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Predictors of Internet Use

Zizi Papacharissi and Alan M. Rubin

We examined audience uses of the Internet from a uses-and-gratifications perspective. We expected contextual age, unwillingness to communicate, social presence, and Internet motives to predict outcomes of Internet exposure, affinity, and satisfaction. The analyses identified five motives for using the Internet and multivariate links among the antecedents and motives. The results suggested distinctions between instrumental and ritualized Internet use, as well as Internet use serving as a functional alternative to face-to-face interaction.

Access to computer-mediated technologies, such as the Internet, has extended our informational and interactive capabilities. These technologies are highly publicized, debated, and regulated media. With the widespread use of such technologies, we require greater understanding of the personal and social attributes that affect why people use computer-mediated communication (CMC) and the outcomes of CMC-related behavior. Computer-mediated communication is communication facilitated by computer technologies, and is defined as "synchronous or asynchronous electronic mail and computer conferencing, by which senders encode in text messages that are relayed from senders' computers to receivers' " (Walther, 1992, p. 52). Considering the widespread use of the World Wide Web, CMC-related activities would also include web browsing.

Some researchers have focused on the interactive and informational dimensions of new technologies, exploring how these newer media might differ from traditional face-to-face communication, and how they might provide additional communication channels. Several attributes of CMC are thought to distinguish CMC from face-to-face communication. These include: problems in coordination owing to the lack of informational feedback, the absence of social influence cues in discussion, and depersonalization due to the lack of nonverbal involvement (Kiesler, Siegel, & McGuire, 1984). CMC provides users with a massive information resource and a

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vehicle for social interaction (Williams & Rice, 1983). It creates a sociocultural network where people can fulfill informational and interactive needs.

Several researchers have begun to examine the unique communicative capabilities of CMC technologies. For example, Williams, Strover, and Grant (1994) recognized that media systems such as personal computers create nongeographically based communities. They suggested that perspectives such as uses and gratifications can help us understand relationships among people and technologies. This is especially the case for how people use technologies to negotiate their identities, social positions, and emotional lives.

A debate similar to what has accompanied the television medium has surrounded this need to understand the interactive and informational potential of CMC. Some have felt that some users must be protected from the possible negative effects of certain Internet resources. Even though little is known about what actually goes on in cyberspace, there has been some research and a lot of speculation. For example, using longitudinal data across 73 households, Kraut et al. (1998) found that greater Internet use related to reduced communication in the household, smaller social circles, and greater senses of depression and loneliness. Following the rationale of Newhagen and Rafaeli (1996), we need a clearer understanding of the relationship between the individual user and the technology before we can more clearly estimate the effects of these technologies.

Following the suggestion of Newhagen and Rafaeli (1996), we considered the uses and gratifications of the Internet. Earlier, Kuehn (1994) examined motives of CMC users in an instructional setting, following a uses-and-gratifications approach. As a psychological communication perspective, uses-and-gratifications theory assumes people communicate or use media to gratify needs or wants. It focuses on motives for media use, factors that influence motives, and outcomes from media related behavior. Psychological characteristics, social context, and attitudes and perceptions influence people's motives and behavior (A. Rubin, 1993, 1994). In addition, interpersonal and mediated communication channels complement and may substitute for each other (A. Rubin & Rubin, 1985). Research has shown that people choose among interpersonal and mediated channels to fulfill interactive and informational needs, depending on availability and individual perceptions of a medium, and the type of need to be fulfilled (A. Rubin, 1994).

The uses-and-gratifications perspective, then, has been used to study antecedents, motives, and outcomes of communication within interpersonal and mediated contexts. It has also been suggested as a framework by which to study new media technologies (Newhagen & Rafaeli, 1996; A. Rubin & Bantz, 1987). Besides the Internet's unique nature, a person's own social and psychological characteristics affect how he or she uses the Internet. The purpose of this study, then, was to examine motives for using Internet CMC channels, consider how motives are affected by certain antecedents and perceptions of media attributes, and examine how motives and antecedents affect attitudinal and behavioral outcomes.

Some researchers have examined the uses of the Internet within organizational and

interpersonal communication settings and have provided insight into the nature of CMC. Much of the CMC research completed from an organizational perspective has been summarized as the *cues-filtered-out* approach. Authors of these studies have addressed how CMC's limited number of nonverbal cues affect communication. Based on such nonverbal cues, media vary in their *social presence* (Short, Williams, & Christie, 1976) or *media richness* (Daft & Lengel, 1984).

Social presence is "the feeling that other actors are jointly involved in communicative interaction" (Short et al., 1976, p. 65). In other words, social presence is a sense that others are psychologically present and that communication exchanges are warm, personal, sensitive, and active. Lacking nonverbal cues compared to other media, computers have been found to have less social presence or media richness than other media such as the telephone or voice mail (Perse & Courtright, 1993; Rice, 1993). Perceptions of social presence influence CMC motives and outcomes. For example, Perse, Burton, Kovner, Lears, and Sen (1992) found that college students who rated computers as more socially present, tended to use them more often and to find them more helpful in learning.

Similarly, media richness theory assumes that people distinguish among communication media based on the intrinsic properties (e.g., personalness and warmth) of the media. These properties influence people's perceptions and selection of media to fulfill communication needs (Fulk, Steinfield, Schmitz, & Power, 1987). The ways in which media richness is employed in research are similar to those found in social presence research. Different media are ranked on how rich they are, usually in the following order (starting with the most rich): face-to-face, telephone, electronic mail, personal written communication, and formal written communication (Steinfield & Fulk, 1987; Trevino, Lengel, & Daft, 1987).

In contrast, researchers have documented differences in groups using face-to-face and computer-mediated communication for decision making or to brainstorm in organizational settings. Kraut and Attewell (1997) found that employees who extensively used electronic mail (e-mail) in their organization were more committed to the goals of and better informed about their companies than those who used e-mail less often. CMC groups also outperformed groups using verbally oriented media to communicate (e.g., Valacich, Dennis, & Connolly, 1994; Valacich, George, Nunamaker, & Vogel, 1994; Valacich, Paranka, George, & Nunamaker, 1993). Valacich and colleagues argued that computer mediation can support unlimited parallel and distinct communication episodes, whereas traditional (e.g., verbal) media support serial communication. McGuire, Kiesler, and Siegel (1987) found that face-to-face discussion contained more argumentation than computer-mediated discussion in decision-making groups. Straus (1997), however, found that, although computer-mediated groups exhibited more supportive and less attacking communication than face-to-face groups, computer-mediated groups were less cohesive and satisfied about group outcomes.

Other researchers have argued for the existence of computer-mediated interaction. Walther (1992), for example, found that as computer-mediated communication

develops over time, communicators adapt their language and textual displays to enhance immediacy and to manage relationships they develop through CMC. He proposed a social information-processing perspective that embodied relational motivators and the decoding of textual cues that may substitute nonverbal ones. Walther's (1992) rationale grew out of such assumptions as people have a need to affiliate and expend considerable social energy trying to get others to like and appreciate them. Therefore, CMC users, just as communicators in any context, should desire to transact personal, rewarding, complex relationships. CMC users should exhibit relational indicators and communicate to do so.

Walther (1993) extended this research to include impression management of computer-mediated communication and how relational and personal indicators of CMC vary and change over time (Walther, 1994). Walther (1995) noted that face-to-face groups did not express greater intimacy than computer-mediated groups. He concluded that (a) mediated interaction is rarely impersonal, (b) CMC is interpersonal when users have the time and interest to interact on a relational level, and (c) CMC is hyperpersonal when users can manage relationships and impressions in ways more effective than with face-to-face communication or other mediated channels (Walther, 1996).

Parks and Floyd (1996) supported Walther's arguments, by outlining levels of friendship formation in cyberspace. They found more developed personal relationships for those who posted (i.e., mailed messages to newsgroups) more often and who had been posting for a longer time. However, two-thirds of the relationships that developed on-line did not remain there. People used the audio/visual capacities of the World Wide Web, and then moved on to face-to-face and telephone communication. Similarly, Straus (1996, 1997) concluded that electronic communication was not inherently more depersonalized than face-to-face communication, and that patterns of performance and interaction are similar in computer-mediated and face-to-face groups. Hollingshead (1996) found that factors such as status of group members were more important than any differences between computer-mediated and face-to-face communication in decision making.

Still, identity management and community formation on-line have been researched by new media researchers who have approached the topic ethnographically. Turkle (1984), for example, looked at how computer interfaces invite human interaction and have the potential to replicate our thoughts and actions. She also examined the development of artificial intelligence research and computer-centered cultures, such as hackers. The role of the computer as a prosthetic device that catapults one into "cyberspatial interaction" has been examined by Haraway (1991). According to Haraway, the advent and diffusion of new communication technologies can eradicate or blur distinctions between human-animal, human-machine, and physical-nonphysical dimensions, and cyberspace presents an inviting environment for communication and identity exploration. It is the anonymous and textual nature of cyberspace that allows one to overcome "identity fixes," such as gender, looks, and disabilities. People choose to explore certain sides of their personalities (e.g.,

assertiveness) more extensively, or even invent virtual life personae different from their real life personality (e.g., Bolter, 1996; Cutler, 1996; Lipton, 1996). For certain researchers, the striking point is that the individual and computer function as one, and it is because of the machine that the individual is able to reinvent himself/herself on-line (Stone, 1995).

People initiate and maintain several on-line communities to overcome the confines of real life in cyberspace, and envision cyberspace as a utopian universe for achieving equality (Stone, 1991). These on-line communities have been the subject of observations for several researchers, who have explored the interactive dimension of the Internet as setting this medium apart from other forms of communication (e.g., Baym, 1995; Beaubieu, 1996; Jones, 1995; McLaughlin, Osborne, & Smith, 1995; Turkle, 1995).

Technologies such as the Internet, then, possess both interactive/social and informational/task-oriented dimensions for users. In this respect, the needs the Internet fulfill may not be too different from the needs met by more traditional interpersonal and media channels, including talk radio, which also enhances the opportunity to reinvent one's identity and to compensate for a sense of inadequate social interaction (e.g., Armstrong & Rubin, 1989). Similar to findings about more traditional media, social and psychological characteristics should influence people's expectations and uses of the Internet.

Motives

Audience activity is central to uses-and-gratifications research, and communication motives are key components of audience activity (A. Rubin, 1993). Motives are general dispositions that influence people's actions taken to fulfill a need or want. Motives are also key components of this study of the Internet. Others have argued that the Internet is a mass medium with the ability to fulfill interpersonal and mediated needs (e.g., Morris & Ogan, 1996). Besides identifying different motives for this newer technology, we relied on interpersonal and mediated motives research to examine CMC motives.

Schutz (1966) argued that three interpersonal needs influence all aspects of communication: inclusion, affection, and control. R. Rubin, Perse, and Barbato (1988) drew upon previous research and identified six major motives for interpersonal communication: pleasure, affection, inclusion, escape, relaxation, and control. They developed the Interpersonal Communication Motives (ICM) Scale. Affection, inclusion, and control were seen as more interpersonally oriented needs, whereas pleasure, relaxation, and escape were needs derived from earlier uses-and-gratifications mass communication research (e.g., Greenberg, 1974; A. Rubin, 1981, 1983).

When examining the uses of newer media, researchers have sometimes combined interpersonal and mediated motives. In most cases, depending on the nature of the new medium, researchers have augmented more traditional uses-and-gratifications

motives. For example, Garramone, Harris, and Anderson (1986) used open-ended questions to assess gratifications sought from political electronic bulletin board systems (BBSs) and found four gratifications: surveillance, personal identity, diversion, and technological access to legislators. When investigating the uses of videocassette recorders (VCRs), A. Rubin and Rubin (1989) retained social interaction, and added library storage, freedom of choice, learning, and time shifting as motives for using VCRs. Also, when comparing CMC and interpersonal-communication motives, Flaherty, Pearce, and Rubin (1998), found that people used computers to gratify: (a) interpersonal needs (i.e., inclusion, affection, control, relaxation, escape, and pleasure); (b) needs traditionally fulfilled by media (i.e., social interaction, pass time, habit, information, and entertainment); and (c) other needs (i.e., time shifting and meeting people), which are fulfilled by new media.

Following from earlier studies in which researchers assessed motivation to communicate in various contexts, our first research question addressed the motives for using the Internet:

RQ₁: What are computer-user motives for using the Internet?

Social/Psychological Antecedents and Perceptions

Previous research supports a conceptualization that combines examining both personal and media motives to assess the uses of newer technologies such as personal computers. According to uses and gratifications, however, communication needs interact with social and psychological factors to produce motives for communicating (Rosengren, 1974). Researchers have sought to understand how attitudes and dispositions influence gratifications sought, obtained, and audience behavior. Certain social and psychological factors, along with perceptions of the medium, should influence Internet use.

Contextual age. Contextual age is a life-position construct that was developed by Rubin and Rubin (1981) to account for the limitations of using chronological age in communication research. Consisting of interpersonal interaction, social activity, mobility, life satisfaction, health, and economic security dimensions, contextual age has been found to influence media use (Rubin & Rubin, 1982).

As "a transactional, life-position index of aging" (Rubin & Rubin, 1986), researchers have observed that contextual age influences mass mediated and interpersonal communication (Palmgreen, 1984; Rubin & Rubin, 1992), as well as CMC (Bruning, 1992). In this investigation, we examined three contextual-age dimensions that should affect Internet use. In particular, one's degree of mobility, economic security, and life satisfaction should affect one's ability to access and to use the Internet.

Unwillingness to communicate. Burgoon (1976) conceptualized unwillingness to communicate as a global communication construct that represents "a chronic tendency to avoid and/or devalue oral communication" (p. 60). Unwillingness to

communicate has been linked to anomia and alienation, introversion, self-esteem, communication apprehension, and reticence (Burgoon, 1976). It has two dimensions: (a) reward, which includes distrust, perceived isolation, evaluations of the utility of communication, and an individual's perceptions of the value of his/her communication to others; and (b) approach-avoidance, which includes anxiety, introversion, and amount of participation in various communication contexts (Burgoon, 1976).

Unwillingness to communicate (UC) had been applied to mass media research to help explain differences in media use. In talk radio research, for example, Armstrong and Rubin (1989) found that, as compared with noncallers, talk radio callers were less willing to communicate in face-to-face interaction and perceived face-to-face communication to be less rewarding. Similar to talk-radio callers, and consistent with the CMC literature addressing self-identity needs, the Internet should provide a functional alternative to more traditional channels for those who find face-to-face communication less rewarding.

Media perceptions. As noted before, due to the lack of nonverbal cues, computer-mediated communication is said to be low in social presence in comparison to face-to-face communication (e.g., Perse & Courtright, 1993; Rice, 1993). Garramone et al. (1986) found that social presence related positively to personal identity satisfaction (which included expressing one's own opinion, knowing others' opinions, and interacting with others) for users of political computer bulletin board systems. Because it refers to the ability of CMC media to transmit interpersonally oriented content effectively, social presence should help differentiate between informational and interpersonal uses of the Internet.

Based on the differences in one's social and psychological characteristics and perceptions of the social presence of the communication medium, our second research question was:

RQ₂: How do antecedents (i.e., contextual age, unwillingness to communicate) and media perceptions (i.e., social presence) relate to Internet motives?

Behavioral and Attitudinal Outcomes

Internet use. Attitudes and exposure are important correlates of media use. For example, motives and attitudes such as affinity and realism have been related to different patterns of television viewing (A. Rubin, 1983). Patterns of exposure or use (i.e. amount of use, duration of use, types of use) and attitudes are also relevant to the study of the Internet.

Researchers interested in CMC patterns of use have measured the amount and types of use. These have been linked to more positive attitudes about computers and to higher levels of learning (Perse et al., 1992), as well as to motives and personal identity satisfaction (Garramone et al., 1986).

Affinity. Affinity, or the perceived importance of communication behavior or channels, has been a significant component of media-use patterns. Affinity with

television has been positively linked to viewing motives such as arousal, habit, pass time, escape, and entertainment (Rubin, 1981). Perceived importance of the Internet and patterns of using the Internet should be influenced by the social and psychological characteristics of the individual.

Satisfaction. Communication satisfaction is a communication outcome that is related to fulfilling our expectations through interaction (Hecht, 1978a). It has been described as an affective dimension of audience activity (Perse & Rubin, 1988). Marketing researchers have found satisfaction to influence product choices and related behavior (Oliver, 1980).

Hecht (1978b) suggested that communication satisfaction should be related to interpersonal disclosure and relationship development. Spitzberg and Hecht (1984) found that motivations and skills predicted communication satisfaction. Similarly, Palmgreen and Rayburn (1985) found satisfaction related to gratifications sought. Specifically pertaining to CMC satisfaction, Garramone et al. (1986) measured satisfactions obtained from political bulletin board use and found that social presence and personal identity satisfaction related positively. Variations in satisfaction, then, should be an outcome of Internet use.

The third research question considered how motives and individual differences predicted these behavioral and attitudinal outcomes of using the Internet.

RQ₃: How do Internet antecedents, perceptions, and motives predict behavioral and attitudinal outcomes of Internet use (i.e. amount and types of Internet use, duration of Internet use, Internet affinity, and Internet satisfaction)?

In this study, then, we employed a uses-and-gratifications framework to examine how (a) social and psychological antecedents (i.e., contextual age and unwillingness to communicate), (b) perceptions of media attributes (i.e., social presence), and (c) Internet motives influence behavioral (i.e., patterns of Internet exposure) and attitudinal (i.e., Internet affinity and satisfaction) outcomes of Internet use.

Method

Sample and Procedures

The Internet has become a popular research and recreational tool on college campuses. College students participate in newsgroups, Multi-User Dimensions, and chatrooms. They use the Internet for their coursework, construct their own web sites, visit others, and correspond through e-mail regularly. College students also have enabled useful conclusions about communication behavior in prior investigations. Our sample in the study, then, was college students at a large midwestern university.

A total of 279 students enrolled in an introductory communication class were surveyed about their use of the Internet. The sample breakdown was 58.8% female ($n = 164$) and 41.2% male ($n = 115$); 51.6% of the students were first-year ($n = 144$), 33.3% sophomore ($n = 93$), 12.2% junior, and 2.9% senior ($n = 8$). Participation in

the study was voluntary, and participants received research credits for the introductory course.

Measurement

CMC motives. We used a combination of interpersonal, media, and new technology motives to measure motives for using the Internet. To construct an Internet motives scale, we combined interpersonal (affection, inclusion/companionship, and control), media (entertainment, habit, information, social interaction, escape, surveillance, pass time, and relaxation), and Internet (time control, convenience, economy, and expressive need) motives. We used three items representing 15 possible a priori categories, and adapted several statements from previous research to the Internet context. Respondents were asked how much their reasons for using the Internet were like these reasons for using the Internet on a 5-point Likert scale (5 = *exactly*, 1 = *not at all*).

We used principal-components analysis with varimax rotation to extract and interpret possible Internet motive factors. We required an eigenvalue of 1.0 or greater to retain a factor, which also had to contain at least three items meeting a 60/40 loading criterion. Responses to the retained items were summed and averaged to form the scales representing each factor. The analysis accounted for 63.2% of the variance. Its results are summarized for RQ₁ below.

Contextual age. We used Rubin and Rubin's (1982) Contextual Age Scale to assess life position. Because the sample consisted of college students, the physical health, social activity, and interpersonal interaction dimensions were not included. No significant variations were expected for the college student sample in these three dimensions. Each remaining dimension—economic security, life satisfaction, and mobility—contained 5 items (Rubin & Rubin, 1982; Rubin & Rubin, 1982). Respondents stated their levels of agreement with these statements on a 5-point Likert-type scale (5 = *strongly agree*, 1 = *strongly disagree*). We summed and averaged responses to the items of each subscale. The mean scores for the separate dimensions were: life satisfaction ($M = 3.40$, $SD = 0.75$, Cronbach $\alpha = .75$); mobility ($M = 3.74$, $SD = 0.82$, Cronbach $\alpha = .70$); and economic security ($M = 2.98$, $SD = 0.89$, Cronbach $\alpha = .61$). We deleted two items to improve reliability of the economic security dimension to .75.

Unwillingness to communicate. Burgoon's (1976) 20-item Unwillingness-to-Communicate Scale includes two dimensions: Approach-Avoidance (UC-Avoid) and Reward (UC-Reward). To clarify the direction and interpretation of results, we will refer to approach-avoidance as avoidance. High UC-Avoid scores meant that a respondent was anxious or fearful about interpersonal encounters, whereas high UC-Reward scores implied that a respondent felt valued by his/her friends and family. We summed and averaged responses for the several items of each dimension. To be consistent with other measures in the study, we used a 5-point Likert scale for the measure (5 = *strongly agree*, 1 = *strongly disagree*). The mean for the UC-Avoid

dimension was 2.66 ($SD = 0.72$, Cronbach $\alpha = .89$); it was 3.68 ($SD = 0.71$, Cronbach $\alpha = .88$) for UC-Reward.

Social presence. We used 5 items to assess the social presence of the Internet. We asked respondents to rate the Internet on sociability, personalness, sensitivity, warmth, and activity on 5-point semantic differential scales, the two anchors being *very* (5) and *not at all* (1). We constructed a social presence index by summing and averaging the five responses. We initially obtained a .62 Cronbach α , but deleted 1 item to improve the reliability for the 4-item scale to .65 ($M = 3.13$, $SD = 0.73$).

Internet use and attitudes. We operationalized the amount of Internet use as the total number of hours of Internet use in a day. Respondents were presented with a grid, and asked to fill out how many minutes they used each type of Internet facility (i.e., e-mail, newsgroups, chatrooms, browsing, and other) yesterday and on an average day. We then summed and averaged these two numbers for each type of use. Thus, it was possible to analyze each type of use separately. A total of overall use was also obtained. This method has been used successfully to assess amount of television viewing (e.g., Conway & Rubin, 1991; Rubin, 1981, 1983). The two questions for each type of use had an average Pearson correlation of .57, suggesting that the amount of Internet use is somewhat variable each day. Participants indicated they used the Internet an average 45.01 minutes each day. Of that daily use, 35.2% was spent web browsing, 34.2% using e-mail, 14.2% in chatrooms, 10.2% with newsgroups and listservs, and 6.2% with other uses such as FTP or Telnet.

As a measure of *duration of use*, participants also indicated the number of years and months they had used the Internet. The average length was 18.70 months.

We adapted the Television Affinity Scale (Rubin, 1981) to assess liking or *affinity* with the Internet. This was a 5-item Likert scale (5 = *strongly agree*, 1 = *strongly disagree*). We summed and averaged responses to the items. The mean for the 5-item scale was 2.25 ($SD = 0.85$, Cronbach $\alpha = .84$).

Internet satisfaction. Similar to Palmgreen and Rayburn (1985), we used a single-item to assess satisfaction with Internet use. We asked respondents to indicate: "Overall, how satisfied are you with the job the Internet does in providing you with the things you are seeking?" Response options ranged from *extremely satisfied* (5) to *not at all satisfied* (1). This measure had a mean of 3.78 ($SD = 0.83$).

Statistical Analysis

We used Pearson correlations to examine relationships among Internet motives, social and psychological factors, and social presence. We used canonical correlation to investigate multivariate relationships between motives and antecedents/perceptions (contextual age, UC-Reward, UC-Avoid, and social presence). We used hierarchical regression analysis for each outcome variable. Consistent with the conceptual framework, we entered contextual age and unwillingness to communicate dimensions on the first step, social presence on the second, and motives on the third step.

Results

Internet Motives

RQ₁ asked about computer-user motives for using the Internet. The factor analysis of the Internet motive statements yielded five interpretable factors: interpersonal utility, pass time, information seeking, convenience, and entertainment. Tables 1 and 2 summarize the factor analysis and Internet motives.

The first factor, *interpersonal utility*, accounted for 18.1% of the variance after rotation. It contained 12 items from a priori categories of inclusion, affection, social interaction, expressive need, and surveillance (Cronbach $\alpha = .93$). It was the only factor that contained statements primarily from interpersonally oriented categories. *Pass time* consisted of 3 items, all of which comprised that a priori category (Cronbach $\alpha = .85$). It explained 7.5% of the variance. *Information seeking* contained 5 information, surveillance, and convenience items (Cronbach $\alpha = .87$). It accounted for 8.3% of the variance. *Convenience* included 4 items from time control, convenience, economy, and social interaction categories (Cronbach $\alpha = .78$). The factor explained 6.2% of the variance. *Entertainment* contained 2 entertainment items and 1 habit item, "I just like to use it" (Cronbach $\alpha = .85$). It explained 4.2% of the variance after rotation.

Information seeking ($M = 3.52$, $SD = 0.83$) and entertainment ($M = 3.50$, $SD = 0.95$) had the highest mean scores. Convenience ($M = 3.27$, $SD = 1.02$) was also a salient factor, whereas pass time ($M = 2.82$, $SD = 1.05$) and interpersonal utility ($M = 2.43$, $SD = 0.94$) were less salient reasons for using the Internet. Primarily, these computer users sought a convenient vehicle of information and amusement. We found no significant differences between male and female respondents on these factors.

Most motives correlated moderately. Interpersonal utility and entertainment were the only motives that did not correlate significantly. The highest correlations were between interpersonal utility and pass time ($r = .52$), entertainment and information seeking ($r = .48$), entertainment and convenience ($r = .48$), and pass time and entertainment ($r = .37$), all $p < .001$.

Motives, Antecedents, and Social Presence

RQ₂ asked how antecedents and media perceptions related to Internet motives. We found several significant Pearson correlations between Internet motives, and life satisfaction, mobility, economic security, UC-Avoid, UC-Reward, and social presence. The strongest correlations were between: UC-Reward and interpersonal utility ($r = .35$), information seeking ($r = -.34$), and entertainment ($r = .26$); mobility and interpersonal utility ($r = -.32$) and information seeking ($r = .29$); and life satisfaction and information seeking ($r = .28$), all $p < .001$.

The canonical correlation analysis produced two significant roots (see Table 3). For

Table 1
Factor Analysis for Internet Motives

Internet Motive Items Factors "I use the Internet . . ."	Internet Motive				
	1	2	3	4	5
Factor 1: Interpersonal Utility					
● To help others	.80	.19	-.06	.02	-.07
● To participate in discussions	.80	.15	-.07	.00	.03
● To show others encouragement	.75	.15	-.11	.18	-.15
● To belong to a group	.75	.23	-.17	.08	-.12
● Enjoy answering questions	.73	.10	.08	.22	.13
● To express myself freely	.72	.18	.09	.16	.16
● To give my input	.71	.19	.08	.06	-.01
● To get more points of view	.70	.07	.27	-.07	.08
● To tell others what to do	.69	.32	-.19	-.00	-.35
● I wonder what other people said	.68	.19	-.04	.10	.10
● To meet new people	.65	.32	-.22	-.07	.14
● I want someone to do something for me	.63	.34	-.15	-.03	-.40
Factor 2: Pass Time					
● Passes time when bored	.22	.75	.17	.08	.23
● When I have nothing better to do	.23	.74	.10	.11	.15
● To occupy my time	.37	.69	.09	.05	.19
Factor 3: Information Seeking					
● New way to do research	-.16	-.03	.77	.05	.19
● It is easier	-.12	-.14	.74	.12	.24
● To get information for free	-.27	.03	.73	.18	.09
● To look for information	-.22	-.18	.69	.02	.21
● To see what is out there	.07	.24	.68	.02	.22
Factor 4: Convenience					
● To communicate with friends, family	.00	.01	.06	.81	.23
● It is cheaper	-.01	.09	.12	.77	.25
● Easier to e-mail than tell people	.14	.29	.05	.66	-.13
● People don't have to be there to receive e-mail	.05	-.03	.15	.62	.25
Factor 5: Entertainment					
● It is entertaining	-.01	.20	.31	.21	.74
● I just like to use it	.09	.25	.25	.28	.69
● It is enjoyable	.02	.09	.21	.32	.68

Note. Factor 1 (Interpersonal Utility) had an eigenvalue of 8.14, Factor 2 (Pass Time) 3.38, Factor 3 (Information Seeking) 3.73, Factor 4 (Convenience) 2.79, and Factor 5 (Entertainment) 1.91.

Root 1 ($R_c = .56$, $\lambda = .58$, $p < .001$), UC-Reward, mobility, life satisfaction, and UC-Avoid had the highest correlations among the set of antecedents and perceptions. In particular, mobility and life satisfaction related positively to each other and to UC-Reward, and negatively to UC-Avoid. Interpersonal utility, information seeking,

Table 2
Internet Motives Scale

"I use the Internet . . ."	<i>M</i>	<i>SD</i>
Interpersonal Utility		
● To help others	2.36	1.13
● To participate in discussions	2.48	1.23
● To show others encouragement	2.37	1.28
● To belong to a group	2.32	1.32
● Because I enjoy answering questions	2.67	1.25
● To express myself freely	2.88	1.25
● To give my input	2.54	1.23
● To get more points of view	2.71	1.16
● To tell others what to do	1.98	1.32
● Because I wonder what other people said	2.77	1.18
● To meet new people	2.32	1.35
● Because I want someone to do something for me	2.03	1.25
Pass Time		
● Because it passes time when bored	2.85	1.23
● When I have nothing better to do	2.83	1.17
● To occupy my time	2.81	1.22
Information Seeking		
● Because it is a new way to do research	3.61	1.09
● Because it is easier	3.73	1.11
● To get information for free	3.62	1.23
● To look for information	3.65	1.13
● To see what is out there	3.48	1.05
Convenience		
● To communicate with friends, family	3.45	1.36
● Because it is cheaper	3.51	1.38
● Because it is easier to e-mail than tell people	2.95	1.38
● Because people don't have to be there to receive e-mail	3.16	1.15
Entertainment		
● Because it is entertaining	3.54	1.11
● Because I just like to use it	3.40	1.10
● Because it is enjoyable	3.57	1.05

Note. Response options ranged from *exactly* (5) to *not at all* (1) like my own reason for using the Internet.

entertainment, convenience, and pass time had the strongest loadings among the set of Internet motives. In particular, using the Internet for interpersonal utility and for information seeking related negatively.

Across the two sets, then, those who found interpersonal interaction to be rewarding (e.g., others valued their opinions), were mobile, satisfied with their lives,

Table 3
Canonical Analysis of Internet Motives and Antecedents/Social Presence

Canonical	Loading	Canonical	Loading
Root 1			
Set 1: Antecedents/Social Presence		Set 2: Internet Motives	
● Life Satisfaction	-.62	● Interpersonal Utility	.73
● Mobility	-.79	● Pass Time	.32
● Economic Security	-.22	● Information Seeking	-.68
● UC-Avoid	.42	● Convenience	-.31
● UC-Reward	-.93	● Entertainment	-.47
● Social Presence	.03		
Redundancy Coefficient	[11.02]	Redundancy Coefficient	[8.93]
Root 2			
Set 1: Antecedents/Social Presence		Set 2: Internet Motives	
● Life Satisfaction	.06	● Interpersonal Utility	.40
● Mobility	-.09	● Pass Time	.83
● Economic Security	.35	● Information Seeking	.24
● UC-Avoid	.14	● Convenience	.75
● UC-Reward	.12	● Entertainment	.60
● Social Presence	.93		
Redundancy Coefficient	[1.44]	Redundancy Coefficient	[3.03]

Note. Root 1: $R_c = .56$, $R_c^2 = .32$, $\lambda = .58$, $F(30, 962) = 4.75$, $p < .001$. Root 2: $R_c = .29$, $R_c^2 = .08$, $\lambda = .84$, $F(20, 800) = 2.11$, $p < .01$.

and were less anxious with face-to-face communication, used the Internet as a convenient means of seeking information and entertainment, rather than for interpersonal utility or to fill time. Interpreted differently, those who found interpersonal communication to be less rewarding and were anxious when communicating with others face to face, used the Internet for interpersonal utility. Root 1 points to the Internet being a functional alternative to face-to-face communication for those who are anxious about face-to-face communication and who did not find face-to-face communication to be rewarding.

For Root 2 ($R_c = .29$, $\lambda = .84$, $p < .01$), the antecedents set was dominated by social presence. The highest loadings for the Internet motives set were for pass time, convenience, and entertainment. Across the two sets, those who perceived the Internet to have greater social presence were motivated to use the Internet to fill time, because it was convenient, and to be entertained.

Predictors of Behavioral and Attitudinal Outcomes

RQ₃ asked how the Internet antecedents, perceptions, and motives predicted behavioral and attitudinal outcomes of Internet use. We examined duration and

amount of Internet use, and Internet affinity and satisfaction, as the behavioral and attitudinal outcomes, respectively.

Convenience motivation ($\beta = -.15$) was the only significant (but negative) predictor of the *duration* or length of overall Internet use, but the equation was not significant, $R = .24$, $R^2 = .06$, $F(11, 239) = 1.35$, $p = .20$. Interpersonal utility motivation was the only predictor of *amount* of Internet exposure ($\beta = .17$), $R = .28$, $R^2 = .07$, $F(11, 239) = 1.82$, $p = .05$.

We also considered predictors of the amount of more specific types of Internet use. Information seeking ($\beta = -.19$) and entertainment ($\beta = .20$) motives significantly predicted *e-mail* use, $R = .30$, $R^2 = .09$, $F(11, 239) = 2.19$, $p < .02$. Convenience motivation significantly (but negatively) predicted *newsgroup*, *listserv*, or *bulletin board* use ($\beta = -.19$), but the equation was not significant, $R = .26$, $R^2 = .07$, $F(11, 239) = 1.63$, $p = .09$. There were no significant predictors of *chatroom* use, although the equation was significant, $R = .28$, $R^2 = .08$, $F(11, 239) = 1.91$, $p < .04$. Economic security ($\beta = -.19$) and information seeking ($\beta = .17$) significantly predicted web *browsing*, but the equation was not significant, $R = .27$, $R^2 = .07$, $F(11, 239) = 1.69$, $p = .08$. We found no predictors for other Internet uses, $R = .19$, $R^2 = .03$, $F(11, 239) = 0.77$, $p = .67$.

The antecedent variables were entered on the first step of the regression analysis in order to predict Internet *affinity* (see Table 4). There were two significant negative predictors: UC-Reward and mobility. Social presence was added on the second step and was also a significant predictor. Internet motives were entered on the third step, at which point interpersonal utility emerged as a significant predictor. UC-Reward, mobility, and social presence were no longer significant, but life satisfaction emerged as a significant, negative predictor. At the conclusion of the analysis, then, life satisfaction negatively predicted and interpersonal-utility motivation positively predicted Internet affinity, $R = .52$, $R^2 = .27$, $F(11, 239) = 8.08$, $p < .001$.

When regressing Internet *satisfaction* (see Table 4), the antecedent variables produced one significant predictor on the regression's first step, UC-Reward. Social presence was not a predictor on step 2. On the third step, the information-seeking motive was a significant predictor, and UC-Reward retained its significance. At the end of the analysis, then, UC-Reward and information-seeking motivation positively predicted Internet satisfaction, $R = .44$, $R^2 = .19$, $F(11, 233) = 5.11$, $p < .001$.

Discussion

In this investigation we located five primary motives for using the Internet. The most salient use of the Internet (i.e., information seeking) reflected an instrumental orientation, which has been defined as an active and purposive orientation, often having to do with information seeking, and characterized by utility, intention, selectivity, and involvement (A. Rubin, 1994). Although information seeking suggests an instrumental use of the medium, interpersonal utility is less easily interpreted here. Interpersonal-utility motivation included different a priori categories that are open to

Table 4
Hierarchical Regression to Predict Internet Affinity and Satisfaction

	Predictors	Internet Affinity		Internet Satisfaction	
		β	F	β	F
Step 1	● UC-Reward	-.18	4.62*	.34	15.64***
	● Economic Security	.00	0.00	.05	0.73
	● UC-Avoid	-.08	1.30	.08	1.29
	● Mobility	-.17	5.33*	.05	0.40
	● Life Satisfaction	-.09	1.38	.02	0.08
Step 2	● UC-Reward	-.20	5.47*	.33	14.91***
	● Economic Security	-.00	0.00	.05	0.69
	● UC-Avoid	-.08	1.20	.08	1.33
	● Mobility	-.15	4.43*	.05	0.50
	● Life Satisfaction	-.09	1.51	.02	0.07
	● Social Presence	.14	5.35*	.05	0.81
Step 3	● UC-Reward	-.13	2.29	.29	10.19**
	● Economic Security	-.01	0.04	.05	0.60
	● UC-Avoid	-.04	0.40	.09	1.77
	● Mobility	-.11	2.65	.02	0.12
	● Life Satisfaction	-.15	4.05*	-.00	0.01
	● Social Presence	.05	0.90	.00	0.02
	● Convenience	.01	0.05	.09	1.71
	● Pass Time	.01	0.04	-.04	0.23
	● Information Seeking	.12	2.94	.18	6.59**
	● Interpersonal Utility	.32	19.63***	.06	0.55
● Entertainment	.13	3.15	.08	1.02	

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

different interpretations. Because our method did not allow respondents to describe their Internet conversations, we could not be certain as to the users' intended behaviors. In the future, researchers should focus on illuminating this aspect of interpersonally oriented Internet communication, especially in light of different notions as to whether computer-mediated communication lacks social presence, is a depersonalizing experience, and reflects reduced social interaction (e.g., Perse & Courtright, 1993; Rice, 1993; Straus, 1997).

Interpersonal utility has also been linked to functional alternative uses of the Internet. We also observed links among social/psychological user antecedents, personal perceptions, Internet motives, and Internet outcomes. Perhaps, as supported by the canonical correlation results, interpersonal utility reflects a motivation of people who were less involved with others in face-to-face social contact. So, to compensate for that, the less involved interacted more actively on an alternate social

space, the Internet. There is an instrumental element in this decision, because users might be selective and goal directed in their behavior. There is also a ritualized element present, though, because some who choose to pursue social contact on the Internet may do so to fill free time they have due to reduced face-to-face contact. The highest correlation among Internet motives was actually between interpersonal utility and pass time, thus supporting the latter speculation.

These findings support the informative and interactive capabilities of the Internet. The relationships between Internet motives and the social and psychological antecedents support the use of the Internet as a functional alternative for Internet users for whom other channels were not as available or rewarding. A. Rubin and Rubin (1985) argued that if a "channel is not available, or if the interaction does not effectively fulfill the need, a functional alternative would be chosen" (p. 48). In the present study, Internet users who avoided face-to-face interaction, or found it to be less rewarding, chose the Internet as a functional alternative channel to fulfill interpersonal needs. This finding would resonate well with suggestions that computer-mediated communication is used for "identity fixes" and to establish or alter one's self-identity (e.g., Haraway, 1991; Stone, 1995), and to reinvent one's virtual personality (e.g., Bolter, 1996; Cutler, 1996; Lipton, 1996).

This support for the functional alternatives argument links the present study to other personal and mediated research. Rosengren and Windahl (1972) argued that actual interaction, medium consumption, and the interaction potential of the medium influences the ways in which people use mass media channels as functional alternatives. In this study we assessed interaction by measuring contextual age and unwillingness to communicate for the respondents. The interaction potential of the medium could lie in interpersonal utility and convenience motivation.

In addition, social presence had the highest loading in Root 2 of the canonical correlation. This suggests that those who perceived the Internet as warm, social, and active, used it primarily to fulfill pass-time, convenience, and entertainment desires, and for interpersonal utility. Previous studies had noted positive relationships between social presence and personal identity satisfaction for political bulletin-board use (Garramone et al., 1986). Despite the different sample and different type of computer use, it is reasonable that social presence was associated with pass time, convenience, entertainment, and interpersonal uses, as opposed to information seeking.

Another interesting finding was in the correlations among UC-Reward, information seeking, and entertainment. UC-Reward had a positive correlation with information seeking and a negative correlation, of almost the same value, with interpersonal utility. This symmetrical relationship was interesting, not only because it underlined the functional alternative uses detailed above, but also because it implied a difference between informational and interpersonal Internet uses. The relations these two motives had with UC-Reward suggests that they were distinctly different types of uses. Information seeking and interpersonal utility were, therefore, linked to two opposing user profiles. Those who felt valued in their interpersonal environment considered the

Internet to be primarily an informational tool, whereas those who felt less valued in their face-to-face interaction turned to the Internet as an alternative, interactional tool.

To summarize, it appears that those who were more mobile, economically secure, satisfied with life, comfortable with approaching others in an interpersonal context, and who felt valued in their interpersonal encounters preferred the more instrumental Internet uses, such as information seeking. Those who were less satisfied and who felt less valued in their face-to-face communication used the Internet as a functional alternative to interpersonal communication, or to fill time.

Further insight was provided by the regression results. Internet motives appeared to be significant predictors of most outcomes. The hierarchical regression analysis identified one negative predictor of the length of Internet use, convenience motivation. This is not surprising, if we consider that the Internet was not always as easy, fast, or cheap as it is today. Understandably, the early users of the Internet were not intrigued by its convenience; perhaps, other Internet attributes appealed to them. Interpersonal utility motivation was the only positive predictor of total Internet use. Therefore, those who used the Internet to fulfill needs of affection, inclusion, expression, social interaction, control, and surveillance, tended to use the Internet the most.

Information seeking and entertainment motivation predicted total e-mail use. This suggests that those who used e-mail, did so mainly for amusement or enjoyment. Interaction that can often be entertaining takes place through e-mail, too, which could explain why entertainment emerged as a predictor. College students often exchange jokes or stories, or simply chat via e-mail.

Convenience motivation was the only significant negative predictor of newsgroup use. Those who used newsgroups, listservers, or bulletin boards did not do so for reasons of convenience, which referred to easy and cheap access to information or others. It did not mean that the participants also had convenient access to a computer. For respondents without computers, and with limited access to the university computer facilities, newsgroups would not be easy ways of contacting others or obtaining information.

Finally, economic security and information-seeking motivation predicted web browsing. Economic security had a negative value and information seeking a positive one. These findings suggest that people who just liked to look around the Internet did so because it allowed them to save money and to obtain information. For example, it is possible to download software programs, and to read magazines, newspapers, or books, at no cost on the Internet. These predictors align well with the nature of web browsing.

Consistent with Kraut et al. (1998), who found links between Internet use and loneliness and depression, Internet users who were less satisfied with their lives and who used the Internet for interpersonal utility reasons had greater affinity with the Internet. It seems reasonable that those who use the Internet for social contact, and are less satisfied with the quality of the social interaction in their own lives, would

think of the Internet as being more important to them. This affinity may be due to the nature of the medium, which limits nonverbal cues, bypasses physical appearance, and allows the user to create a new identity, if so desired. The lack of visual contact and the existence of different cyberspace social norms allow the user more freedom in personal expression, and make interaction less stressful. Net users also have the opportunity of simply observing the on-line discussions of others, without being obligated to participate, like they might have to in a face-to-face situation. This directly relates to the findings of on-line self-identity and community research that documents how Internet users seek to overcome the confines of their real lives, by reinventing themselves, trying out new relationships, and participating in communities on-line (e.g., Turkle, 1996). In addition, these findings highlight the potential of the Internet as a social medium that can augment our socializing capabilities.

UC-Reward and information seeking also emerged as the two significant predictors of overall satisfaction with the Internet. Thus, users who felt more valued by their friends and family and used the Internet to obtain information, felt more satisfied. The Internet is a massive on-line encyclopedia with links and references to any topic imaginable. It is also economical, fast, and relatively easy to use. Therefore, it would make sense that those who use the Internet to look up information would be satisfied with their Internet use. In addition, those who felt valued in their interpersonal communication, did not turn to the Internet as a substitute for face-to-face communication.

These results create an interesting contrast between the concepts of Internet affinity and satisfaction. UC-Reward, paired with an informational use of the Internet, predicted user satisfaction, whereas life satisfaction and interpersonal utility uses of the Internet predicted affinity. Therefore, those who used the Internet for interpersonal utility did not necessarily feel more satisfied about this choice, and those who used the Internet to obtain information did not actually consider it to be really important in their lives. Satisfaction was associated with a more instrumental approach to the medium, whereas, similar to past television uses research, affinity was linked to a more ritualized use of the Internet (Rubin, 1994). Future research should further consider this contrast between affinity and satisfaction.

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