

# 4      **The Mind's Eye in Cyberspace: Online Perceptions of Self and Others**

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**Abstract.** The Internet has greatly expanded the ways in which we communicate and interact with others. This chapter explores how are our perceptions of others and of ourselves effected by these new ways of communicating. The first section examines the nature of computer-mediated communication (CMC) as viewed by several prominent theoretical models, exploring how these models assess possible sources of accurate and inaccurate perceptions online and the impact of perceptions in cyberspace on everyday face-to-face social relationships. Next, the chapter explores the role of relevant cognitive processes in the development of online perceptions, including the activation of stereotypes, self-confirmation of attributions, and the instantiation of social identity. The final section examines the problem of accurately knowing how others perceive oneself in cyberspace versus in face-to-face interactions. Current literature supports the general idea that perceptions are indeed influenced by the medium, but not always in straightforward ways. First, despite the apparently impoverished text-based nature of most forms of CMC, people do form impressions of each other and they do develop strong interpersonal relationships online. Second, CMC may foster perceptions that are more extreme than in face-to-face situations, but the positive or negative direction of the effect may depend on factors external to the medium itself. Finally, meta-perceptions are distorted by at least some forms of the medium such that people may be less accurate in judging how others view them than they are in face-to-face interactions.

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## 4.1 Overview

In our daily lives we depend heavily on our perceptions of other people to determine how we should behave toward them. Our interactions and relationships with others are strongly influenced by our assessments of their intentions, motives, personality traits, skills and abilities. Likewise, we are concerned with how others perceive us because we believe their assessments and impressions will shape their behavior towards us. In recent years the Internet has greatly expanded the ways in which we communicate and interact with others. Email, instant messaging, chat rooms, newsgroups, listservs, world wide web home pages, and online interactive games are becoming important venues for developing and maintaining social relationships, and our perceptions in these contexts have increasing importance to our daily lives. It is currently estimated that over 400 million people worldwide are online [1], and one of the main uses of the Internet in the home is for social communication [2]. Yet, as Wallace [3] has observed, “The Internet explosion happened so rapidly that we have not had much time to step back from the medium and look at it more systematically, as a new environment that can have potent effects on our behavior...it is an environment that we, as Internet users, can affect and mold – provided we have some inkling of how, and why, it can change our perceptions and behavior” (p. 1).

How are our perceptions of others and of ourselves effected by these new ways of communicating? Are we as accurate in our assessments of others when we interact with them in cyberspace, as opposed to face-to-face situations? Aside from the accuracy question, do our online and offline perceptions differ in content and tone? Do we communicate more openly and honestly in cyberspace, or are we more apt to hide our true feelings and personalities? How accurate are our beliefs about how others see us – can we effectively view ourselves through other people’s eyes?

This chapter will explore ways that social perception in cyberspace can be better understood by applying psychological principles, research, and theory. There are three major sections. The first is an examination of the nature of computer-mediated communication CMC as viewed by several prominent theoretical models, outlining how these models assess possible sources of accurate and inaccurate perceptions online and the impact of perceptions in cyberspace on everyday face-to-face social relationships. Next, the chapter explores the role of relevant cognitive processes in the development of online perceptions, including the activation of stereotypes, self-confirmation of attributions, and the instantiation of social identity. The final section examines the problem of accurately knowing how others perceive oneself in cyberspace versus in face-to-face interactions.

## 4.2 The Nature of Computer-Mediated Communication

Communication in cyberspace is primarily text-based and therefore does not provide visual and auditory cues that are available in face-to face interaction. This limitation would seem to make it very difficult to develop complete and accurate perceptions of the personalities and characters of other people. Early research tended to support this view, showing that users rated computer mediated communication (CMC) as cold, impersonal, and unsociable [4].

More recent work, however, has revealed that under certain conditions CMC is nevertheless capable of fostering well-developed impressions among people who interact online and of supporting strong, positive relationships among some users [5, 6, 7, 8]. As Walther [6] has noted, “Although novice users and the uninitiated still seem to suspect that CMC may be impersonal, growing numbers of reports are appearing that reflect more personal CMC interaction, sometimes *just* as personal as face-to-face (FtF) interaction, or even describing interaction that surpasses FtF in some interpersonal aspects. It is these dynamics that undergird phenomena such as ‘on-line

friendships' and 'virtual communities'" (p. 4). In short, the nature of CMC is complex and its effects on interpersonal perception are not as straightforward as one might initially think.

#### 4.2.1 *Models of Computer-Mediated Communication*

The complexities of CMC are reflected in the diversity of theoretical models that attempt to explain the implications of electronic communication (for excellent reviews of these models, see papers by Walther [6] and Lea & Spears [9]). The different approaches are not necessarily contradictory, but rather emphasize different qualities of CMC. Four of the most prominent models will be briefly reviewed here: Social Presence, Reduced Social Cues, Social Information Processing, and Hyperpersonal Communication.

According to *Social Presence Theory*, communication media differ in the number of channels through which interpersonal information can be conveyed – more channels give the medium greater “social presence” [4]. For example, in a telephone conference call only auditory information is available, whereas a video conference transmits both auditory and visual information, giving it higher social presence. An online chat session or an exchange of email messages, in which communication is restricted to text, would have the lowest social presence of all. According to the theory, one implication of low social presence is that communication will necessarily be very task-oriented and impersonal, leading to less positive perceptions among those who are interacting. As noted above, early research did tend to show that users of CMC rated it as impersonal [4], but other studies have contradicted the notion that media lower in social presence lead to less positive social perceptions. For example, Chiacoan and Define [10] compared perceptions of social attractiveness, credibility, and attitude similarity among people interacting face to face, in video-conferences, or in audio-conferences. The results showed that the most positive perceptions occurred in the audio-conferencing contexts – the situations that were lowest in social presence, according to the model.

A related approach is the *Media Richness Model* developed by Daft & Engel [11]. According to this analysis, media vary in their ability to reduce ambiguity in communications – rich media facilitate feedback, communicate multiple cues, permit individually tailored and highly specific messages, etc., and thereby allow non-ambiguous communication. Face-to-face communication is the richest possible medium, whereas various forms of CMC are much lower. The model predicts that people should prefer a medium that is most suitable to a given communication context, which is not always the richest medium. For example, in some contexts a letter or an email message may be seen as a more appropriate way to communicate than the telephone or in person, even though text-based media are not as rich or personal. Research on media selection has shown that people do indeed vary their preference for different forms of communication under different circumstances, though the basis for the selection seems to have to do with factors other than the objective characteristics of the media, such as socially constructed views of richness and usefulness [12], and with a communicator’s assessment of the “social utility” of the medium [13, 14].

The *Reduced Social Cues Model* focuses on a specific type of information that it proposes is filtered out in text-based CMC – social context information [15]. Social context cues define the nature of the social situation, indicate normatively appropriate boundaries for behavior, and convey the social status and identities of those in the interaction. In face-to-face communication these cues might include visible features of the environment itself (a bar versus a seminar meeting room), gestures and facial expressions, symbols of authority and status (clothing, jewelry, etc. ), physical appearance, and spatial behavior (seating choices, interpersonal distance). According to the model, when these cues are absent, as in CMC, people become more self-oriented and less concerned with the feelings, opinions, and evaluations of others. This, in turn, is thought to lead to uninhibited and even hostile behavior, with accompanying negative perceptions of others [16, 17]. Another

predicted outcome is that the general lack of visible status cues, along with reduced evaluation anxiety on the part of low status and shy individuals, may lead to more equal participation in CMC contexts [18], presumably with a change in how shy individuals are perceived by other group members. Support for the Reduced Social Cues model has been found in some contexts, particularly those involving short-term interacting groups with no previous histories, but evidence in other contexts has been contradictory [6, 19, 20], suggesting that there are likely additional mediating factors in CMC effects than those proposed by the model.

A third prominent model of CMC is *Social Information Processing Theory*. The basic notion of this approach is that people are motivated to develop social relationships in any communication context, including CMC, and in the service of this motivation they form impressions of each other on the basis of whatever information is available [21]. They subsequently test the assumptions associated with their perceptions using a variety of strategies. Text-based CMC slows down this process but does not prevent it from occurring.

Thus, according to the Social Information Processing (SIP) model, impressions may take longer to form than in face-to-face communications, but they are not essentially different in CMC than face-to-face contexts. The model recognizes that certain kinds of social cues are missing in CMC, but it maintains that people are motivated to obtain social information in other ways (for example, by learning to communicate emotion through textual devices such as emoticons and linguistic modifiers) and thus overcome these limitations, given enough time. There is considerable support for the model's claim that CMC and face-to-face communication produce impressions that have comparable levels of structure if enough time is available for CMC interaction [5, 20, 22]. Perhaps the two main shortcomings of the SIP model are that it does not specify what differences, if any, there might be in the content or tone of CMC versus face-to-face perceptions, and it doesn't recognize important individual and situational differences in people's social motivations to overcome the challenges posed by CMC [5].

A fourth approach to understanding the nature of CMC is the *Hyperpersonal Communication Model*. The model was proposed by Walther [6] to account for the phenomenon that CMC is sometimes "...more socially desirable than we tend to experience in parallel FtF [face-to-face] interaction" (p. 17). Specifically, Walther suggests that "Combinations of media attributes, social phenomena, and social psychological processes may lead CMC to become 'hyperpersonal,' that is, to exceed FtF interpersonal communication" in terms of "...heightened levels of intimacy, solidarity, and liking" (p. 4-5).

According to the model, interpersonal perceptions in hyperpersonal communication are not accurate assessments, but rather positive exaggerations based on selective self-presentation by the target person and faulty inferences by the perceiver. The gist of the model's assumptions are succinctly described by Utz [5]:

*"In CMC, users have the opportunity for selective self-presentation. They have time to think about how to present themselves and can choose the positive aspects. On the other hand, the reduced social cues in CMC lead to an idealized perception by the perceiver. S/he has only the positive information, and inflates the impression of the partner by generalizing these positive cues on other unknown personality aspects. CMC can, therefore, be more social and intimate, or "hyperpersonal" relative to FTF communication*

There is considerable evidence that strong friendships and even romantic relationships often develop through online interactions [5, 8, 23], and that people can achieve a sense of community and solidarity with others in cyberspace [24, 25, 26, 27]. It is also the case, as suggested by the Hyperpersonal model, that when individuals meet in person they frequently find their online

impressions were overly positive [28]. Furthermore, the heightened sense of community and solidarity experienced by group members may lead to greater vulnerability to disruption, such that violations of community standards and trust may have particularly severe consequences for online communities [29, 30, 31].

Though these findings are in line with the Hyperpersonal Communication theory, there have been only a few direct tests of the underlying mechanisms proposed by the model. Utz [5] has found that self-presentation of positive sentiment through the use of using paralinguistic cues does indeed correlate with developing positive relationships online. However, Utz also showed that the correlation is mediated by individual differences in skepticism about the medium: “Individuals who believe it possible to build up relationships in virtual worlds learn how to use smileys, feelings, and emotes and thus make friends...but those who are more skeptical of CMC do not.” In a recent series of experimental studies by Joinson [7], self-disclosure of personal and intimate information was higher in CMC than in face-to-face interactions, as predicted by the Hyperpersonal model. But independent manipulations of the participants’ anonymity and the degree to which their attention was self-focused revealed that self-disclosure was highest when they were anonymous. Anonymity would seem to remove strategic self-presentation as a motivation for disclosure, and thus Joinson’s findings are a challenge to the model as originally proposed.

In summary, the Hyperpersonal Communication model is a valuable attempt to explain the positive effects of CMC, though more research is needed to test and to refine its assumptions.

#### *4.2.2 Assessment of CMC Models*

The approaches reviewed above give the flavor of ways researchers have tried to characterize the nature of CMC and its implications for social perception. All the models recognize that the information available for forming impressions and making judgments of other people is restricted in CMC relative to face-to-face communication. They differ, however, in their views of how severe the consequences of such restrictions are likely to be. Social Presence theory and the Reduced Social Cues model are perhaps the most negative in this respect, viewing interpersonal perceptions that arise in CMC as likely to be poorly developed, impersonal, and largely negative. The Social Information Processing and Hyperpersonal Communication theories are much more positive, proposing that social impressions arising from CMC can be just as well-developed and positive in tone as those generated from face-to-face interactions, and under certain circumstances may even exceed them in intimacy and positivity.

### **4.3 Cognitive Processes in Cyberspace**

Everyday social perceptions are influenced by a number of cognitive processes that determine the kind of information that is attended to and the way it is interpreted. Several of these processes are particularly relevant to social perception in cyberspace because they influence the nature and quality of online impressions. These processes are “snowballing,” social identification, and the activation of social categories.

#### *4.3.1 Snowballing*

Our initial impression of someone often leads us to behave toward that person in certain ways. For example, if we perceive the person to be warm and friendly, we are apt to be open and responsive to them. The other person, in turn, may respond to our treatment by being even more friendly and

jovial than they would normally. We then infer that the person's behavior is confirming evidence that s/he is indeed a very warm and friendly person, unaware that their actions might be due to our own behavior, not the manifestation of a central feature of the person's personality.

Social psychologist Daniel Gilbert refers to this phenomenon as the "snowball effect," in which an initial perception can start a process that gathers momentum and becomes harder and harder to alter over time [32]. Gilbert's analysis was originally developed to apply to face-to-face interaction but it is also relevant to CMC. Gilbert proposes that the snowball effect is particularly robust because it leads to a mistaken inference that the target person's behavior is the result of a disposition or trait that the person possesses, rather than the result of the perceiver's own behavior which produces "perceiver-induced constraints" on the target's actions: "Snowball effects occur when perceivers make dispositional attributions about those who are operating under the influence of perceiver-induced constraints – in other words, when I cause you to act in certain ways and then conclude that you are predisposed to those actions" (p. 137).

How might this operate in text-based CMC? Gilbert proposes three factors that contribute to the snowball effect, each of which is relevant to CMC.

- *Response matching*: Much of our behavior in face-to-face situations is simply a matched reaction to the behavior of another person. According to Gilbert, "In social life, behaviors play 'call and answer,' and everyone knows just which kinds of offers warrant just which kinds of responses. If a person is cold and hostile toward us, then we will probably act coolly in return; if a person is lively and interested, we will feel flattered and repay their warmth with our own" (p. 128).

Response matching is also characteristic of online interactions. Wallace [3] suggests that people who are new to CMC are not yet facile with ways to overcome the medium's limitations for expressing emotion and social responsiveness, such as adding emoticons and linguistic modifiers to their messages. The result is a perception-behavior cycle that is an online version of the snowball effect:

*"We don't just appear a little cooler, testier, and disagreeable because of the limitations of the medium. Online, we appear to be less inclined to perform those little civilities common to social interactions. Predictably, people react to our cooler, more task-oriented impression and respond in kind [italics added]. Unless we realize what is happening, an escalating cycle begins. The online group members could have typed simple phrases to express more agreement and to release tension if they had realized the importance of such utterances to the impression they were making and to the group's functioning"*

- *Providing opportunities*: People test the assumptions associated with their impressions of others using a variety of strategies that provide opportunities for confirming or disconfirming their initial perceptions [6, 33]. As Gilbert describes the process, "...our beliefs about people, right or wrong, determine our behavior toward them – specifically, they determine the sorts of opportunities we provide for others to corroborate or rectify our first impressions." (p.133). It is well documented, however, that in face-to-face interaction this process is biased toward confirming one's initial impressions [33]. In Gilbert's words, "... not only do we fail to provide opportunities for others to repudiate our suspicions, but we also *create* special opportunities for them to confirm what we suspect" (p. 133). Creating opportunities in CMC can include starting a specific thread, or line of discussion that invites responses from others, or posing questions and challenges to a target person to see how s/he responds. The text-based nature of CMC provides an archive that can play a role in these confirmation strategies. Wallace [3] suggests that:

*“As cognitive misers, we are reluctant to rethink the impressions we form of others ... That first impression is so critical because of this human resistance to admit mistakes, and the desire to leave the label in place leads to confirmation bias . Not only do we ignore evidence that might contradict our original impressions; we actively search for information to confirm them...Once we form some impression we selectively pick up confirming evidence. In long Internet messages, it is usually not difficult to find snippets to support our first impression and to ignore the rest.” (p. 26)*

- *Setting norms:* If we interpret a situation as calling for a certain kind of behavior, our actions will set the norms for others to behave in a similar way. Note that the other people are responding to what they perceive to be the norm governing the situation, not in their mind to our behavior. In the snowball phenomenon, a person’s initial impression of another will lead to certain behaviors that the other interprets as indicative of the norm to be followed, which nevertheless will be observed by a perceiver as behavior arising from the target person’s personality or character. Balm [26] has identified the presence of both implicit and explicit norms in online interactions. These norms govern the use of paralinguistic elements, expression of negative statements, disclosure of personal information, and reciprocation of positive, supportive messages. Thus, people may adapt their behavior to what they perceive as the normative standards of the online community, just as they would in face-to-face situations, with the result that they will be perceived as having personality characteristics consistent with the normative behavior they exhibit. Their actual personality might be quite different, however.

- *Barriers to being aware of perceiver-induced behavior:* An important element of the snowball effect is that the perceiver is unaware that s/he is actually producing the behavior of the target person. Gilbert proposes two reasons why it is difficult to overcome this problem.

First, if we are the cause of the other person’s behavior, it is quite likely that they behave differently when we are not around. However, we have no opportunity to see the other person behave in a manner that might contradict our impression because we only encounter the person when we are present. Second, during social interactions we devote considerable effort and attention to monitoring our own behavior and the impression we are giving to others.

This distracts us from thinking deeply about the causes of other people’s behavior. Both of these conditions are present in many forms of CMC. For example, our knowledge of someone might be restricted to a single USENET forum so that all our inferences about their character are based on behavior that occurs in our presence. Another illustration might be the inferences that take place in chat sessions, where the interactions are often rapid fire and require careful attention to one’s own activity, giving little opportunity for analyzing alternative reasons for someone’s behavior.

#### 4.3.2 *Social Identity*

A second important process that shapes the nature of social perceptions in cyberspace is the activation of social identities. Social identities are linked to memberships in social categories, such as those based on gender, age, or culture, and also to memberships in work groups and organizations. Personal identity, on the other hand, is tied to a person’s unique qualities and characteristics, including physical features and appearance, character traits, attitudes, and values. Social identity has an important psychological function. It can contribute to our self-esteem by allowing us to assume we possess the positively evaluated characteristics that are stereotypically attributed to the groups with which we are associated [34, 35, 36, 37]. Social identity can also have an important influence on how we behave in social situations. Under conditions where social identity is more salient than

personal identity, behavior will likely follow the group's norms for appropriate actions rather than being idiosyncratic [36], [37].

Social Identity De-individuation (SIDE) theory, developed by Spears & Lea [36, 37], offers a useful framework for examining the relevance of social identity to online interactions and the social perceptions that develop during CMC. According to the theory, a major factor that moderates the effects of salience is *de-individuation*. De-individuation is a cognitive state produced by visual anonymity and physical isolation, two qualities that characterize much of CMC. Spears & Lea propose that de-individuation accentuates the effects of whichever type of identity is salient [38]:

*“The effects of group identity will be accentuated when subjects are de-individuated, as visual anonymity and physical isolation will reduce perceptions of individual (intragroup) differences. However, if individual identity is already salient, physical isolation from the group is predicted to further undermine any sense of group belonging, and further accentuate individualistic norms and tendencies. (p. 331-332).”*

The theory is not only able to resolve contradictions between studies that have found both positive and negative social behavior to be enhanced in CMC, it also makes some interesting predictions concerning the impressions people develop of each other during CMC. One prediction is that the same cues can lead to both positive and negative social perceptions, depending upon certain conditions in which social identity is more or less salient relative to personal identity. Paralinguistic cues, for example, might be either positively or negatively evaluated, depending upon the salience of the perceivers' social identities. According to Lea & Spears [38]:

*“...when group identity is salient, paralinguistic cues will tend to be seen as a prototypical feature of the group (the inductive aspect of stereotyping), whereas when individual identity is salient, they will tend to be seen more in terms of the idiosyncratic style of the individual users. As a result, such cues will tend to be evaluated differently in the two conditions, being evaluated more positively when group identity is salient, and increasingly less so as a more individualistic context becomes salient.” (p.331)*

In a test of this prediction, Lea & Spears [38] assessed the relation in online discussions between use of paralinguistic cues (ellipses, inverted commas, quotation marks, and exclamation marks) and perceptions of warmth, dominance, uninhibitedness, responsibility, liking, and competence. Half of the discussions took place under conditions of high group salience, in which instructions to participants emphasized their common group membership. In the remaining discussions instructions stressed the individuality of each person and the unique contributions of each to the discussion, thus making personal identity more salient. Within each salience condition Lea & Spears manipulated de-individuation by physically and visually isolating participants in half the online discussions (de-individuation condition) or by having participants use the computer conferencing system while seated in the same room and in view of each other, but without allowing them to talk to one another (individuation condition).

The results of Lea & Spears' study were in line with the SIDE theory. When participants were de-individuated, paralinguistic use was positively associated with perceptions of likeableness, warmth, competence, uninhibitedness, and responsibility if group salience was high, but *negatively* associated with these qualities when personal salience was high. These relationships were weaker when participants were individuated, as expected by the theory. In summary, the qualities of CMC as a medium cannot by themselves account for the perceptions of these participants. Rather, the de-individuated nature of CMC appears to exaggerate the different effects of social and personal

identities. When group membership is salient, paralinguistic cues are seen as positive contributions to group solidarity and commonality. When individual identity is salient, “a more individualistic and competitive context will be perceived for the communication task,” and the same cues may be interpreted as negative manifestations of “competitive individualism.”

#### 4.3.3 *Activation of Social Categories, Schemas, and Stereotypes*

We like to think that our assessments of other people are based only on careful and thorough considerations of hard evidence regarding each person’s unique personality. In truth, however, the process of forming an impression is more often characterized by rapid processing of incomplete information and making inferences on the basis of mental shortcuts and generalizations [3, 39, 40]. Particularly in the initial stages of social perception, we rely on social categories, schemas, and stereotypes to help make sense of another person’s behavior. Cues about a person’s occupation, for example, may lead us to assume a number of interrelated things about his or her attitudes, values, interests, abilities, etc. A farmer is likely to value practical, down-to-earth approaches to life, and not enjoy the opera or ballet. A college professor is likely to value abstract and theoretical thinking, and not enjoy a rock concert. There may be some statistical truth in these assumptions, but they are apt to miss the mark if applied to every farmer or college professor.

Social categories, schemas, and stereotypes help us process information about others quickly and efficiently even if not accurately. As Wallace [3] describes it (p. 19-20):

*“Barraged by sensory information and rushed for time, we take shortcuts and rely on just a few cues. Once we have those, we think we have that person nailed and can move onto other matters...It would be too time-consuming to collect comprehensive information to form unique impressions of everyone we meet, so we overuse certain cues that serve as rules of thumb. The impression of a person’s warmth or coldness is one example. It dominates the picture as soon as we know anything at all about it and our conclusions about other personal characteristics flow from it.”*

Wallace gives a person’s email address or choice of online nickname as examples of an initial cue that can stimulate initial impressions on the basis of social categories, schemas, and stereotypes [3, 41]. For instance, consider the difference in impressions generated by “tufdude888@aol.com” versus “jtravis@vs2.harvard.edu”. We would perhaps expect that “tufdude” holds traditional attitudes about the role of women and takes a dim view of women’s rights, and that “jtravis” has an intellectual orientation, is probably liberal in social attitudes, and appreciates art and literature. These impressions may be incorrect, of course, but they nevertheless would influence our initial online interactions with the two individuals, perhaps in ways that would lead to snowball effects as described earlier. Other cues that may stimulate online impressions based on categorization include explicit evidence of age, gender, or cultural background through a person’s responses to direct queries [3], as well as more subtle information contained in a person’s language use, such as word choice and diversity of vocabulary, sentence structure, and spelling errors [22, 28, 38, 42]. For example, a person who mentions “dons,” “lorries,” and “roundabouts” may be categorized as English, with additional inferences associated with the category, such as the person preferring warm beer [28].

#### 4.3.4 *Prototype Effects*

A useful analysis of categorization processes in online impression formation is offered by Jacobson [28]. Jacobson's analysis draws on concepts from cognitive and social psychology, particularly Prototype theory [42, 43, 44]. A "prototype" is the clearest case of membership in a particular category, with individuals varying in how good an example of the category they are. These variations among individuals in how well they fit a category, as well as differences among perceivers in their judgements of how well the same individuals fit the category, are termed "prototype effects."

Understanding prototype effects entails explaining their source – why are some individuals perceived as fitting a category better than others, and why do some perceivers regard a particular individual as fitting a category better than other perceivers do? One source is the lack of fit between a category and its background assumptions. For example, "bachelor" is a category that assumes men in society marry at a typical age – an unmarried man of that age may therefore be initially considered a good fit to the category. Yet there are a number of circumstances where the assumption doesn't apply and a specific unmarried man may fit the category less well – for instance a priest or a homosexual [28, 43]. In CMC contexts, gender and marital status might be among the first qualities that are perceived, with the attendant potential for error in assuming an unmarried male encountered online is a good fit to the category of "bachelor."

A second source of prototype effects is the nature of the cognitive model a perceiver applies to a given situation. Two such models that Jacobson proposes are prevalent in cyberspace are *stereotypes* and *exemplars*. A stereotype is model in which an individual is taken to represent the entire category, the characteristics of which are culturally recognized.

Thus, an impression based on a stereotype will contain inferences based on the belief that all individuals in the same category possesses the same characteristics. Exemplars are "specific individuals whom people have encountered and who are taken as representative of others who are thought to be members of the same category" [28]. For instance, a new acquaintance may remind us of someone else we already know and on that basis we infer they share many characteristics. Prototype effects in this case may arise either because other perceivers are reminded of different exemplars, leading to different impressions, or because through experience we come to regard different people as exemplars of the same category, leading us to generate different inferences about the target person.

Two additional models are *typical examples* and *ideal types*. "A model of 'typical examples' is based on knowledge about features common to a number of individuals that distinguish them as an identifiable class" [28, p. 5]. Thus, it might be "typical" of computer programmers to be socially withdrawn, but prototype effects would occur if this inference is applied to an atypical case. Ideal types, in contrast to typical examples, are not necessarily either typical or stereotypical. For example, qualities associated with the ideal husband may overlap very little with those of the stereotypical husband, and neither may overlap with those of the typical husband. Prototype effects in the case of ideal types take the form of impressions that lead to inferences of ideal qualities, whereas the non-ideal case better reflects reality. Some forms of CMC may encourage this idealization effect, as Walther has outlined in his Hyperpersonal Communication Theory discussed earlier [6].

Jacobson [28] examined the role of various prototype effects among participants in several virtual communities, known as MOOs (Mud, Objected Oriented – see Curtis [45] for an informative explanation of MOO's and Muds). He interviewed one group of individuals who had interacted with other community members in both online and face-to-face contexts, asking them to describe the fit (or lack thereof) between their expectations based on their interactions online and their experiences face-to-face. Questions included, "Are people what you expected them to be?" and "In what ways do their online and offline characteristics differ?" A second group of participants wrote down their impressions of individuals based on their online interactions with them. They were

*specifically, his debating style – WAS extremely similar to a coworker’s, so much so that when I read the MOOer’s words I imagined my coworker sitting in his chair, staring at his screen, typing and squinting and whatever.”*

The use of typical examples and ideal types are illustrated by a woman who reported to Jacobson that she supposed, in the absence of disconfirming evidence, that her fellow participants’ were white, a statistically typical characteristic of the online population, and that they would tend to be slender, a culturally ideal characteristic in her view: “I think we all like to assume the people we like are attractive, which usually means thinner in this culture.”

For most of Jacobson’s participants their face-to-face experiences did not match online expectations, particularly in the areas of physical appearance and talkativeness. In many cases the online impressions were more positive than the perceptions from face-to-face interaction, in line with Walther’s notion of hyperpersonal communication effects. One of Jacobson’s participants commented ( p. 14):

*“On Moo everything can seem larger than life – it can be quite a surprise to realize the people are ordinary. People here can seem more witty and amusing and clever and sexy than the people one knows irl [in real life]. People project a persona here sometimes, and when you meet them they are shy or whatever. A friend of mine was disappointed when he first started meeting people from the Moo. He had the impression they were demi-gods.”*

Prototype effects characterized many of the discrepancies between online expectations and face-to-face experiences. Jacobson found that these arose from applications of stereotypes, typical examples, and exemplars, either singularly or in combination. One description that combines all three is of a woman in her late teens who was actually a petite brunette with long hair:

*“I imagined that Malaika was high-school to early college age. This I inferred from something she said about her parents “letting” her go to Canada (no one keeps their 24-year-*

*old home at gunpoint, at least no one I know of). [typical] Another thing she said made me think she was a lesbian and I have an image of short blond hair and a lot of leather clothing for that image. This is based on the fact that of the two gay people I've known well, they've both been blond. [exemplar] In addition, the media stereotypes influenced the length portion; after seeing multiple "stereotypical" lesbian characters, the word always conjures in my mind an image of shorter hair. [stereotype] Having no information to support these images, I assumed her to be fairly "average" looking a typical person one might encounter while walking down the street. In other words, I did not imagine her to be exceptionally thin or obese, exceptionally tall or short... [typical]"*

#### 4.3.5 Priming of Social Categories

A well-studied aspect of how people process social information in everyday life concerns the accessibility of categories and concepts. At any given moment some categories are more available than others and are therefore more likely to be used to form an impression of a new person [40]. Availability is often influenced by a process called "priming". For example, if I have just viewed a movie in which the main character is motivated throughout by greed, the concept of greed may remain very active for some time afterward. If I encounter a new acquaintance during that period, I may be more likely to interpret his or her behavior as indicative of greed than some other motivation, providing the behavior is ambiguous enough to allow this. The category of "greedy-person" is momentarily more accessible than other social categories, having been "primed" by the movie.

In CMC contexts behavior is frequently ambiguous enough to be open to interpretation as to its exact meaning for the character of the person performing it, and therefore CMC-based impressions might be particularly prone to priming effects. Wallace [3] offers the following fictitious illustration of how this might operate. Assume that you have just logged on to a chat room using the nickname "solo" and encounter Trajyk, and newcomer to the room. You exchange the following remarks:

*<Trajyk> I've had some tough times in my life  
<solo> heh, heh, what difficult times were those Traj?  
<Trajyk> much sadness, much disappointment  
<solo> are you happy now?  
<Trajyk> I've found real, true friends :)  
<solo> here?  
<Trajyk> No, in our little community of friends  
<Trajyk> Are you lonely, solo?*

By themselves, Trajyk's comments are not very informative about his or her personality, other than possibly displaying a certain resilience and willingness to look to others for emotional support. Imagine now, though, that just before logging on to the chat room you had read a newspaper account of how a number of religious cults are using the Internet to recruit new members, particularly those who are depressed and lonely. Trajyk's comments would have seemed more sinister because you would be momentarily more inclined to interpret them as consistent with a social category of "fanatic" or "treacherous enticer" [3].

Priming of social categories can occur offline and then carry over to perceptions in online situations, as the above example illustrates. It can also occur as a result of the way online interactions are structured. For example, USENET discussion forums are designated with a label that indicates their topical focus, such as alt.paranormal, or alt.philosophy.greek. These labels activate social categories that are associated with people who believe in paranormal phenomena or who are

familiar with ancient Greek philosophers, and we may be more likely to interpret ambiguous postings we find in those forums in terms of the primed categories.

Other examples of structural priming include the “neighborhoods” on the popular home page hosting service, Geocities. Users of the service choose to locate their page in themed communities of people with similar interests, such as “Vienna” for those who like classical music, or “Hollywood” for movie buffs. Visitors to Geocities arrive with social categories associated with the neighborhood labels primed, and thus may interpret ambiguous information as being consistent with primed categories. On Ebay, the online auction house, visitors can interact in discussion forums focused on specific interests, such as Beanie Babies, antiques, or rare recordings. Wallace [3] suggests that “...when you start reading the posts in your favorite forum the category you associate with people who hang out there is already primed ... you will be the miser, conserving your cognitive energy, by relying on your person-type for stamp collectors or rare book lovers to get some impression of new posters” (p. 26).

#### 4.4 Self-Perception and Impression Management in Cyberspace

Thus far the discussion has focused on perceptions of *other people* in various computer-mediated contexts. An equally important topic, though one that has received much less attention in the literature, is how we perceive *ourselves* in cyberspace. As we interact with others, either online or face-to-face, we monitor the impression we are creating by attempting to view ourselves as others might see us. If necessary, we engage in various “impression management” tactics to alter the perceptions others have of us, selectively presenting information that is self-relevant. Erving Goffman’s classic work *The Presentation of Self in Everyday Life* [46] details many of these strategies as they occur in face-to-face situations.

CMC offers some unique challenges to both managing our impressions and to assessing how others are perceiving us. As discussed earlier, reliance on text-based communication means that visual and auditory tools for self-presentation are not available and therefore require adjustment in strategy. “Managing your own impression on the Internet is like navigating white water with two-by-fours for oars. Your impression management toolkit is strangely devoid of the tools most familiar to you, and new ones appear that you may not know how to use...nevertheless, the drive to manage our impressions in any social setting is strong, and Internet users are extraordinarily creative” [3, p.28].

Some of the ways people can shape their online persona include strategic use of paralinguistic elements and linguistic modifiers in textual messages, such as emoticons and acronyms. As discussed earlier, there is evidence that such features do modify social perceptions. However, the newness of these devices makes it likely that achieving the desired impact requires experience and feedback. For example, from the work of Lea & Spears [38] we know that in order for authors of messages to correctly gauge the impact of paralinguistic cues, they have to be sensitive to the salience of group identity from the perceiver’s point of view. Another tool can be one’s choice of nickname for e-mail or for interactions in online forums. Bechar-Israeli [41] queried regular participants in several chat forums as to the nature and meaning of their online nicknames, and found strong indications that many used this as an impression management device. People rarely changed their nicknames, evidence that they regarded consistency in their online persona to be important. Nearly half (45%) reported that they chose a name that related in some way to their personalities, indicating that they were aware of the name’s significance for impression management.

Wallace [3] notes that when people join an online mailing list or discussion forum, they are often invited to provide self-descriptions that will introduce them to the other forum members. These self-

descriptions are clear opportunities for impression management, in that the person can choose what information to include and how to present it to project a desired persona. However, Wallace [3] suggests that there is also a challenge to using this tool effectively (p. 30):

*“...many people are new at this self-presentation mode and in this context they have no model to follow. They just joined and have not yet seen anyone else’s introductions, or even had much chance to see what others are discussing. The result is a bizarre mixture of first impressions that range from the brief and highly professional to the heart-rending personal confessional.”*

#### 4.4.1 Home Page Meta-Accuracy

With the advent of the World Wide Web (WWW) in the early 1990's, the home page has become a widespread instance of self-presentation, and researchers have recently begun to assess the psychological and social implications of this new form of expression. [3, 47, 48, 49, 50, 51, 52, 53, 57]. As a number of authors have noted, the ease with which a person can create a home page has made it possible to convey a sense of self on an unprecedented scale. The basic nature of the home page as a self-presentation venue is described succinctly by Chan (pp. 272-273):

*“Much like the way personal belongings, trophies, and souvenirs show off our accomplishments and tell the story of our lives, home pages bring together a collection of text, graphics, photographs, and links to create a distinctive online presence. Indeed, we can draw further parallels between the home page and physical space...Home pages, like rooms, are spaces where we can project our personalities, hopes, dreams, and fears. They are symbolic representations of our selves...”*

At first glance, the graphical and hypertextual nature of home pages would seem to make it easier for individuals to manage their self-presentation and project a desired image [3, 57]. The creator of a home page has a high degree of control over the selection and arrangement of photographs and other graphical elements, as well as in the number and type of external links that can be chosen to convey interests, attitudes, and other personal qualities [52]. These features seem in line with Walther’s notion of Hyperpersonal Communication [6] discussed earlier, and suggest that the home page creator might produce a more positive impression than through other media, perhaps even more positive than through face-to-face interaction.

However, there may also be a number of limitations to impression management through home pages. For one thing, the home page is largely a one-way presentation medium, whereas text-based CMC and face-to-face contexts are more interactive. This means that projecting a desired image in one’s home page requires what social psychologists call “generalized meta-accuracy”[53] – the home page creator must accurately know how he or she is generally viewed by others in a particular audience. The problem is that neither the size nor the makeup of the audience for a home page is usually known. As Wynn & Katz [47] have observed:

*“By contrast to the random nature of the home page audience, in traditional self-presentation formats, professional or political, the nature and numbers of the audiences are explicit. In home page ‘advertisements for one’s self,’ audience is a self-selected unknown. There may be a presumption that the home page in and of itself will be an audience definer, but presenters have little knowledge of the range and size of potential audiences. It is thus possible to construct a presentation of self for an imagined audience while the actual audiences vary.”*

*-I-am tends to be expressed in a photograph, a list of interests which are active by being clickable, and a list of friends which is also active. The one is invited unilaterally to engage in an exploration that normally would occur at least dyadically. Indeed*

*the dyadic nature of it would be the purpose for finding out about the person in the first place.”*

Creators of home pages seldom receive feedback about the reactions of others to their self-disclosure, and therefore they have no corrective mechanism for adjusting the impression they may be giving. This limitation is less characteristic of email exchanges, news group postings, and text-based chat interactions, leading to the prediction that meta-accuracy would be greater in those contexts than with WWW home pages, though still probably less than in face-to-face interactions.

A second reason for low meta-accuracy might be that the “billboard” nature of the home page may exaggerate egocentric biases, or tendencies to assume others view the world the same way we do, including our positive self-evaluations [54]. For example, in face-to-face interactions research has shown a tendency to assume others take more notice of us than they actually do, and to believe that our emotions, values, and attitudes are more apparent to others than they actually are [54]. Sherman et al. [52] suggest that these biases may operate in the case of home pages to the extent that people are assuming others will base their impressions on information that may actually be ignored, including information contained in photographs and other graphical elements. Again, the lack of interaction in the home page context prevents feedback that might allow the person to detect the discrepancy and correct the meta-perception.

#### **4.5 Conclusions**

This chapter has explored some of the ways that computer-mediated communication influences how we view others and ourselves. Based on our examination of available theory and research, there are three overall conclusions that seem to be warranted regarding the characteristics of social perceptions in cyberspace. All three are related to the general idea that perceptions are indeed influenced by the medium, but not always in ways that are straightforward.

First, despite the apparently impoverished text-based nature of most forms of CMC, people do form impressions of each other and they do develop strong interpersonal relationships online. The cues that influence perceptions may differ from those present in face-to-face interaction, but it seems people can learn to attend to them and to use them, given enough time and motivation to do so.

Second, the medium can produce negative perceptions of others as cold, uncaring, hostile, etc., but it can also exaggerate positive aspects of impressions as well. In general, CMC may make certain interpersonal processes more extreme than they are in face-to-face situations, with the direction of the effect dependent on factors external to the medium itself. For example, the same cues can produce impressions that are opposite in affective tone, depending on the salience of perceiver’s group identity or the cognitive categories that are most accessible to the perceiver.

A third conclusion is that meta-perceptions are distorted by at least some forms of the medium such that people may be less accurate in judging how others view them than they are in face-to-face interactions. This may be because people have not yet developed a clear idea of how much others attend to certain cues and how they interpret them in CMC. It is also likely that reduced feedback from others when interaction is limited makes assessing the impact of an impression on others difficult.

The impact of CMC on society is still evolving and our understanding of its social, psychological, political, and economic implications is far from complete. It is useful to keep in mind that although the impact of this technology is dramatic, it is not unprecedented and there may be some lessons to be gleaned from the past. As Gackenbach [55] has pointed out, there are parallels that have occurred with past technologies. For example, in the early development of radio, some of the

questions we now ask regarding computers, the Internet, and CMC were salient at that time regarding the impact of a “revolutionary” form of communication (p. 14):

*“..the uncritical enthusiasm with which society first greeted radio soon gave way to grave doubts about its negative effects. After the rise of private radio in the United States, dozens of scholarly books were written from the late 1920's into the 1940's studying the ways in which the new technology was reshaping personal relationships, the structure of the family, the literacy of children, and the ability of people to think critically and express themselves clearly. We have only to pass by the shelves of any bookstore to see this whole process repeating itself with respect to the Internet.”*

Gackenbach’s analysis emphasizes that approaches to studying the impact of CMC will benefit by placing it in a broader context. One lesson that derives from doing so is an appreciation of the nature and extent of a technology’s impact, as in the distinction that Kiesler [56] makes between *amplifying* and *transformative* effects ( pp. xii-xiii):

*“Some technological change is primarily amplifying, making it possible for people to do what they have done before, but more accurately, quickly, or cheaply. In other cases, technology is truly transformative: It leads to qualitative change in how people think about the world, in their social roles and institutions, in the ways they work, and in the political and economic challenges they face...Sometimes the amplifying effect is what we see first, never realizing there is a later transformative effect to come, or that the amplifying technology is part of a larger social change.”*

According to Kiesler, it is people’s behavior, not just the attributes of the technology, that determine whether a technology is amplifying or transformative. This certainly seems to be true in the case of CMC. As this review has documented, a deterministic view that focuses only on the technical qualities of the medium is insufficient to account for the impact of CMC on social perceptions. Whether the impact is amplifying or transformative is not yet clearly established, and an assessment would be premature. As history has illustrated, it is wise to remain open to all possibilities.

## 4.6 References

- [1] Nua Internet Surveys, How many online? Retrieved Friday, December 29, 2000 from the World Wide Web: [http://www.nua.ie/surveys/how\\_many\\_online/index.html](http://www.nua.ie/surveys/how_many_online/index.html) .
- [2] Kraut, R., Mukhopadhyay, T., Szczpula, J., Kiesler, S., & Scherlis, B., Information and communication: Alternative uses of the Internet in households. *Information Systems Research*, 10, 2000, 287-303.
- [3] Wallace., P., *The Psychology of the Internet*. Cambridge, U.K.: Cambridge University Press, 1999.
- [4] Short, J., Williams, E., & Christie, B., *The Social Psychology of Telecommunications*. London: Wiley, 1976.
- [5] Utz, S., Social information processing in MUDs: The development of friendships in virtual worlds. *Journal of Online Behavior*, 1(1), 2000. Retrieved Friday, December 29, 2000 from the World Wide Web: <http://www.behavior.net/JOB/v1n1/utz.html> .
- [6] Walther, J.B. Computer-mediated communication: Impersonal, interpersonal, and hyperpersonal interaction. *Communication Research*, 23, 1996, 3-43.
- [7] Joinson, A. Self-disclosure in computer-mediated communication: The role of self-awareness and visual anonymity. *European Journal of Social Psychology*, 2000, in press.
- [8] Parks, M., & Floyd, K. Making friends in Cyberspace. *Journal of Computer-Mediated Communication*, 1(4) 1996. Retrieved Friday, December 29, 2000 from the World Wide Web: <http://www.ascusc.org/jcmc/vol1/issue4/vol1no4.html> .
- [9] Lea, M. & Spears, R., Paralanguage and social perception in computer-mediated communication. *Journal of Organizational Computing*, 2, 1992, 321-341.

- [10] Chilcoat, Y., & DeWine, S., Teleconferencing and interpersonal communication perception. *Journal of Applied Communication Research*, 18, 1985, 14-32.
- [11] Daft, R. & Lengel, R. Information richness: A new approach to managerial behavior and organization design. In B.M. Shaw & L.L. Cummings (Eds.), *Research in Organizational Behavior*, 1984, pp. 191-233.
- [12] Fulk, J., Schmitz, J., & Ryu, D., Cognitive elements in the social construction of technology. *Management Communication Quarterly*, 8, 1995, 259-288.
- [13] Soe, L., & Markus, L., Technological or social utility? Unraveling explanations of email, vmail, and fax use. *The Information Society*, 9(3), 1993, 223-236.
- [14] Johnson, J., Chang, H., Pobocik, S., Ethington, C., Ruesch, D., & Wooldridge, J., Functional work groups and evaluations of communication channels: Comparisons of six competing theoretical perspectives. *Journal of Computer-Mediated Communication*, 6(1), 2000. Retrieved Friday, December 29, 2000 from the World Wide Web: <http://www.ascusc.org/jcmc/vol6/issue1/johnson.html> .
- [15] Sproull, L., & Kiesler, S., Reducing social context cues: Electronic mail in organizational communication. *Management Science*, 32, 1986, 1492-1512.
- [16] Kiesler, S., Siegel, J., & McGuire, T., Social psychological aspects of computer-mediated communication. *American Psychologist*, 39, 1984, 1123-1134.
- [17] Siegel, J., Dubrovsky, V., Kiesler, S., & McGuire, T., Group processes in computer-mediated communication. *Organizational Behavior and Human Decision Processes*, 37, 1986, 157-187.
- [18] Dubrovsky, V., Kiesler, S., & Sethna, B., The equalization phenomenon: Status effects in computer-mediated and face-to-face decision-making groups. *Human Computer Interaction*, 6, 1991, 119-146.
- [19] Lea, M., O'Shea, T., Fung, P., & Spears, R., 'Flaming' in computer-mediated communication: Observations, explanations, implication. In M. Lea (Ed.), *Contexts of Computer-Mediated Communication* (pp. 89-112). London: Harvester-Wheatsheaf, 1992.
- [20] Walther, J., Anderson, J., & Park, D., Interpersonal effects in computer-mediated communication: A meta-analysis of social and anti-social communication. *Communication Research*, 21, 1994, 460-487.
- [21] Walther, J., Interpersonal effects in computer-mediated interaction: A relational perspective. *Communication Research*, 19, 1992, 52-90.
- [22] Walther, J. Impression development in computer-mediated interaction. *Western Journal of Communication*, 57, 1993, 381-398.
- [23] Turkle, S. *Life on the screen: Identity in the Age of the Internet*. New York: Simon & Shuster, 1995.
- [24] Rheingold, H. Real-time tribes. In *The Virtual Community: Homesteading on the Electronic Frontier* (pp. 176-196). New York: Addison-Wesley, 1993.
- [25] Jones S.G. Understanding community in the information age. In S.G. Jones (Ed.), *CyberSociety: Computer-Mediated Communication and Community* (pp.10-35). Thousand Oaks, CA: Sage, 1995.
- [26] Baym, N. K. The emergence of community in computer-mediated communication. In S.G. Jones (Ed.), *CyberSociety: Computer-Mediated Communication and Community* (pp. 138-163). Thousand Oaks, CA: Sage, 1995.
- [27] Haythornthwaite, C., Wellman, B., & Garton, L., Work and community via computer-mediated communication. In J. Gackenbach (Ed.), *Psychology and the Internet: Intrapersonal, Interpersonal, and Transpersonal Implications* (pp. 199-226), San Diego: Academic Press, 1998.
- [28] Jacobson, D. Impression formation in Cyberspace: Online expectations and offline experiences in text-base virtual communities. *Journal of Computer-Mediated Communication*, 5(1) 1999. Retrieved Friday, December 29, 2000 from the World Wide Web: <http://www.ascusc.org/jcmc/vol5/issue1/jacobson.html>
- [29] Van Gelder, L., The strange case of the electronic lover. In Kling, R (Ed.) *Computerization and Controversy: Value Conflicts and Social Choices* (2nd Edition, pp. 533-546). New York: Academic Press, 1996.
- [30] Dibbell, J., Taboo, consensus, and the challenge of democracy in an electronic forum. In Kling, R (Ed.) *Computerization and Controversy: Value Conflicts and Social Choices* (2nd Edition, pp. 552-568). New York: Academic Press, 1996.
- [31] Reid, E. The self and the Internet: Variations on the illusion of one self. In J. Gackenbach (Ed.), *Psychology and the Internet: Intrapersonal, Interpersonal, and Transpersonal Implications* (pp. 29-42). San Diego: Academic Press, 1998.
- [32] Gilbert, D., Attribution and interpersonal perception. In A. Tesser (Ed.) *Advanced Social Psychology* (pp. 99-148). Boston: McGraw-Hill, 1995.
- [33] Snyder, M., & Swann, W. Hypothesis testing processes in social interaction. *Journal of Personality and Social Psychology*, 10, 1978, 1202-1212.

- [34] Hogg, M., Social identity and group cohesiveness. In J.C. Turner, M.A. Hogg, P.J. Oakes, S.D. Reicher, & M.S. Wetherell (Eds.), *Rediscovering the social group: A self-categorization theory* (pp. 89-116). Oxford: Blackwell, 1987.
- [35] Hogg, M., & Abrams, D., *Social Identification*. London: Routledge, 1988.
- [36] Lea, M., & Spears, R. Computer-mediated communication, de-individuation, and group decision making. *International Journal of Man-Machine Studies*, 39, 1991, 283-301.
- [37] Spears, R. & Lea, M. Panacea or panopticon? The hidden power in computer-mediated communication. *Communication Research*, 21, 1994, 427-459.
- [38] Lea, M. & Spears, R., Paralanguage and social perception in computer-mediated communication. *Journal of Organizational Computing*, 2, 1992, 321-341.
- [39] Fiske, S. & Taylor, S., *Social Cognition*. New York: McGraw-Hill, 1991.
- [40] Fiske, S., Social cognition. In A. Tesser (Ed.) *Advanced Social Psychology* (pp. 149-194). Boston: McGraw-Hill, 1995.
- [41] Bechar-Israeli, H., From <Bonehead> to <cLoNehEAd>: Nicknames, play, and identity on Internet relay chat. *Journal of Computer-Mediated Communication*, 1(2) 1996. Retrieved Friday, December 29, 2000 from the World Wide Web: <http://www.ascusc.org/jcmc/vol1/issue2/bechar.html> .
- [42] Rosch, E., Principles of categorization. In E. Rosch & B. Loyd (Eds.), *Cognition and Categorization*, (pp.27-48). Hillsdale, N.J.: Erlbaum, 1978.
- [43] Lakoff, G., Cognitive models and prototype theory. In U. Neisser (Ed.), *Concepts and Conceptual Development: Ecological and Intellectual Factors in Categorization* (pp. 63-100). Cambridge: Cambridge University Press, 1987.
- [44] Cantor, N., & Mischel, W., Prototypes in person perception. *Advances in Experimental Social Psychology*, 12, 1979, 3-52.
- [45] Curtis, P., Mudding: Social phenomena in text-based virtual realities. In S. Kiesler (Ed.), *Culture of the Internet* (pp. 121-142). Hillsdale, N.J.: Erlbaum, 1997.
- [46] Goffman, E. *The Presentation of Self in Everyday Life*. Garden City, New York: Doubleday, 1959.
- [47] Wynn, E., & Katz, J.E. Hyperbole over cyberspace: Self-presentation & social boundaries in Internet home pages and discourse. *The Information Society*, 13(4), 1997, 297-328. Also available as online document: <http://www-slis.lib.indiana.edu/TIS/articles/hyperbole.html> .
- [48] Miller, H., The presentation of self in electronic life: Goffman on the Internet. Paper presented at Embodied Knowledge and Virtual Space Conference, Goldsmith's College, University of London, June. Retrieved Friday, December 29, 2000 from the World Wide Web: <http://www.ntu.ac.uk/soc/psych/miller/goffman.htm> .
- [49] Miller, H. & Mather, R. The presentation of self in WWW home pages. Paper presented at IRISS Conference, Bristol U.K., 1998, March. Retrieved Friday, December 29, 2000 from the World Wide Web: <http://www.sosig.ac.uk/iriss/papers/paper21.htm>
- [50] Miller, H., The hypertext home: Images and metaphors of home of World Wide Web home pages. Paper presented at the Design History Home and Away Conference, Nottingham Trent University, September. Retrieved Friday, December 29, 2000 from the World Wide Web: <http://www.ntu.ac.uk/soc/psych/miller/homeweb.htm>.
- [51] Arnold, J., & Miller, H. Gender and Web home pages. Paper presented at CAL99 Virtuality in Education Conference, Institute of Education, London, 1999, March. Retrieved Friday, December 29, 2000 from the World Wide Web: <http://www.ntu.ac.uk/soc/psych/miller/cal99.htm>
- [52] Sherman, R., End, C., Kraan, E., Cole, A., Campbell, J., Klausner, J., & Birchmeier, Z., Meta-perception in Cyberspace. *CyberPsychology & Behavior*, 2001, in press.
- [53] Kenny, D.A., & DePaulo, B.M., Do people know how others view them? An empirical and theoretical account. *Psychological Bulletin*, 114, 1993, 145-161.
- [54] Gilovich, T., & Savitsky, K., The spotlight effect and the illusion of transparency: Egocentric assessments of how we are seen by others. *Current Directions in Psychological Science*, 8, 1999, 165-168.
- [55] Gackenbach, J., & Ellerman, E., Introduction to psychological aspects of Internet use. In J. Gackenbach (Ed.), *Psychology and the Internet: Intrapersonal, Interpersonal, and Transpersonal Implications* (pp. 1-28), San Diego: Academic Press, 1998.
- [56] Kiesler, S. Preface. In S. Kiesler (Ed.), *Culture of the Internet* (pp.ix-xvi). Hillsdale, N.J.: Erlbaum, 1997.
- [57] Chan, S. Wired\_Selves: From artifact to performance. *CyberPsychology & Behavior*, 3(2), 271-285.

