Moreover, because the deleterious effect of physical attractiveness on competence discussed by Burgoon and Saine was documented more clearly for female than male targets, a research question is offered to guide investigation of the pattern's occurrence in Facebook profiles.

H2: The physical attractiveness of one's friends depicted on a virtual profile affects observers' perceptions of the profile owner on social evaluations
 (a) in the same direction as physical attractiveness, for social attractiveness
 and (b) in the opposite direction as physical attractiveness, for (i) task attractiveness and (ii) credibility.

RQ1: Does the effect of physical attractiveness of friends' photos interact with the sex of the profile owner on (a) task attractiveness and (b) credibility?

Hypotheses are also derived based on context effects and the Brunswikian lens conception of the utilization of cues. We extend cue utilization to include behavioral residues that appear in the wall postings that friends leave in a profile owner's (virtual) space. Although they are not created by the target, because the target allows specific others to leave these residues such cues will be utilized and affect observers' impressions of targets. We hypothesize:

H3: Statements made by others on one's virtual profile influence observers' social evaluation of the profile owner with respect to (a) social attractiveness, (b) task attractiveness, and (c) credibility, in directions consistent with the valence of the statement content.

Finally, a research question asks whether the association between attributions of goodness and physical attractiveness works in reverse, if positive qualities bestowed by friends' statements left on a profile owner's site might invoke superior perceptions of physical attractiveness for the profile owner.

RQ2: Do positive (vs. negative) friends' statements on a profile owner's site raise the perceived physical attractiveness of the profile owner?

Methods

Participants ($N = 389$) volunteered to take part in the research in exchange for extra credit or satisfaction of a research requirement in one of several communication or telecommunication courses at a large public university in the midwestern United States. Each participant viewed one of the eight stimuli each containing a mock-up of a Facebook profile. Differences among stimuli reflected variations in (a) physically attractive or unattractive photos of ostensible wall posters and (b) positively or negatively valued content of the wall posting messages with respect to their description of the profile owner's behavior. There were all-female and all-male versions of the stimuli. Because physical attractiveness ratings are sometimes affected by the sex combination of the rater and target, omnibus data analyses included these factors.

Thus, the overall design was 2 (attractive or unattractive wall poster) \times 2 (positive or negative wall message) \times 2 (sex of profile owner) \times 2 (sex of participant).

Stimuli

Wall poster attractiveness

Researchers pretested a number of photographs containing head shots of college-aged persons in order to create specific variations in the apparent attractiveness of wall posters (high and low attractiveness) and depict neutral attractiveness for the ostensible profile owners. Researchers gathered photographs from photo-rating Web sites (i.e., hotornot.com), from photos generated in previous studies where permission to use participants' likenesses was given, and by utilizing an Internet search engine with keywords such as "pretty girl." Photos that seemed to capture the range of attraction were presented to a mixed-sex group of college-aged raters ($N = 10$) who evaluated each photo on a scale from -10 (*physically unattractive*) to 10 (*physically attractive*). Analyses of these scores yielded two attractive and two unattractive male, and two attractive and two unattractive female, photos, among which there was no overlap on raw attractiveness ratings. These photos were used to represent wall posters on the profile mock-ups. Analyses also revealed neutral photos, which were employed to represent the profile owners.

Message value

Focus groups and pretests also contributed to the development of verbal messages in the wall postings. These postings were designed to reflect positively or negatively on the profile owner by describing things the owner had done or would do, which were socially desirable or undesirable among the college population based on the results of focus group discussions. Messages were generated in part by actual postings observed on Facebook that reflected the behaviors of the profile owner. Rewrites followed focus group discussions that helped shape messages that were both believable and positive or negative to the prospective participants who would later observe them. Each pair had a male and female version.

The focus group discussions sought to discern what types of behaviors discussed in Facebook postings connoted desirable and undesirable qualities or characteristics. These discussions employed college-aged discussants other than those who were later to become research participants. Discussions began with the question: "What statements on Facebook would lead you to think that the profile owner was a 'loser,' or conversely, a really desirable person?" Respondents suggested that statements reflecting both excessive and morally dubious behavior were unfavorable. For example, drinking, per se, was not negative, nor was drinking a considerable amount, but drinking to the point of illness was. Flirting was not negative but flirting with unattractive targets, and promiscuity, was alleged to be. Positive messages, on the other hand, generally connoted that the profile owner was a socially desirable individual. The person was, for instance, popular with people or was included in

enjoyable past or future activity of some type. Prototype messages were reviewed, and the final set consisted of two excessive and negative or inclusive and positive statements per stimulus. The specific foci of these stimulus messages may have some effects on the ultimate and differential responses to them, as will be discussed below. At the point of their creation, though, they satisfied the criteria of arousing respectively negative and positive global evaluations.

Message postings also reflected profile owners', rather than posters', behavior. Although spectators reading about friends' own behaviors might also attribute qualities to the profile holder (in the same way that photos affect judgments), verbal messages were designed to reflect only owners' behaviors. This approach is consistent with the behavioral residual principle in which clues pertain to a central target, which drove the hypotheses regarding messages. This approach was bolstered by a content analysis of the nature of wall postings on Facebook, which indicated that many postings do indeed discuss the target explicitly. One coder content analyzed 237 randomly selected Facebook wall postings on the college network where the research took place. The coder classified 27% of friends' postings as presenting information about the target (profile owner), 23% as presenting information about the friend/poster his- or herself, 28% presenting information about both the target and the poster, and 21% pertaining to other foci or undeterminable. Thus, approximately 55% of wall postings referred to the profile owner alone or the poster and the profile owner. Future research may explore the effects of self-oriented wall poster messages on profile owner evaluations if such questions are warranted.

The final set of negative messages consisted of the following:

"WOW were you ever trashed last night! Im not sure Taylor was that impressed."

"Hey, do you remember how you got home last night? Last I remember you were hanging all over some nasty slob... please tell me you didnt take [him/her] home...."

Positive messages consisted of these:

"Vegas Baby!!! Only 3 days and we are on our way... Im so pumped!"

"Chris, I just gotta say you rock!!! u were the life of the party last night. all my friends from home thought you were great!"

Typographical errors in these messages were intentional and reflect common writing characteristics in Facebook postings. An example stimulus is presented in Figure 1.

Procedure

Researchers provided volunteers with a single www address and requested that they complete the research on their own. Participants therefore viewed stimuli in a natural setting in which they typically used the Internet. The www address directed users to a Web page that reflected informed consent information and a button with which to signal consent. Clicking the button activated a hidden Javascript code that randomly



Figure 1 Sample Facebook profile mock-up. Faces have been blurred for publication.

redirected a participant's Web browser to one of the eight stimulus conditions. Participants were instructed to view the Facebook profile and then to follow a link to a questionnaire where they would answer questions about the Facebook profile owner.

Questionnaire measures

The posttest questionnaire included measures of task, social, and physical attractiveness developed by McCroskey and McCain (1974). These 15 items employed 7-interval Likert-type response scales. Task attractiveness included items such as "I have confidence in this person's ability to get the job done" and "If I wanted to get things done, I could probably depend on this person." Task attractiveness yielded a Cronbach's alpha reliability estimate of .79. Social attractiveness obtained $\alpha = .75$ and included items such as "I would like to have a friendly chat with this person" and "I think this person could be a friend of mine." Physical attractiveness included items such as "This person is somewhat ugly" (reverse coded) and "I find this person very attractive physically"; $\alpha = .86$.

Participants also rated profile owners on credibility using the 15 bipolar adjective items from Berlo, Lemert, and Mertz (1970). Credibility measurement is known to

be context sensitive; it yields different factor structures in different settings with different sources and raters (see, e.g., Cronkhite & Liska, 1976). Therefore, researchers conducted a principal components factor analysis with Varimax rotation using these criteria for factor retention: (a) factors display eigenvalues of 1.5 or greater, (b) scree analysis displayed improvement in variance accounted through addition of a dimension, and (c) factors contain at least three items with primary loading of 0.60 or greater and secondary loadings below 0.40. A three-factor solution accounting for 51.5% of the variance emerged, with factors similar to the dimensions prescribed by Berlo et al. (1970); Cronbach reliability estimates were acceptable for *qualification*, $\alpha = .87$, including such items as Experienced/Inexperienced, Qualified/Unqualified, and Informed/Uninformed; *safety*, $\alpha = .89$, including Just/Unjust, Honest/Dishonest, and Safe/Dangerous; and *dynamism*, $\alpha = .87$, which included Bold/Timid, Active/Passive, and Energetic/Tired. Although individual subscales might vary independently, and the qualification and safety dimensions may be those most commonly associated with the commonplace notion of credibility, no precision is lost in testing these components simultaneously.

Finally, participants provided demographic information. Forty-six cases (11% of the sample) in which participants had no Facebook account were removed from further analysis (as was one individual who reported having 5,000 friends). The remaining sample of 342 cases was 53% male and had a mean age of 19.9 years ($SD = 1.77$); their year in school was 18% freshmen, 31% sophomores, 34% juniors, 15% seniors, and 2% missing. They had been using the Internet from 3 to 15 years, $M = 8.95$, $SD = 2.20$. The mean number of Facebook friends participants reported having was 245.91, $SD = 183.76$, mode = 200. They spent a mean of 3.72 hours per day on Facebook ($SD = 4.04$, mode = 1, $Mdn = 2$, minimum = 0, maximum = 20, suggesting that some individuals left their computers logged into Facebook most of the day).

Results

H1 predicted that greater physical attractiveness of friends displayed on wall postings in one's Facebook profile raises perceptions of the profile owner's physical attractiveness. Given the directional nature of the hypothesis, it was tested by way of a one-tailed t test, which was significant, $t(341) = 2.37$, $p < .01$, $\eta^2 = .02$. Participants who saw attractive friends' photos rated the profile owner significantly more physically attractive ($M = 3.65$, $SD = 1.17$, $N = 183$) than did those exposed to unattractive photos ($M = 3.30$, $SD = 1.17$, $N = 160$). This finding confirms an assimilation effect: Profile owners' attractiveness varied in the same direction as their friends' did. An omnibus F test showed no interaction effects involving the photos' attractiveness with any other factors on physical attractiveness ratings.¹

H2 predicted that social evaluations of the Facebook profile owner are affected by their friends' photos' physical attractiveness. Given that physical attractiveness ratings corresponded positively with photo attractiveness, we expected positive effects

on social attractiveness as well (H2a), but negative effects were anticipated for task attractiveness and credibility (H2b). Because the directions of the hypotheses differed for social attractiveness versus task attractiveness and credibility, hypothesis testing proceeded in two steps. The test for H2a examined the effects of friends' photo attractiveness only on social attractiveness ratings. Because the hypothesis predicted directional effects for the impact of physically attractive photos on social attractiveness perceptions, a one-tailed t test was conducted, which supported H2a, $t(341) = 1.70, p < .05, \eta^2 < .01$.

H2b specified negative effects on evaluations that were assessed with several measures: task attractiveness and the three dimensions of credibility (safety, qualification, and dynamism). Bartlett's test of sphericity, $\chi^2(20) = 695, p < .01$, indicated that these variables were sufficiently related to be treated as a group. (Simple correlations among all dependent variables are presented in Table 1.) Therefore, a multivariate analysis of variance (MANOVA) test examined the effect of friends' photos on the set of dependent variables simultaneously. This test produced no significant multivariate effects, Wilk's $\lambda = 1.22, F(4, 338) = 1.22, p = .30$. H2b was not supported.

RQ1 explored whether previously documented stereotypical negative associations between physical beauty and competence for women were prompted by friends' photos and, if so, whether it was confined to judgments of females. Specifically, analyses focused on whether the interaction of physical attractiveness of the friends' photos with the sex of the profile owner affected task attractiveness and credibility. As in the previous test, this analysis employed a multivariate test, with the Photo \times Target Gender interaction (and main effect factors) as the independent variables. The omnibus test did not yield significance for the interaction effect, Wilk's $\lambda = 0.99, F(4, 326) = 0.74, p = .66$. It appears that the physical attractiveness of one's Facebook friends does not affect observers' judgments of one's qualifications, either directly or in combination with the target's gender.

H3 predicted that the valence of statements left by friends on a profile owner's Facebook wall affects social evaluations of the profile owner in a consistent direction across the dimensions of social and task attractiveness and credibility. A preliminary

Table 1 Correlations (r) Among Physical Attractiveness, Social Attractiveness, Task Attractiveness, Safety, Qualification, and Dynamism

	Social Attractiveness	Task Attractiveness	Safety	Dynamism	Qualification
Physical attractiveness	.26*	.28*	-.12*	-.13*	-.02
Social attractiveness		.26*	.16*	.02	.19*
Task attractiveness			.12	-.08	.18*
Safety				.11	.52
Dynamism					.10

Note: * $p < .05$. $N = 333$.

omnibus MANOVA yielded a significant multivariate interaction effect between statements' valence and sex of the participant, Wilk's $\lambda = 0.95$, $F(5, 326) = 3.17$, $p < .01$, $\eta^2 = .01$. The effect appeared to be confined to dynamism alone, which revealed the sole univariate effect, $F(1, 330) = 8.60$, $p < .01$, $\eta^2 = .03$, where the pattern of means indicated a disordinal interaction. When female participants viewed positive messages, they rated the profile owner less dynamic, $M = 4.53$, $SD = 0.92$, $N = 71$, than when negative messages were shown, $M = 4.85$, $SD = 0.81$, $N = 90$. Male participants, however, gave higher dynamism ratings when they viewed positive messages, $M = 4.76$, $SD = 0.84$, $N = 96$, than when viewing negative messages, $M = 4.56$, $SD = 0.81$, $N = 85$. Analysis proceeded to the main effects analysis implied in H3 with respect to the remaining social evaluation variables.

MANOVA examining the multivariate main effect of wall statements yielded significance, Wilk's $\lambda = 0.89$, $F(5, 338) = 8.99$, $p < .01$, $\eta^2 = .11$. See Table 2 for descriptive statistics, F and η^2 values. Univariate effects occurred on each of the four remaining dependent variables. Positive wall postings yielded higher safety assessments than negative statements by friends. Qualification was similarly affected; participants exposed to positive wall postings rated the profile owners more qualified than their counterparts who read negative statements. Both task and social attractiveness were influenced by the wall postings made by friends with regard to the profile owners. Task attractiveness of the profile owner was significantly higher when the statements from friends were positive than when negative; and profile owners were rated significantly more socially attractive when friends' wall posting statements were positive than when they were negative. Due to the higher-order interaction on dynamism, that variable was not tested for a main effect of statements. With that exception, H3 was supported.

RQ2 asked whether the valence of friends' wall postings affected the physical attractiveness perceptions of the profile owner on whose wall the postings appeared. A preliminary omnibus analysis of variance revealed a significant disordinal interaction of message valence by the apparent gender of the profile owner, $F(1, 339) = 6.47$, $p = .01$, $\eta^2 = .02$. Female profile owners were rated more physically attractive when their profiles showed positive comments from friends, $M = 3.98$, $SD = 1.29$,

Table 2 Means (and *SD*) for Effects of Wall Posting Statements on Safety, Qualification, Task Attractiveness, and Social Attractiveness

	Statements from Friends		$F(1, 341)$	η^2
	Positive ($N = 167$)	Negative ($N = 175$)		
Safety	4.50 (0.71)	4.00 (0.71)	41.45	.11
Qualification	4.12 (0.75)	3.80 (0.76)	14.94	.04
Task attractiveness	4.15 (0.84)	3.77 (0.91)	15.94	.05
Social attractiveness	4.45 (0.97)	4.05 (1.04)	14.00	.04

Note: $p < .01$.

$N = 80$, than when the statements were negative, $M = 3.46$, $SD = 1.19$, $N = 100$. This pattern, however, was reversed when the profile owner was male; positive comments yielded lower physical attractiveness ratings, $M = 3.20$, $SD = 0.91$, $N = 88$, whereas negative statements produced greater physical attractiveness perceptions, $M = 3.31$, $SD = 1.17$, $N = 75$. Due to the higher order interaction, no further analysis of statements on physical attractiveness was warranted.

Discussion

The goal of this research was to examine how information provided by and about people's friends in a Facebook profile impacts judgments about the profile owners, who did not themselves provide that information. This investigation addresses novel theoretical questions about the process of impression formation and the influence of different forms of communication in that process as these issues are revealed by new communication technologies.

In this experiment, the physical attractiveness of one's friends' photos, as seen in the Facebook wall postings presented on another individual's profile, had a significant effect on the physical attractiveness of the profile's owner. Perceptions of physical attractiveness did not reduce task competence attributions, an effect associated with evaluations of women in other, offline domains. It behooves one to have good-looking friends in Facebook. One gains no advantage from looking better than one's friends.

Although photo appearance on a wall posting may directly reflect a quality of the posting friend, not the profile owner, the verbal statements within wall postings may describe behaviors of the profile owner more directly. This approach was reflected in the stimuli adopted in the present study. Results showed that complimentary, pro-social statements by friends about profile owners improved the profile owner's social and task attractiveness, as well as the target's credibility.

In all analyses, the effect sizes were very modest. This should be expected given the small proportion of overall information in the stimulus profiles that reflected the independent variable manipulations. For instance, even though there were two friends' photos on each profile, both of which were respectively attractive or unattractive, each profile also featured a much larger photo representing the target person. These target photos were neutral in attractiveness, by design. Furthermore, stimulus profiles offered neutral yet visible information about the target's interests and favorite media, as is customary on Facebook. Thus, given the large amount of common, neutral information about the target against which the small manipulations in friends' photos and wall comments appeared, small effects on the target's physical attractiveness and personal characteristics are not surprising. In a sense, it is somewhat surprising to see any effect on physical attractiveness perceptions, given that the alleged target's photo was more prominent than anything else.

An unanticipated interaction effect involving the sex of the profile owner and the nature of the wall statements was obtained with respect to the effect of friends'

comments on perceptions of the targets' physical attractiveness. The negative statements depicted normatively undesirable behavior, as they involved sexual innuendo and insinuated that the target person was drinking excessively the previous night. These statements raised the desirability of a man's appearance among the subject population in this study, whereas the residues of such behavior rendered the target physically unattractive when she is female. These results reflect what has come to be known as the *sexual double standard* when making social judgments or forming impressions of others. The sexual double standard pertains to the differences in individuals' evaluations of men and women who engage in premarital sexual behaviors: Men who engage in such encounters receive respect or admiration, whereas women who engage in similar behavior are often shunned or denigrated by society. This effect has been shown to be a pervasive belief in Western cultural ideology and the subject of much scholarly research (see, for review, Crawford & Popp, 2003; Marks & Fraley, 2006). Not only do these findings suggest a double standard, they also reinforce concerns over the potential of Facebook dynamics to reinforce stereotypes and behaviors that are potentially harmful to college students (see, e.g., Bugeja, 2006; cf. Haley, 2006). We might speculate that if greater attractiveness is perceived for males who misbehave, confirmatory and rewarding reactions by others might reinforce such behaviors or set observational learning dynamics into play encouraging others to behave in a similar manner.

In addition to these value implications, this study offers additional theoretical implications. The findings suggest support for the social information processing theory of CMC (Walther, 1992) and the warranting principle articulated by Walther and Parks (2002). It is relatively well documented that people use information provided to them online to make judgments about others. What is less known is what kinds of information are used to make what judgments. This study highlights the utilization of exterior behavioral residue for judgments of others in a Facebook setting. People made judgments about a target based on comments left by the target's friends and by the attractiveness of those friends. Even though this information is not provided by the target, people may believe this information to be sanctioned by the target and employ these clues to form impressions of the target in a manner consistent with the Brunswikian lens model (Brunswik, 1956).

Alternatively, because the information may be perceived as unsanctioned by the profile owner, it may have particularly great impression-bearing value. The results are consistent with Walther and Parks's (2002) warranting hypothesis. The warranting principle suggests that other-generated descriptions are more truthful to observers than target-generated claims. Findings that friends' statements significantly altered perceptions of profile owners support this contention. It is less costly to alter or distort claims that one makes about oneself (e.g., one's own profile) than to modify or manipulate statements made by others (e.g., their pictures and wall postings). Thus, information reflected in others' "testimonials" should be of special value to an individual making a judgment about the profile owner, according to the warranting principle. Results with regard to participants' ratings of profile owners' social and

task attractiveness, and safety and qualification, are consistent with this notion. The present study does not, however, provide a complete test of the warranting hypothesis. Whether or not others' wall postings override one's profile information is not yet known, and future research must address this last contention more directly.

It is a clear limitation of the present research that the negatively oriented statements it employed focused on behaviors that might arouse these stereotypes and double standards. These manipulations arose as a result of the inductive approach to identify realistic positive and negative statements among college students who were familiar with Facebook norms. Future research with different theoretical concerns about the kinds of messages Facebook users display might focus on other topics and may find less gender stratified effects.

Future research may also explore the perception of who "owns" the comments that appear on one's Facebook wall: owners, friends, or both? As Web sites become more interactive and participatory, the question of textual authority becomes less clear. The degree to which impressions formulate or dissipate may depend on the perceived independence or collusion the material leading to them appears to have and whether it remains independent or consensual, affecting how much online we are judged by the company we keep.

Acknowledgments

The authors are grateful to Lindsey Langwell, Malcolm R. Parks, and the editor and reviewers for their suggestions during the development of this article.

Note

- 1 There was a main effect of the profile owner's gender on attractiveness ratings (female target $M = 3.70$, $SD = 1.26$, $N = 179$, and male target $M = 3.25$, $SD = 1.03$, $N = 163$), but this effect was overridden by an interaction of Participant Gender \times Target Gender, $F(1, 335) = 13.85$, $p < .01$, $\eta^2 = .04$; male subjects rated the female target more attractive ($M = 3.89$, $SD = 1.26$, $N = 97$) than the male target ($M = 3.01$, $SD = 0.88$, $N = 84$), whereas female respondents showed a slight reversal of direction ($M = 3.48$, $SD = 1.23$, $N = 82$, for the female target; $M = 3.50$, $SD = 1.12$, $N = 79$, for the male target).

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Le rôle de l'apparence et du comportement des amis dans l'évaluation d'individus sur Facebook : Notre entourage nous connaît-il?

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Résumé

Cette recherche explore la façon dont des indices déposés par des partenaires sociaux sur le profil de réseautage en ligne d'une personne ont un effet sur les impressions qu'ont les observateurs du propriétaire de ce profil. Une expérience a testé la relation entre 1) ce que les amis d'une personne disent de celle-ci sur un site de réseautage social par le biais de messages publics laissés par ces amis sur son « *Wall* » (« mur » virtuel servant à afficher des messages) et 2) l'attrait physique des amis d'une personne telle que reflété par les photos qui accompagnent leurs messages publiés sur le « *Wall* », sur l'attrait et la crédibilité que des observateurs attribuent au propriétaire du profil ciblé. Les résultats indiquent que l'attrait des amis des propriétaires de profils a un impact sur le leur, selon un schéma d'assimilation. Des affirmations favorables ou défavorables aux cibles ont interagi avec le genre de la cible : des messages à valence négative à propos de certains comportements moraux ont augmenté l'attrait physique perçu des propriétaires de profils masculins, alors qu'ils faisaient en sorte que les propriétaires de sexe féminin étaient considérées moins attirantes.

Die Rolle des Erscheinungsbildes und Verhaltens von Freunden bei der Evaluation von Personen bei Facebook: Was verraten die anderen über uns?

Diese Studie untersucht, wie der Eindruck bezüglich des Profilinehabers durch Nachrichten, die auf Online-Networking-Profilen hinterlassen werden, beeinflusst wird. In einem Experiment untersuchten wir den Einfluss von 1) dem, was die Bekannten einer Person über diese via öffentlich lesbaren Pinnwandbotschaften sagen und 2) der physischen Attraktivität eines Freundes auf den beigefügten Fotos auf die Attraktivität und Glaubwürdigkeit, die Beobachter dem Profilbesitzer zuschreiben. Die Ergebnisse zeigen, dass die Attraktivität des Freundes die Attraktivität des Profilbesitzers auf vergleichbare Art und Weise beeinflusste. Positive oder negative Bemerkungen über das Zielprofil interagierten mit dem Geschlecht des Zielprofils. Negativ konnotierte Botschaften über das moralische Verhalten erhöhten bei männlichen Profilbesitzern die wahrgenommene physische Attraktivität, während sie bei weiblichen Profilbesitzern dazu führte, dass diese als weniger attraktiv wahrgenommen wurden.

**El Rol de la Apariencia y el Comportamiento de los Amigos sobre las
Evaluaciones Individuales en Facebook: ¿Somos Conocidos por la
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Resumen

Esta investigación explora cómo las claves depositadas por los compañeros sociales en el perfil de red online de uno mismo afectan las impresiones que los observadores tienen sobre el dueño de dicho perfil. Un experimento puso a prueba la relación entre (1) lo que sus asociados dicen acerca de una persona en la red social a través de los “mensajes de pared” donde los amigos dejan mensajes públicos, y (2) el atractivo físico de los asociados reflejado en las fotos que acompañan sus mensajes de pared, sobre el atractivo físico y la credibilidad que los observadores atribuyen al dueño del perfil. Los resultados indicaron que el atractivo físico de los amigos del dueño del perfil afectó el suyo propio en una pauta asimilativa. Las declaraciones favorables ó desfavorables sobre los perfiles metas interactuaron con el género meta: los mensajes de valencia negativa sobre ciertos comportamientos morales incrementaron la atracción física percibida del perfil masculino de los dueños, mientras que causó que las mujeres sean vistas como menos atractivas.

朋友外貌及行为在评价 Facebook 的个体中所扮演的角色： 可以通过
我们所交往的朋友来了解我们吗？

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摘要

本研究探讨了社交伙伴在某人网页上留下的线索对他人评价网主（即网页拥有者）所产生的影响。通过实验我们检测以下两个因素之间的关系：（1）在社交网站上，一个人的朋友通过“墙贴”（即供朋友公共留言的地方）所说的关于这个人的事情；（2）此人朋友的外貌特征（反映在墙贴中的照片中）对其他人对评价此人吸引力和可信度的影响。结果显示网主之朋友的吸引力以一种同样的模式影响了他们自己的吸引力。关于网主有利或不利的评价和网主性别相互作用：关于某种道德行为的负面信息会增加男性网主的吸引力，但会减少女性网主的吸引力。

**Facebook에서 개인들의 평가에 대한 친구들의 표정과 행위의 역할에 관한
연구**

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요약

본 연구는 개인의 온라인 네트워크 파일에 대한 사교적인 파트너들에 의해 맡겨진 단서들이 파일 소유자에 대한 관찰자들의 인상에 어떠한 영향을 미치는가를 연구한 것이다. 실험은 (1) 친구들이 공개 메시지를 남기는 벽 포스트를 통해 사회적 네트워크를 만드는 것에 대해 그 사람을 알고 있는 사람들이 해당자에 대해 무엇을 말하는가와 (2) 그들의 벽 포스팅에 수반하는 사진들에 반영된 개인이 알고있는 사람들의 신체적 매력들, 즉 관찰자들이 목표로하는 파일 소유자에 기여하는 매력과 신뢰도, 사이의 관계를 조사하였다. 그 결과들은 파일 소유자의 친구들의 매력은 매우 비슷한 정도로 그들 자신에 영향을 미치는 것으로 나타났다. 그들의 목표에 관한 호의적, 비호의적 발언들은 목표하는 성에 따라 다르게 나타났다. 즉, 어떤 도덕적 행위에 관한 부정적인 메시지들은 남성 파일 소유자들의 인지된 심리적 매력을 증가시킨 반면, 여성들은 다소 덜 매력적으로 보이게 하는 것으로 나타났다.