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INTERNET GRATIFICATIONS, DEPRESSION, SELF-EFFICACY, AND INTERNET ADDICTION

By

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ABSTRACT

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By

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The present study applied the uses and gratifications approach and social cognitive theory to develop an understanding of the relationship of Internet users' gratification, depression, and Internet self-efficacy to Internet addiction tendencies in a typical college student population. There were 7 key underlying factors of Internet gratifications drawn from gratification items used in previous Internet research: Virtual Community, Information Seeking, Aesthetic Experience, Monetary Compensation, Diversion, Personal Status, and Maintenance of Relationship. Of these, Virtual Community was interpreted as a new gratification factor that has not been in any of the previous studies. This study also verified that Internet gratification factors could be dichotomized into content (instrumental) gratifications or process (ritualistic) gratifications; then it was hypothesized that only process gratifications would be positively related to Internet addiction tendency along with depression and Internet self-efficacy. Virtual Community, Monetary Compensation, Diversion, Personal Status, Maintenance of Relationship gratifications, depression, and Internet self-efficacy were found to be positively related to Internet addiction. The relationship between Internet addiction and uses and gratifications was discussed in terms of the formation of media habits among normal (non-addicted) populations.

To my wife Hyejung and parent,

for their unconditional support, sacrifice, and great love.

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INTRODUCTION

Before it was available to the general public in the early 1990s, the Internet was little more than an arcane communications medium to which relatively few had access. Its use was dominated by academic and government personnel and the primary focus was on faculty research and communication (Weiser, 2001). However, the Internet has grown exponentially to become an essential medium in our lives. It appears that Internet users have embraced the Internet in daily living to "communicate, transact, entertain, educate, and improve their connectivity and productivity" (Scruby, 1999, p. 2.).

The world Internet population grew from 280.86 million (4.63% of the total world population) as of February in 2000 and 455.55 million (7.5%) as of February in 2001 to 544.2 million (8.96%) in February in 2002 (Nua Internet Surveys, 2002). Also, there is no doubt that the Internet is now a mainstream activity in American life. The UCLA Internet Project (UCLA Center for Communication Policy, 2001) found that 72.3 percent of all Americans were online in 2001, up from 66.9 percent in 2000. It is estimated that about 59.4 percent of all Americans had Internet access at home as of July 2001 (Nielsen//Netratings, 2001), compared with 52.2 percent in July 2000 and 39.4 percent the year before that. This steady growth is likely to continue as long as the costs of computers and online services continue to decline and technological advances that allow individuals to access the Internet from their home computers continue to be made.

As the popularity of the Internet continues to grow, it is critical to understand how it may affect its users and society. Due to widespread use of the Internet for retail and business applications, it is possible that the nature and scope of the family, social, and occupational consequences may be underestimated (Young, Pistner, O'Mara, &

Buchanan, 1999). Internet technology could have a far larger and more serious impact on our society than the introduction of any other existing media. While television primarily involves only an allocation of leisure time, for instance, Internet technology may affect allocation of mental and physical energy at work, school, and play, changing personal, family, and business relationships (Ebersole, 2000).

Most people have experienced some of the benefits of the Internet (e.g., Tsai & Lin, 2001), with rapid growth and prevalence of computer network technology. On the Internet, for example, people can find almost any information they want, communicate with others no matter when and where they are, and purchase almost any kind of merchandise needed. Yet, there is also concern about the negative social impact of its use, such as social isolation (Kraut et al., 1998), lack of involvement in prosocial behavior (Funk & Buchman, 1996), poor school performance (Wiegman & van Schie, 1998), and Internet addiction (Brenner, 1997; Griffiths, 1999, 2000a; Griffiths, Miller, Gillespie, & Sparrow, 1998; Kandell, 1998; Young, 1996, 1999).

Among these negative effects of Internet use, Internet addiction (Davis, 2001a; Young, 1998a), also known as pathological Internet use (Davis, 2001a; Morahan-Martin & Schumacher, 2000; Young, 1997) or overuse of the Internet (Chou, 2001), may pose a threat to the society as well as individual users, since little is understood about the implications of this new and often unrecognized phenomenon. Indulging in online pornography, abandoning families for chatroom lovers, and losing one's life savings on online gambling are just a few of the stories covered by today's press.

Especially, college students' over-involvement with the Internet on campuses has been reported (Chou & Hsiao, 2000). Some college students have expressed Internet

addiction symptoms, such as "heavy preoccupation with the Internet, excessive online time, compulsive behavior, and time management problems" (Chou, 2001, p. 573). In addition, poor school performance and dropout rates were found to be associated with high Internet use (J. Young, 1998). Likewise, Young (1998b) found that a higher dropout rate among students with high academic abilities was linked to excessive Internet use. According to Kandell (1998), college students are more vulnerable to Internet addiction than any other segment of users, probably because, developmentally, they have strong drives to develop firm senses of identity, and to develop meaningful and intimate relationships.

Besides these two major stressors, they feel "the pressure of making top grades, fulfilling parental expectations, and upon graduation, facing fierce competition for good jobs" (Young, 2001). It was reported that, for example, 53 percent of a college student sample experienced depression since beginning college and that the causes of depression included loneliness (51%), money problems (50%), relationship problems with boyfriends or girlfriends (48%), hopelessness (26%), parental problems (25%), and helplessness (17%) (Furr, Westefeld, McConnell, & Jenkins, 2001). And at that time, most of college students are given free unlimited access to the Internet through their institutions' servers. Thus, using Internet to adapt or cope with depression symptoms may leave them more vulnerable to Internet addiction.

As the Internet has been promoted as an abundant source of information and an effective means of education as well as a convenient means of communication and entertainment, uses of the Internet are growing constantly. Although the Internet is an excellent tool for many people, dangers exist for those who make it the central focus of

their lives. In particular, over-involvement with the Internet can inhibit college students' development of skills needed for identity and intimacy, "creating a spiral of Internet use, difficulties in real life, followed by more Internet use as a means of avoidance and self-medication, and the like" (Kandell, 1998). Therefore, new areas of research should include the development of models that identify or explain the causes underlying such abnormal online behavior. So, the main purpose of this study is, firstly, to explore the gratifications that can be sought and obtained by Internet users and, secondly, to explore the origins of Internet addiction in normal populations on the basis of Internet gratifications and two important psychological variables that are closely related to the general concept of addiction: depression and self-efficacy.

CHAPTER 1

LITERATURE REVIEW

Internet Addiction: A Habit Formation

The term "Internet addiction" was originally coined by Goldberg (1995) to describe the effects of excessive Internet use. However, an agreement on the precise definition of this terminology has not yet been reached (Shaffer, 1996). Thus, several terms describing similar concepts have been used in the literature, including Internet abuse (e.g., Brenner, 1997; Davis, 2001b), Internet dependence (e.g., Anderson, 2001), pathological Internet use (e.g., Davis, 2001a; Morahan-Martin & Schumacher, 2000; Young, 1997; Young & Suler, 1998), compulsive Internet use (e.g., Greenfield, 1999a, 2000), and Internet addiction (e.g., Beard & Wolf, 2001; Chou & Hsiao, 2000; Eppright, Allwood, Stern, & Theiss, 1999; Griffiths, 1999; Griffiths et al., 1998; Kandell, 1998; Stern, 1999; Tsai & Lin, 2001; Young, 1996, 1999; Young & Rodgers, 1998b), each with its own conceptual definition. This study adopts "Internet addiction" or "Internet addiction tendency" as a generic term to describe the negative effects resulting from excessive Internet use. Although the development of the Internet addiction concept is still in its infancy and academic investigations are few in number, some anecdotal data and empirical studies have been accumulated and much of the discussion has centered on the appropriateness to consider excessive use of the Internet a behavioral addiction (Petrie & Gunn, 1998).

In general, it is well known and accepted that substances such as alcohol and other mood-altering drugs can create a physical and/or psychological dependence. Even certain behaviors such as compulsive gambling (Griffiths, 1990), video game playing

(Keepers, 1990), overeating (Lesieur & Blume, 1993), exercise (Morgan, 1979), and sex or love relationships (Peele & Brodsky, 1979), and television viewing (McIlwraith, 1998) have gained some acceptance with regard to their addictive potential. There has been an acknowledgement that the compulsive performance of these behaviors may mimic the addictive process found with substances such as drugs and alcohol. Thus, usage of the Internet may be an additional behavior that can produce a compulsive pattern of use that possibly leads to an addictive process (Greenfield, 1999a).

Marlatt, Baer, Donovan, and Kivlahan (1988) defined "addiction" as "a repetitive habit pattern that increases the risk of disease and/or associated personal and social problems....often experienced subjectively as 'loss of control' [that] continues despite volitional attempts to abstain or moderate use" (p. 224). By this definition, addicted media users would feel compelled to consume media despite potentially negative consequences that make continued use appear irrational or out of control, even in their own eyes (LaRose, Lin, & Eastin, 2002). That is to say, addictions to media are a type of behavioral addiction (Marks, 1990) in which there is no external chemical substance involved. Technological (behavioral) addictions can either be passive (e.g., television) or active (e.g., computer games), and usually contain inducing and reinforcing features that may contribute to the promotion of addictive tendencies (Griffiths, 1995a, 1995b, 1995c, 1998, 2000a).

Griffiths (1991) followed the Diagnostic Criteria for Pathological Gambling (American Psychiatric Association, 1987) to define addiction to video arcade games. Others used diagnostic criteria for behavioral addictions (Greenberg, Lewis, & Dodd, 1999; Griffiths, 1999, 2000b; Rozin & Stoess, 1993) or equated them with impulse

control disorders (Cooper, Scherer, Boies, & Gordon, 1999; Shapira, Goldsmith, Keck, Khosla, & McElroy, 2000), the same APA diagnostic category that included behavioral addictions such as pathological gambling and compulsive buying (Wise & Tierney, 1994). Thus, people are not addicted to the Internet in the same way that they can be addicted to alcohol or cocaine (Davis, 2001c) where psychoactive substances are involved. Addictive and compulsive behavior that leads to excessive use of the Internet has also been documented (Griffiths, 1998, 1999; Huang & Alessi, 1997; Stein, 1997; Swadley, 1995; Wallace, 1999).

The concept of Internet addiction as a type of behavioral addiction includes dependence on the Internet, obsessive thoughts about the Internet, tolerance, diminished impulse control, inability to cease using the Internet, and withdrawal (Davis, 2001a; Young, 1999). These are all symptoms commonly associated with other behavioral addictions including gambling and alcoholism, as defined by the Fourth Edition of Diagnostic and Statistical Manual (DSM-IV) of the American Psychiatric Association (1995). For example, studies conducted by Young (1996) and Griffiths (1998) developed a seven-item self test which adapted diagnostic criteria for substance dependence from the DSM-IV. If a person answered "yes" to three or more of the seven questions, the person was deemed to be an Internet addict.

But the problem is that participants in these Internet addiction studies might have been excessively lenient in assessing their own addiction symptoms compared to the judgment of clinical professionals. Moreover, one important component is missing from self-diagnoses of Internet addiction, which assesses serious life consequences as a result of their addictive behavior, such as the loss of employment or the dissolution of a

marriage (Shapiro, 1999). So, most of the self-identified Internet addicts described in previous studies may not have been truly addicted in a clinical sense.

Also, it is unlikely that Internet addictions happen all at once. Rather, the symptoms are likely to develop over time. Indeed, the diagnosis of an addiction, whether self-reported or professionally assessed, is predicated on the accumulation of several of the symptoms (Greenfield, 1999b; K. S. Young, 1998a). This means that it is possible to have varying degrees of Internet addiction from being "a little bit addicted" while still leading a normal life to being "seriously addicted" in the sense of having severe indications of most of the addiction symptoms (Song, LaRose, Eastin, & Lin, 2002).

From the social learning perspective, addictive behaviors represent a category of "bad habits" and are assumed to lie along a continuum of use rather than being defined in terms of discrete or fixed categories such as excessive use (loss of control) or total abstinence (Marlatt, 1985). This reasoning can be confirmed by a prior study (LaRose, Mastro, & Eastin, 2001) that found a strong positive relationship between perceived (self-identified) Internet addiction and the amount of Internet usage and suggested perceived Internet addiction might be a useful construct in models of Internet use. LaRose et al. (2001) interpreted perceived addiction as an indication of habit formation that is conceptually and empirically distinct from expected gratifications.

However, Internet researchers have conceptualized habit as a type of gratification. Hunter (1996) first proposed "Browsing" as a distinctive gratification related to Internet usage. Perse and Greenberg-Dunn (1998) compared respondents who chose computers as the source of typical mass media gratifications to those who did not; they found that perceptions that computers are a habit or are good for keeping busy were significantly

related to computer use. However, in several studies (Charney & Greenberg, 2001; Ferguson & Perse, 2000; Kaye, 1998; Korgaonkar & Wolin, 1999) that operationalized habit as a gratification, it emerged as only a minor component of other types of gratifications. Since the habit gratifications were single-item measures in these studies, their significance may have been obscured by yielding only minor loadings on multi-item factors that also reflected other gratification dimensions.

Although habit formation (perceived addiction) and gratifications may act independently on behavior, they may still be interrelated. Stone and Stone (1990) proposed that media habits were the result of prior decision-making that once engaged active uses and gratifications thought processes that had become dormant with repetition over time. It is certain that "Internet addictions provide the opportunity for a reassessment of the media addiction issue and also basic conceptions of media attendance that involve the interplay between habit and reason" (LaRose et al., 2002).

Uses and Gratifications Theory for Internet Research

Uses and gratifications theory has been a dominant paradigm for explaining media exposure in the field of communication studies. It has been applied to a wide range of conventional mass media (Palmgreen, Wenner, & Rosengren, 1985) as well as to interpersonal communication (R. A. Rubin, Perse, & Barbato, 1988) and now to the Internet (Charney & Greenberg, 2001; Dimmick, Kline, & Stafford, 2000; Eighmey & McCord, 1998; Ferguson & Perse, 2000; Flanagin & Metzger, 2001; Kaye, 1998; Korgaonkar & Wolin, 1999; Lin, 1999a; Papacharissi & Rubin, 2000; Parker & Plank, 2000; Perse & Dunn, 1998). Many communication researchers (e.g., December, 1996;

Kuehn, 1994; Morris & Ogan, 1996; Newhagen & Rafaeli, 1996; Perse & Dunn, 1998; Rice & Williams, 1984; Ruggiero, 2000; Williams, Strover, & Grant, 1994) suggested that traditional models of uses and gratifications may still provide a useful framework from which to begin to study Internet and new media consumption and a convincing theoretical explanation for changes in media use patterns following the adoption of new communication technologies such as the Internet.

Therefore, the present study also adopts the uses and gratifications paradigm as a framework to better understand and to further explain Internet addiction from a communication perspective. With its interactive and decentralized nature, the Internet is an active two-way communication medium. This new mode of communication entails active participation, which corresponds to the uses and gratification theory's assumption that the audience is active and selective in media consumption. On the Internet, the user actively chooses or constructs information, sometimes in response to other messages or provided information. Since the bits of information circulated on the Internet are easily alterable, it is possible for those who were once considered "passive" to exert more control over both the content and form of information (McCain, Morris, Green, & Al-Najran, 1999). As an "active audience" perspective, the uses and gratifications paradigm provides a vantage point to look at the ways that the user responds to the breadth and depth of information that is made available by the Internet (Ebersole, 2000; Morris & Ogan, 1996).

The uses and gratifications perspective assumes that audiences choose media content based on certain needs or gratifications that they expect to satisfy or receive from various media sources. It shifted the focus of inquiry from direct effects of media on

passive audiences to active audiences' uses of the media: "What purposes or functions the media serve for a body of active receivers" (Fisher, 1978, p. 159)? In other words, uses and gratifications approach stresses individual use and choice (Rubin, 1994). A key assumption of uses and gratifications theory is that media effects are mediated by the intent or motivation of the user (Katz, Haas, & Gurevitch, 1973). Katz, Blumler, and Gurevitch (1974) defined the uses and gratifications as the study of:

> the social and psychological origins of needs, which generate expectations of the mass media or other sources, which lead to differential patterns of media exposure or engagement in other activities, resulting in need gratifications and other consequences, perhaps mostly unintended ones (p.20).

This view makes the explicit assumption that media use is functional, or directed toward the fulfillment of a particular need.

Uses and gratifications theory has helped to identify the various reasons why people engage in specific types of mediated communication and to classify different types of gratifications that can be fulfilled by users. McQuail, Blumler, and Brown (1972) cited four categories of need gratifications: Diversion (escape from the constraints of routine, escape from the burdens of problems, and emotional release); Personal Relationships (companionship and social utility); Personal Identity (personal reference, reality exploration, and value reinforcement); and Surveillance. Katz et al. (1973) pointed out that all media users have essentially the same five categories of needs:

> Needs related to strengthening information, knowledge, and understanding—these can be called cognitive needs; Needs related to strengthening aesthetic, pleasurable, and emotional experiences—or affective needs; Needs related to strengthening credibility, confidence, stability, and status—these combine both cognitive and affective elements and can be labeled [personal] integrative needs; Needs related to strengthening contact with family, friends, and the world. These can also be seen as performing an [social] integrative function; Needs related to escape or tension-release which we define in terms of the weakening of contact with self and one's social roles (pp. 166-167).

Internet users are likely to share and satisfy these needs that have been found for other media sources such as television, radio, newspaper, book, and film because the multimedia characteristics of the Internet can facilitate all their uses for diverse gratifications. For instance, December (1996) argued that more traditional typologies of mass media consumption translate appropriately to the Internet. Although the real test of the Internet as a new medium is its ability to satisfy these needs, it would seem that the Internet can indeed serve all five of these needs (i.e., Cognitive, Affective, Personal Integrative, Social Integrative, and Escapist Needs) and can do so in revolutionary ways (Hunter, 1996; Lin, 1999a).

However, there remains inconsistency between the concept of Internet addiction discussed above and the essential concept of "active audience" in uses and gratifications theory. According to uses and gratifications theory, people are conscious of their media choice, know why they choose one media over another, and know why they use it in

retrospect (McQuail et al., 1972). Therefore, development of Internet addiction as a habit and, at the same time, as a type of negative consequence that any user may not desire cannot be logically explained when the user is considered to be conscious, rational, and goal-directed in media usage. Since habit is a necessary, though not sufficient, component of the definition of media addiction, Internet addiction seems to conform to the notion of habitual or ritualistic (Rubin, 1984) media use (LaRose et al., 2002) which has been long lurking in uses and gratification literature (Rosenstein & Grant, 1997; Stone & Stone, 1990).

Content Gratifications versus Process Gratifications

Palmgreen (1984) argued that topological studies aimed at identifying motives for media consumption are "at the core of the uses and gratifications tradition" (p.22). In fact, the most prodigious effort has been directed toward refining an understanding of gratifications from mass media, and gratifications studies have revealed many different ways of categorizing the central concept. Some researches have suggested that a simple dichotomous gratification structure might underlie most media use: immediate (i.e., entertainment) and delayed (i.e., informational) gratifications (Schramm, Lyle, & Parker, 1961); fantasy-escapist and informational-educational functions of media (Weiss, 1971); content and process gratifications (Cutler & Danowski, 1980; McGuire, 1974; Stafford & Stafford, 2001); cognitive and cultural gratifications (McQuail, 1984); cognitive and affective gratifications (Dobos & Dimmick, 1988); and instrumental and ritual gratifications (A. M. Rubin, 1984, 1994). Although the terms for these dichotomies differ from one to another, their conceptual similarity is obvious.

Cutler and Danowski (1980) defined "content gratification" as one derived from the use of mediated messages. For example, mediated messages may be used to gain knowledge or understanding, to increase or reduce specific uncertainty in personal and social situations; or the content might be perceived as useful for the defense of predispositions. Picking up a newspaper for the latest news of the world would be a specific example. "Process gratification," on the other hand, is derived from the use of mediated messages for intrinsic values that do not bear a direct link to particular substantive characteristics of the messages; the individual receives gratification only or mainly from being involved in the process of communication behavior, rather than from message content. For example, watching television to pass time might be considered a process gratification.

Similarly, Rubin (1984) distinguished between "ritualized" and "instrumental" television viewing. He proposed that ritualized viewing is habitual and frequent television use in search of companionship or a way to pass time, whereas instrumental viewing is highly selective and purposeful. Cutler and Danowski's (1980) content gratification appears to parallel Rubin's (1994) instrumental use, while process gratification seems to be related more to his notion of ritualized use:

> Ritualized media use is using a medium more habitually to consume time and for diversion. It relates to greater exposure to and affinity with the medium. Ritualized use suggests utility but an otherwise less active or less goal-directed state. Instrumental media use is seeking certain media content for informational reasons. It relates to greater exposure to news and informational content and

perceiving that content to be realistic. Instrumental use is active and purposive. It suggests utility, intention, selectivity, and involvement (p.427).

McQuail's (1984) distinction between "cognitive" and "cultural" parallels the dichotomy of instrumental and ritual uses, too.

Swanson (1992) also proposed that all the gratifications, in the end, can be categorized into two essential dimensions: "gratifications that result from the pleasurable experience of media content and are realized during consumption [i.e., process, cultural, or ritual gratifications], and gratifications that result from learning information from media content and subsequently putting it to use in practical affairs" [i.e., content, cognitive, or instrumental gratifications] (p.310).

In the study of the popular television program *60 Minutes*, for an example of empirical evidence, Rubin (1981) identified two types of viewers: a time-consuming (habitual) information seeker who was a more frequent, generalized user of television, and a non-time-consuming (non-habitual) entertainment-information seeker who exhibited an affinity with the program. In accordance with these findings, Windahl (1981) concluded that media use may be instrumental or ritualized and further proposed that individuals tend toward one of two types of viewing. Examining older people's television viewing motives, Rubin and Rubin (1982) confirmed that there were two types of television viewers depending on their motivations: Habitual viewers watched television to fill time and for companionship, relaxation, arousal, and escape, viewed a great deal of television, and displayed a definite affinity with the television; and selective viewers

sought information and watched news, talk, and magazine programs. Rubin's (1983) third analysis of adult television use confirmed these two viewer types, too.

Interactive communication media were found to have similar gratifications to these conventional one-way mass media. From the early time of computer-mediated communication, Rogers (1986); (as cited in Dimmick, Sikand, & Patterson, 1994) noted that gratifications of the newer technologies such as email and electronic bulletin boards fell into two categories: "socioemotional" and "task." The socioemotional uses seem to be similar to ritualized gratifications whereas tasks appear to be similar to the instrumental gratifications.

Dimmick et al. (1994) explored unique gratifications associated with the telephone: "sociability" and "instrumentality." According to the researchers, "the socioemotional uses would seem to be similar to what we call sociability gratifications, whereas those uses designated as task would appear to be similar to the instrumentality gratifications of the telephone" (p. 659). The sociability and socioemotional gratifications are process gratifications from media use. Communication is regarded as a purpose itself. That is, people obtain gratifications immediately during the communication process. On the other hand, the instrumentality and task gratifications refer to content gratifications from media use. Here, communication is a means to achieve a certain purpose (Al-Najran & McCain, 1999).

The distinction between content (cognitive and instrumental) and process (cultural and ritual) gratifications may also be applied to the Internet. Morris and Ogan (1996) argued that the concept of active audience can be applied to both instrumental (content-oriented) and ritualized (process-oriented) use of the Internet, and thus, it should continue

to be included in current and future Internet research. Reasons for using the Internet may differ from person to person. Some users may be goal-directed and want to complete a specific task through browsing intended Web pages. On the other hand, others may feel bored and surf Web sites randomly just for fun. According to Stafford and Stafford (2001), for example, Web site use can be characterized by process gratifications in recognition of the "Web surfing" phenomenon. "Aimless surfing is an apt Internet characterization of McGuire's (1974) process gratifications, but bookmarking a site, might be more representative of motivations arising from content gratifications....this is probably indicative of strong content interest" (Stafford & Stafford, 2001, p. 24). Even if one bookmarks an online casino site and visit it regularly, for instance, his or her Internet use might be considered content-oriented as far as he or she has specific expectations from the gambling site. In a study of adolescents' uses of the Internet, Ebersole (1999) also could find two factors similar to both content and process gratifications by an alternative two-factor solution: "Education" and "Diversion" motives (or gratifications).

In the present study, while process-oriented use of the Internet might be understood as to be done by those users who usually browse the Internet looking for something to catch their interest, a more content-oriented approach might be taken by those users who access the Internet looking for a specific bit of information that can fulfill their specific needs (Ebersole, 1999). In other words, content gratifications may entail use of the message or content carried by the Internet, and are thus mainly related to cognitive-related gratifications, whereas process gratifications are related to enjoyment of the act of using the medium itself. It is important to notice that the basic distinction between content-oriented and process-oriented use may not represent types of people or

their fixed usage patterns. Instead, it indicates a progression in the long run, and is thus difficult to distinguish one from the other. For example, people may begin as content-oriented (instrumental) users and become process-oriented (ritualized) users as their active seeking for specific outcomes changes to mindless habit (cf. Stone & Stone, 1990).

Gratifications of Internet Use

Thus, within the uses and gratifications perspective as discussed so far, all forms of communication media serve as important sources of need satisfaction for users (Schramm et al., 1961; Weiss, 1971), and how the user will be affected by a communications medium depends primarily on their goals and purposes for using that medium (Blumler & Katz, 1974; E. Katz, 1959). Extrapolating this approach to the Internet, development of Internet addiction as an adverse consequence of its use may therefore depend on one's various purposes or goals for using it. Thus, to answer the question "how does Internet addiction develop" one must first answer to the question: What are the functions underlying Internet use?

As early as in the middle of 1980's when the World Wide Web (WWW) was not woven yet, Garramone, Harris, and Anderson (1986) found that the needs for Surveillance, Personal Identity, and Diversion in using electronic bulletin boards, which were the precursors to today's chatrooms, listserves, and discussion groups on the Internet. Rafaeli (1986) found that users of electronic bulletin boards gave Reaction, Diversion, and Entertainment as the principal motivations for use, followed by Communications and Learning What Others Think. James, Wotring, and Forrest (1995) found that Informational Learning and Socialization were essential psychological motives

for using electronic bulletin boards, followed by Communication Medium Appeal, Business, and Entertainment. The Internet was originally founded for government and educational use. Thus, it is no surprise that its earlier use was mainly for information exchange and education. Today, however, people use the Internet for a variety of reasons beyond content-oriented (instrumental) purposes.

The abundant opportunities for social interaction that set the Internet apart from the conventional mass media have figured prominently in discussion of the usage motivations for the new medium. Ha and James (1998) defined interactivity as "the extent to which the communicator and the audience respond to each other's communication needs" (p. 457). Since its inception, the Internet has connected individuals all over the world. Through the Internet, individuals are communicating with each other, creating new relationships, and exchanging social support, information, and knowledge (Wellman & Gulia, 1999; Wellman et al., 1996).

Kuehn (1994) emphasized this interactive capacity of computer-mediated communication and suggested a typology of gratifications including Convenience, Diversion, Relationship Development, and Intellectual Appeal. Miller (1996) argued that online activity was mainly motivated by seeking gratifications in Interaction along with Escape, Entertainment, and Surveillance. December (1996) theorized Interaction as one of the three factors including Communication and Information for why people used the Internet. Papacharissi and Rubin (2000) found that a Social Interaction factor and that was the only one that predicted Internet usage.

Interactive applications such as discussion groups, chatrooms, and email were found to fulfill the need for social interaction, including the formation of new

relationships and maintaining existing ones (Al-Najran & McCain, 1999). In the UCLA study (UCLA Center for Communication Policy, 2001), more than 80 percent of email users agreed that email allowed them to communicate with people they could not normally talk to. Typically, checking one's email was the first thing one did after establishing a connection to the Internet (Kraut et al., 1998). Moreover, Internet relay chats (IRCs), multi-user dungeons (MUDs), as well as newsgroups, listserves, and other kinds of synchronous discussion forums allow users to meet new people, communicate with other, and discuss anything they want (Weiser, 2001).

However, entertainment and other process gratifications may be at least as important as social interaction as a motivation for Internet use. LaRose et al. (2001) operationalized gratifications as the "expected outcomes" of Internet use and determined that the enjoyable activities found on the Web predicted Internet usage. Ferguson and Perse (2000) studied the WWW as a functional alternative to television. In their study, Entertainment was found to be the most salient motive for visiting the Web, followed by Pass Time, Social Information, and Relaxation/Escape respectively.

A study of college students' WWW usage (Kaye, 1998) yielded six motivational categories: Entertainment, Social Interaction, Passing the Time, Escape, Information, and Web Site Preference. Similarly, for Parker and Plank (2000), Relaxation and Escape factors were found to be key factors to predict Internet usage, explaining approximately nine percent of the variance.

In a pilot study, Yoo (1996) found six dimensions of gratifications relating to use of the Internet: Entertainment, Information, Sociability-Building, Sociability-Maintaining, Transaction-General, and Transaction-Task. Of these, Entertainment, Information,

Transaction-General, and Sociability-Building were related to WWW usage. By the same token, Lin (2000) discovered seven different gratification-expectation dimensions: Companionship; Learning; Interpersonal Communication; Entertainment; Habituality; Surveillance; and Diversion. The latter four dimensions were able to explain 26 percent of the total variance in online content access level. More recently, Lin (2001) found Escape/Interaction, Informational Learning, and Entertainment factors as Internet motives.

Other empirical studies stressed gratifications that were more distinctly content-oriented (instrumental). According to the UCLA study (UCLA Center for Communication Policy, 2001), at the top of the list of the primary reasons respondents started to use the Internet was "to get information quickly" (25.0%), followed by "for work" (11.6%), "to get e-mail" (10.6%), "it seemed to be new and interesting" (9.3%), "for school" (8.8%), "my friends" (4.6%), "to learn more about things that interest me" (4.5%), "to be up-to-date" (3.8%), "was given access" (3.1%), and "other" (19.0%).

Katz and Aspden (1997) found that all categories of users (i.e., longtime users, new users, nonusers, and former users) ranked Seeking Information as number one or two as a reason for being online. Charney and Greenberg (2001) established eight gratification factors for the Internet, which were Keep Informed, Diversion/Entertainment, Peer Identity, Good Feelings, Communication, Sights and Sounds, Career, and Coolness, and found two of these (Keep Informed and Communication) explained 36 percent of the variance in weekly time spent on the Internet. Stafford and Stafford (2001) identified motivations for the use of commercial Web sites and found Search, Cognitive, New and Unique, Social, and Entertainment gratifications. McCain et al. (1999) found Information Seeking, Maintaining Social Contacts, What's New/Cool, and Social Interaction factors.

In Ebersole's (2000) study participants gave the following reasons for using the WWW: "for research and learning" (52%); "to communicate with other people" (7%); "for access to material otherwise unavailable" (5%); "to find something fun or exciting" (8%); "for something to do when I'm bored" (5%); "for sports and game information" (6%); and "for shopping and consumer information" (1%). However, while 52 percent of the students reported their purpose for using the WWW "for research and learning," they were found to be visiting commercial sites at a much higher proportion than those in other domains.

Korgaonkar and Wolin (1999) found the factor of Economic motivation in Internet usage along with Escapism, Information Control, Interactive Control (relating to the ability to control the presentation of information), and finally Socialization. Anecdotal evidence also showed that smaller, but still large, proportions of Internet users were engaging in e-commerce by buying products or services online. It was estimated from 36 percent (Nie & Erbring, 2000) to 50.7 percent (UCLA Center for Communication Policy, 2001) in the U.S., 33 percent in the U.K. (National Statistics Omnibus, 2000), and 19 percent of households with access to the Internet in Canada (Statistics Canada, 2000) bought goods or services on the Internet.

Although the distinction between content and process gratifications may not be clear due to the progressive characteristic mentioned above, the findings in the extant Internet uses and gratifications literature imply that the basic audience motivations for using either traditional media or the Internet appear to be similar. This means that "the motivations for using the media are stable and may not be media dependent" (Parker & Plank, 2000, p. 48). This assumption is upheld by Lin's (1999a) study, which found that

the motivations for Internet use and television viewing were identical, even though the motivations for seeking specific types of Internet or TV content diverged. These findings conformed with Dimmick and Wallschlager's (1986) view that, although the new media offered a broader variety of content, the audience motives were similar to those of preexisting mass media use.

Table 1 presents the gratifications categories of the Internet on the basis of Katz et al.'s (1973) categories of needs. It is interesting that the list of gratifications of the Internet looks similar to those found by researchers exploring the uses and gratifications of old media. Cognitive, Affective, Personal Integrative, Social Integrative, and finally Escapist gratifications are present.

However, there is also a wide disparity of findings that may depend upon the selection of gratification items utilized for the various studies. Those studies introduced in Table 1 have mixed origins of gratification items: some drawn from prior research on television gratifications (Ferguson & Perse, 2000); others from analyses of the Internet (Papacharissi & Rubin, 2000); and others still from the responses of actual users (Charney & Greenberg, 2001). Therefore, the task that still remains left is to create a unified list of Internet gratifications by asking:

RQ1: What are the gratifications of the Internet?

A firm understanding why users are attracted to the Internet, as well as what they do on the Internet will help media researchers to better understand the general effects of Internet usage as well as Internet addiction.

Table 1 Internet Gratifications in Literature

Study	Gratifications					
	Cognitive	**Affective**	**Personal Integrative**	**Social Integrative**	**Escapist**	**Others**
Garramone et al. (1986)	Surveillance		Personal Identity		Diversion	
Rafaeli (1986)	Learning what others think	Entertainment*		Communication; Reaction	Diversion; Entertainment*	
James et al. (1995)	Informational Learning	Entertainment*; Communication Medium Appeal		Socialization	Entertainment*	Business
Miller (1996)	Surveillance	Entertainment*		Interaction	Escape; Entertainment*	
December (1996)	Information			Communication; Interaction		
Hunter (1996)	Information Seeking	Entertainment*			Entertainment*	Browsing
Yoo (1996)	Information	Entertainment*		Sociability-Building; Sociability-Maintaining	Entertainment*	Transaction-General; Transaction-Task
Kaye (1998)	Information	Entertainment*		Social Interaction	Passing Time; Escape; Entertainment*	Web Site Preference
Korgaonkar & Wolin (1999)	Information Control; Interactive Control*			Socialization; Interactive Control*	Escapism	Economic Motivation
McCain et al. (1999)	Information Seeking	What's New/Cool		Maintaining Social Contacts; Social Interaction		
Ebersole (2000)	For research and learning; For access to material otherwise unavailable; For sports & game information*	To find something fun or exciting; For sports & game information*		To communicate with other people	For something to do when I'm bored	For shopping & consumer information
Ferguson & Perse (2000)	Social Information*	Entertainment		Social Information*	Passing Time; Relaxation & Escape	
Lin (2000)	Learning; Surveillance	Entertainment*		Companionship; Interpersonal Communication	Entertainment*; Diversion	Habituality
Papacharissi & Rubin (				Social Interaction		

Table 1 (cont'd)

Study	Gratifications					
	Cognitive	Affective	Personal Integrative	Social Integrative	Escapist	Others
Parker & Plank (2000)	Surveillance & Excitement*	Surveillance & Excitement*		Companionship & Social Relationships	Relaxation & Escape	
Charney & Greenberg (2001)	Keep Informed; Career*	Diversion & Entertainment*; Good Feelings; Sights and Sounds; Coolness	Career*	Peer Identity; Communication	Diversion & Entertainment*	
Lin (2001)	Information Learning	Entertainment*		Escape & Interaction*	Escape & Interaction*; Entertainment*	
Stafford & Stafford (2001)	Cognitive; Search*	New & Unique; Entertainment*		Social	Entertainment*	Search*
LaRose et al. (2001)	Novel sensory	Pleasing Sensory; Activity	Status	Social	Self-reactive	Monetary
UCLA (2001)	To get information quickly; For work; For school; To learn more about things that interest me*; To be up-to-date*	It seemed to be new and interesting	To be up-to-date*	To get email; My friends	To learn more about things that interest me*	Was given access; Other

Note. * Denotes gratifications factors overlapped through 2 categories

Internet Gratifications and Internet Addiction

Theoretically, we should expect process gratifications to be related to media addictions including Internet addiction. This supposition can be supported by *operant conditioning* formulations of the general problem of addiction. In this view, the individual performs a behavior and gets either rewarded or punished for the behavior. If a person wants certain kinds of rewards, mainly process gratifications such as excitement,

emotional comfort, escape, and fun, etc. (Ferris, 1997), and learns that a specific medium will gratify that needs, "the behavior could begin to become habitual in the sense of being automatic (Stone & Stone, 1990) or ritualistic (Lin, 1993; A. M. Rubin, 1984) while remaining consistent with rational and conscious self-interest" (LaRose et al., 2002). Of course, the initial rational and conscious use could become irrational and addictive behavior over time. Since perceived outcomes of one's behavior or gratifications play an important role in this process, it seems reasonable to explain Internet addiction from the uses and gratifications perspective.

Process (ritualized) gratifications, as conceptualized in the previous section, are focused on the consumption of the medium itself and pull the user away from the outside world more forcefully relative to content (instrumental) gratifications. This would logically lead to a pattern of mounting use. Rubin (1984) found that ritualized (process-oriented) use of a medium involved more habitual use of it for diversionary reasons and a greater attachment with the media, while instrumental (content-oriented) use was associated with overall lower levels of consumption and affinity, but typically linked to greater information use. Television viewing out of habit was correlated significantly with all other television viewing motives except viewing for information. On the other hand, content gratifications impel the user in the opposite direction in that the needs being met by the media are inherently connected to the world outside the media system, although content-oriented (instrumental) uses could also eventually graduate into process-oriented (ritualized) uses.

This premise is born out by the results of a number of studies. For instance, Young (1996) contrasted the applications favored by Internet addicts and non-addicts.

She found that non-addicts predominantly used those aspects of the Internet that allowed them to gather information and send and receive email. On the other hand, Internet addicts did not seem to regard the Internet as an informational tool (e.g., Young, 1997). They predominantly used the two-way communication functions available on the Internet (Table 2).

Table 2 Internet Applications Most Utilized by Addicts and Non-Addicts

Application	Addicts	Non-addicts
Chat Rooms	35%	7%
MUDs	28%	5%
News Groups	15%	10%
E-Mail	13%	30%
WWW	7%	25%
Information Protocols	2%	24%
Total	**100%**	**101%**

Note. This table was drawn from Young's (1996) study, N=396. Results do not add to 100% due to rounding.

Chatrooms and multi-user dungeons (MUDs) were the two most utilized applications by Internet addicts. Newsgroups or bulletin board systems (BBSs) were the third most utilized application among addicts. Internet addicts mainly used email to

arrange dates to meet someone online or to keep in touch between real time interactions with new found online friends. Online relationships were often seen as highly intimate, confidential, and less threatening than real life friendships and reduce the addicts' loneliness. With similar findings in later studies, Young and her colleagues (1999) categorized five general subtypes of Internet addiction on the basis of the most problematic types of online applications. They were addictions to cyber-sex, cyber-relationships, online stock trading or gambling, information surfing, and computer games.

Perse and Greenberg-Dunn (1998) found that the more people went online, the more they did it for entertainment and to pass time. Kandell (1998) observed that MUD games, Internet relay chat (IRC), chatrooms, extended Web surfing, and email were major activities that led people to Internet addiction. In a study of Taiwan college students' Internet uses (Chou, Chou, & Tyan, 1999), it was found that Internet addiction was associated positively with Escape, Interpersonal Relationship, and Total Communication needs, and that Internet addicted students spent significantly more hours on BBSs and IRCs than non-addicted students.

Chou and Hsiao (2000) reported that Internet addicts spent more time on electronic bulletin board systems (BBSs) and email than non-addicts. In this study, BBS and e-mail use hours were two powerful factors in predicting Internet addiction. Internet addicts were more likely to use the Internet to meet new people, get emotional support, talk to others with the same interest, play interactive games, gamble, and engage in net-sex (Morahan-Martin & Schumacher, 2000). Chen, Chen, and Paul (2001) found that there were significant differences between Internet dependents and non-dependents in the way they used the Internet. They confirmed the fact that dependent users were more

likely to use interactive applications such as online games and chatrooms than non-dependent users.

Although there is a little disagreement in findings among several studies introduced above, all of them provide a basis for a hypothesis that there will be certain relations between various activities on the Internet to different levels of Internet addiction tendency. However, since the internet entails both addictive and non-addictive activities, gross measures of internet use should not be related to addiction. Thus, the present study advances the following specific research hypotheses:

H1-A: The amount of time spent in Web browsing will not be related to Internet addiction tendencies; however,

H1-B: The amount of time spent in using e-mail will be positively related to Internet addiction tendencies;

H1-C: The amount of time spent in chatrooms will be positively related to Internet addiction tendencies; and

H1-D: The amount of time spent in newsgroups (listserves) will be positively related to Internet addiction tendencies.

In regard to demographic differences in Internet addiction, age and education appear to have influence on potential Internet addiction tendency. That is, young or well-educated people are more likely to be found among Internet addicts. However, recent studies have consistently found that other demographic factors, especially gender and ethnicity that were once considered important variables to predict Internet addiction (e.g.,

Petrie & Gunn, 1998; Young, 1996), do not make significant differences any longer between addicts and non-addicts. For example, Brenner (1997) found that younger users tended to have experienced more problems related to addictive use of the Internet than older users, while spending the same amount of time online, and that there were no significant differences between men and women in either time online or number of addictive problems experienced.

It was also found that problematic Internet users had an average 15 years education, which seems consistent with the results of other studies (e.g., Shapira et al., 2000; Young, 1996; Young & Rodgers, 1998a). Similarly, Kraut et al. (1998) found that teenagers accessed the Internet more often than their parents and that there were no significant racial differences in Internet use. Nie and Erbring (2000) concluded that younger populations were more likely than older adults to use the Internet, but failed to validate that men and whites were more susceptible than women and minorities to Internet addiction. To verify the above results that age and education, but not gender or ethnicity, had relationships with Internet addiction, this study is going to test the following hypotheses:

H2-A: Internet user's age will be negatively related to Internet addiction tendency;

H2-B: Internet user's education will be positively related to Internet addiction tendency; but

H2-C: There will be no difference of gender in Internet addiction tendency; and

H2-D: There will be no ethnic differences in Internet addiction tendency.

It is important to note that the Internet itself is not addictive. Specific types of applications available on the Internet play different roles in the development of Internet addiction, depending on their different interactive features (Young, 1996) and personal characteristics and situations of individuals. As Griffiths (1993) pointed out, the structural characteristics of particular activities are responsible for reinforcement, gratifications, and excessiveness of Internet use. In other words, Internet addiction is determined by the cluster of needs that Internet use fulfills and how those needs are met (Suler, 1999).

Understanding that many of the respondents in previous Internet addiction studies were not true addicts, but within the bounds of normal Internet behavior, we would expect the same relationships within general populations of users. Thus, this study formulates a grand hypothesis that the degree of Internet users' addiction will have a positive relation only to the degree of process gratifications (i.e., Affective, Personal Integrative, Social Integrative, and Escapist gratifications) but not to content gratifications (i.e., Cognitive gratifications such as information seeking and completing online transactions):

H3-A: Process gratifications will be positively related to Internet addiction tendencies; but

H3-B: Content gratifications will be unrelated to Internet addiction tendencies.

Depression and Internet Addiction

While gratifications play an important role in the development of habitual use of the media and even addiction, addictive media consumption may be prompted by conditioning to internal cues such as boredom and depression (LaRose et al., 2002). According to the *stress reduction* theory (Holmes & Rahe, 1967) that has been discussed mainly in psychiatry, stress contributes to addictive behaviors. Addicts tend to cling to certain substances such as alcohol and drug as well as certain behaviors such as gambling and electronic games to get rid of daily-life stress. The behavior itself momentarily allows the person to forget problems, and this may be a useful way to cope with the stress (Young, 1999).

The concept of stress in this theory includes a wide scope of mental derangement from depression to drug dependency (Rahe, 1979). In fact, previous research in the addiction field showed that psychiatric illness such as depression was often associated with alcoholism and drug addiction (Capuzzi & Lecoq, 1983), and that other addictive behaviors overlapped with depression (Young & Rodgers, 1998b). Although the distinct causal relationship between depression and addiction still remains obscure for some scholars (cf. Marlatt et al., 1988), the same premise holds for Internet addiction.

For example, Petrie and Gunn (1998) found that there was a significant relationship between high Internet use and self-reported depression, supporting the view that Internet addicts are more likely to be suffering from depression. Suggesting a *cognitive-behavioral model of pathological Internet use*, Davis (2001a) proposed that depression is a *distal* necessary cause of Internet addiction, which must first be present in order to Internet addiction to occur but does not in itself result in Internet addiction.

Young and Rodgers (1998b) also suggested that maladaptive cognitions such as depression were significant factors in the development of Internet addiction. They hypothesized that those who suffer from deeper psychological problems may be the ones who are drawn the most to the anonymous interactive applications of the Internet in order to overcome perceived inadequacies. Results showed that those who met criteria for Internet addiction yielded high scores on a depression inventory, and these findings were interpreted as an illustration of a high incidence of depression among Internet addicts. Kraut and his colleagues (1998) concluded that the amount of Internet use was related to increased levels of depression. The results showed that greater use of the Internet resulted in a small but significant increase in depression and loneliness, and a decrease in social engagement.

According to Kiesler, Siegal, and McGuire (1984), computer-mediated communication weakens social influence by the absence of such nonverbal behavior as talking in the head set, speaking loudly, staring, touching, and gesturing. Therefore, the disappearance of facial expression, voice inflection, and eye contact makes electronic communication less threatening, thereby helping the depressed to overcome the initial awkwardness and intimidation in meeting and speaking with others (Young & Rodgers, 1998b). However, perhaps online activities are ultimately not as satisfying as the corresponding real world behaviors, leading to a continuing search, one that may pull the depressed people further away from the real world. At best, they can only give the user immediate gratification that reduces depressed feelings. This convenient remedy for depression through online activity is problematic in the sense that the relief from depression is only temporary and may produce feelings of guilt or negative affect (Lavoie

& Pychyl, 2001), and thus deepen depression. Kraut et al. (1998) described this as "paradox":

> The internet is a social technology used for communication with individuals and groups, but it is associated with declines in social involvement and the psychological well-being that goes with social involvement. Perhaps, by using the Internet, people are substituting poorer quality social relationships for better relationships, that is, substituting weak ties for strong ones (p. 1029).

In this view, it is plausible to propose a research hypothesis that relates depression to Internet addiction as follows:

> *H4: Internet user's degree of depression will be positively related to Internet addiction tendency.*

In addition, this hypothetical relationship between depression and Internet addiction will be supported by such a mechanism as:

> *H4-A: Internet user's degree of depression will be positively related to process gratifications;* and
> *H4-B: Internet user's degree of depression will be negatively related to content gratification.*

Self-Efficacy and Internet Addiction

According to Bandura's (1997) *social cognitive theory*, individuals possess a self-system that enables them to exercise a measure of control over their thoughts, feelings, motivations, and actions. This self-system provides reference mechanisms and a set of sub-functions for perceiving, regulating, and evaluating behavior, which results from the interplay between the system and environmental sources of influence. In this self-referent process, self-efficacy plays a key role in mediating subsequent behaviors (Bandura, 1977, 1982, 1986, 1997; Bandura, Adams, & Beyer, 1977; Bandura, Jeffrey, & Gajdos, 1975).

Self-efficacy is defined as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3). However, in this study, the concept of self-efficacy is limited to the specific situation, in which the individual is using the Internet, since "self-efficacy is domain specific in that perceptions are associated with specific tasks" (Hofstetter, Zuniga, & Dozier, 2001, p. 62). For example, a person may exhibit high levels of self-efficacy in using the Internet, while at the same time exhibiting low self-efficacy in other activities such as schooling or playing sports. Likewise, the level and strength of perceived efficacy in using the Internet may differ depending on the applications available on the Internet, the format of content, and the types of people to interact with.

Self-efficacy determines exposure to a medium that many users may find troublesome in accomplishing useful tasks (LaRose et al., 2001). People's beliefs in their personal efficacy influence what courses of action they choose to pursue, how much effort they will invest in activities, how long they will persevere in the face of obstacles and failure experiences, and their resiliency following setbacks (Bandura, 1994b, 1997).

People who have strong beliefs in their capabilities approach difficult tasks as challenges to be mastered rather than as threats to be avoided. Such an affirmative outlook fosters intrinsic interest and deep engrossment in activities. They set themselves challenging goals and maintain strong commitment to them. They heighten and sustain their efforts in the face of failures or setback. They quickly recover their sense of efficacy after failures or setbacks. They attribute failure to insufficient effort or deficient knowledge and skills which are acquirable (Bandura, 1994a, 1997). In addition, persons who are efficacious regarding a task are more likely to perform the task than those who are not efficacious (Bandura, 1977, 1997). On the other hand, unless people believe that they can produce desired results by their actions they have little incentive to act or to persevere in the face of difficulties (Bandura, 1999).

Early research (Shutton, 1989, 1991) indicated that Internet or computer addicts tend to be technologically savvy. The importance of self-efficacy in explaining computer use was also demonstrated by Hill, Smith, and Mann (1987). They found that computer self-efficacy affected whether individuals chose to use computers or not. Compeau and Higgins (Compeau & Higgins, 1995) tested several hypotheses related to a hypothetical linear model of computer use based on social cognitive theory. In their study, individuals with high self-efficacy used computers more than those with low self-efficacy.

Hill and Hannafin (1997) studied the influence of perceived self-efficacy on strategies employed in an Internet search. Participant's self-efficacy beliefs in using computer technologies and in using information searching systems affected both the number and types of strategies they employed. Those with stronger self-efficacy explored the system more vigorously, while those with lower self-efficacy retreated or

concentrated on simply locating information. Al-Khaldi and Al-Jabri (1998) also reported that confidence (self-efficacy) in using computers was a significant positive predictor of frequency and intensity of computer use.

Eastin and LaRose (2000) showed that Internet self-efficacy directly predicted overall levels of Internet usage. Teo (2001) found that perceived ease of use had significant positive relationship with messaging, browsing, and downloading activities. Also, Tsai and Lin (2001) found that Internet-addicted adolescents perceived better control about using the Internet than non-addicts.

Based on the above discussion and abundant empirical evidence, it can be hypothesized that persons who believe that they can gain information they want or communicate with others effectively on the Internet will use the Internet applications more overall than others, thus increasing the likelihood of being addicted to the Internet:

H5: Internet user's self-efficacy will be positively related to Internet addiction tendencies.

In addition, since self-efficacy is task specific as explained in the beginning of this section, it can be also hypothesized that Internet self-efficacy is more strongly related to specific applications available on the Internet than to generalized use of the Internet. However, little evidence has accrued which can demonstrate the influence of self-efficacy on the use of various online applications. Instead, it was reported that Internet self-efficacy was positively related to expected gratifications (e.g., Ebersole, 1999; LaRose et al., 2001) irrespective of whether they were process or content gratifications. This may be

due to the fact that "user friendly browsers make the Internet easy to use while the almost infinite pool of entertainment and other information available makes the Internet enjoyable to use" (Teo, 2001, p. 134). Thus, the present study proposes the following hypotheses:

H5-A: Internet user's self-efficacy will be positively related to general Internet gratifications (both content and process gratifications).

CHAPTER 2

RESEARCH METHODS

Sample

Data were collected from a purposive sample of 498 students in three introductory communication classes at two Midwestern universities through surveys distributed in class. Respondents picked up the questionnaire in class and returned it later. Respondents have ready access to Internet connections and as such have been the subject of much of the prior research on Internet usage (e.g., Papacharissi & Rubin, 2000) and Internet addiction (e.g., Chou & Hsiao, 2000; Morahan-Martin & Schumacher, 2000; Pratarelli, Browne, & Johnson, 1999).

The sample consisted of 61 percent (n = 303) males and 39 percent (n =194) females. The average age of the respondents was 25.24 (SD = 15.33) and their average years of education was 13.74 (SD = 2.26). Among all respondents, 66 people (13.3%) were African Americans and 342 (68.7%) were White American people consisting of the majority. In addition, there were 42 (8.4%) Asians and 23 (4.6%) Hispanics and the other 20 respondents (4.0%) were categorized into others. Fifty-four percent (n = 269) reported family incomes of $50,000 a year or more, 15.3 percent (n = 76) under $20,000, and the remainder (n = 140) between $20,000 and $50,000.

Measures

A comprehensive pool of Internet gratifications items was assembled from prior Internet gratification studies (Charney & Greenberg, 2001; Ferguson & Perse, 2000; Kaye, 1998; Korgaonkar & Wolin, 1999; LaRose et al., 2001; Lin, 1999b; Papacharissi &

Rubin, 2000). Items were edited for duplication and consistency in wording. The resulting pool of items was checked for completeness against an alternative typology of behavioral motivations found in Bandura's (1986) *social cognitive theory.* Additional items were developed to reflect status and monetary incentives that appeared to be underrepresented in previous uses and gratifications studies (cf. LaRose et al., 2001).

Table 3 Measurement Summary for Internet Gratifications

Incentive Categories	Statements	*M*	*SD*	*n*
Using the Internet, how likely are you to....				
Pleasing sensory incentives	See Web pages with pleasing color schemes	5.94	1.11	497
	Find cool new Web pages	5.85	1.21	498
	Find new interactive features	5.64	1.34	498
	Find Web pages that are easy to navigate	5.79	1.23	497
	See attractive graphics	5.95	1.15	498
	Find cluttered Web pages ®	2.52	1.45	498
Novel sensory incentives	Obtain information that is new to me	6.06	.79	497
	Get useful information about products or services	5.98	1.02	498
	Get immediate knowledge of big news events	6.14	1.10	496
	Get information I can trust	5.03	1.05	498
	Encounter controversial information	5.63	1.27	498
	Obtain current news, sports and weather	6.33	1.22	497
	Get information about local community and government programs	5.22	1.08	498
	Find employment listings that fit me	5.13	1.53	497
	Learn things to improve myself	5.11	1.47	496
	Find a wealth of information	5.87	1.51	498
	Solve a problem	5.22	1.32	495
	Get information to improve my health	5.36	1.43	496
	Find useless information ®	2.27	1.65	497
	Learn about local community events	4.60	1.67	498
	Get useful housing information	4.93	1.64	498
Activity incentives	Hear music I like	6.10	1.32	498
	Feel excited	5.11	1.48	497
	Have fun	5.58	1.33	497
	Feel entertained	5.72	1.32	497
	Fulfill a fantasy	3.63	1.94	498
	Have a bad time ®	4.68	1.54	497
	Pursue a hobby	5.15	1.63	498

Table 3 (cont'd)

Incentive Categories	Statements	*M*	*SD*	*n*
Using the Internet, how likely are you to....				
Self-reactive incentives	Relieve boredom	5.80	1.38	498
	Feel relaxed	5.22	1.54	498
	Save time	4.95	1.73	497
	Feel less lonely	3.84	1.96	498
	Forget my problems	3.74	1.89	498
	Feel a sense of accomplishment	4.48	1.70	498
	Find something that challenges me	4.79	1.70	497
	Find a way to pass the time	5.91	1.33	497
Social incentives	Maintain a relationship I value	4.25	2.00	495
	Find companionship	3.24	1.92	495
	Meet new friends	3.67	1.99	494
	Get in touch with people I know	5.80	1.52	494
	Meet someone in person who I met on the Internet	2.70	1.93	494
	Provide help to others	4.11	1.83	490
	Get through to someone who is hard to reach	5.04	1.79	494
	Feel like I belong to a group	3.29	1.92	494
	Find something to talk about	4.40	1.95	491
	Do something together with family or friends	3.80	1.97	494
	Get support from others	3.87	1.94	495
	Cut myself off from family and friends ®	5.51	1.79	495
	Develop a romantic relationship	2.22	1.68	493
	Find more interesting people than in real life	2.57	1.86	494
Status incentives	Get people to think I'm "cool"	2.63	1.92	495
	Improve my standing in the world	2.61	1.79	491
	Gain respect from the people who matter most me	2.68	1.82	495
	Express myself freely	4.47	1.99	494
	Find others who respect my views	3.99	1.97	493
	Find people like me	3.92	2.03	493
	Find information that reflects my culture	4.59	1.92	494
	Get up to date with new technology	5.33	1.68	494
	Improve my future prospects in life	4.34	1.83	494
	Feel like I don't belong on line ®	5.64	1.69	495
Monetary incentives	Find bargains on product and services	5.29	1.75	495
	Find ways to make more money	4.33	1.99	495
	Get free music	6.02	1.67	495
	Get free information of interest to me	6.05	1.25	497
	Get products for free	4.44	1.97	495
	Save money on phone calls	4.68	2.12	497
	Waste money on things I don't need ®	4.18	2.16	497
	Find profitable financial information	4.21	2.03	497

Note. Incentive categories are from Bandura (1986). Items were measured on 7-point scale (1 = *very unlikely*, 7 = *very likely*). ® denotes reflected items

Following the procedure recommended by LaRose et al. (2001), respondents were asked how likely they were to obtain each gratification from using the Internet from "1 = *very unlikely*" to "7 = *very likely*." The means and standard deviations of these items are shown in Table 3.

The amount of time spent in each activity using certain applications (Web browsing, e-mail, chatrooms, newsgroups, and others) was measured by asking the respondent "how many minutes he or she spent in each of the activities on the Internet yesterday." The average time spent in Web browsing was 26.87 (*SD* = 35.53) minutes, that was found to be the most common activity of the sample (Table 4).

Table 4 Average Time for Internet Activities

Internet Activities	*M*	*SD*	*N*
Weekday	91.05	117.21	489
Weekend	70.83	87.51	490
Web Browsing	26.87	35.53	437
E-mail	19.99	21.11	437
Chatrooms	6.15	20.97	437
Newsgroups	3.75	12.91	437
Other Activities	21.69	49.59	437

Except aggregate other activities, e-mailing was found to be the second with the average 19.99 (*SD* = 21.11) minutes spent. Considering that these respondents' average

amount of time spent on the Internet in the typical weekday was reported to be 91.05 minutes (SD = 117.21) and typical weekend day use was 70.83 minutes (SD = 87.51), it can be said that almost half of the time using the Internet was spent in both Web browsing and e-mailing. However, chatrooms (M = 6.15, SD = 20.97) and newsgroups (M = 3.75, SD = 12.91) were found to be relatively less utilized applications by the sample of the study.

The seven-item short form of the Center for Epidemiologic Studies Depression (CES-D) scale (Mirowsky & Ross, 1992) was used to assess general level of depression (α = .82). This scale includes seven items and they were measured on a four-point scale ranging from 0 to 3. Table 5 shows the means and standard deviations of these items.

Table 5. Depression Scale

Items for Depression	*M*	*SD*
I felt that I could not shake the blues even with help from my family or friends	.79	.84
I had trouble keeping my mind on what I was doing	1.28	.86
I felt that everything I did was an effort	1.35	.89
My sleep was restless	1.11	.97
I felt lonely	.89	.89
I felt sad	.87	.85
I could not get "going"	1.06	.91

Note. Items were measured on 4-point scale (0 = *rarely/none*, 1 = *some/little*, 2 = *occasionally/moderate*, 3 = *most/all*). α = .82

To measure respondents' levels of Internet self-efficacy, Eastin and LaRose's (2000) Internet self-efficacy scale was utilized for this study. This scale consisted of eight items that showed a high level of reliability ($\alpha = .93$) shown in Table 6. It measured the level of agreement with each statement on the seven-point Likert scale that ranged from "1 = *strongly disagree*" to "7 = *strongly agree*."

Table 6 Internet Self-Efficacy Scale

Items for Internet Self-Efficacy	*M*	*SD*
I feel confident....		
understanding terms/words relating to Internet hardware	5.43	1.59
understanding terms/words relating to Internet software	5.40	1.60
describing functions of Internet hardware	5.00	1.70
trouble shooting Internet problems	4.67	1.79
explaining why a task will not run on the Internet	4.48	1.79
using the Internet to gather data	6.11	1.24
learning advanced skills within a specific Internet program	5.36	1.55
turning to an online discussion group when help is needed	4.69	1.86

Note. Items were measured on 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). $\alpha = .93$

Internet addiction items were drawn from a variety of sources including Rozin and Stoess (1993), Young (1996; 1999), Greenfield (1999b), Griffiths (1999), Pratarelli et al. (1999) and Morahan-Martin and Schumacher (2000). These were formatted as seven-point *Likert-type* items ranging from "1 = *strongly disagree*" to "7 = *strongly agree*." These items were reduced through factor analysis (see below) to the six items (α = .80) shown in Table 7. Recalling that these indicators were assessed within a normal population of college students in which "true" Internet addicts were not expected to be prevalent, this study calls this variable Internet Addiction Tendency.

Table 7 Internet Addiction Tendency Scale

Items for Internet Addiction Tendency	*M*	*SD*
The Internet is part of my usual routine	4.77	2.02
I use the Internet so much that it interferes with other activities	3.07	1.89
Web surfing is a habit I have gotten into	4.01	1.89
I use the Internet without really thinking why	4.38	1.99
I would miss the Internet if I could no longer go online	4.72	2.04
I often spend much longer on line than I intended to when I started	3.96	1.98

Note. Items were measured on 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). α = .80

Data Analysis

All analyses were performed using the Statistical Package for the Social Science (SPSS) version 11.5. Firstly, factor analyses were conducted to extract factors related to Internet Addiction Tendency and gratifications of the Internet. Secondly, for the purpose of exploratory analysis, since the Internet gratifications items were gathered into a new scale for the present study, each of the gratification factors produced by the factor analysis was entered into a multiple regression analysis as the dependent variable that would be explained by several essential demographic variables including gender, age, education, ethnicity, and household income.

The factor analysis used a *principal component solution* and *varimax rotation* to find variable groupings, and specified the retention of factors with *eigenvalues* greater than 1.0. To extract more precise factors, however, a rigorous criterion was applied by which an item was considered significant, for example, if it had a primary loading at .50 or higher on one factor, and no secondary loading above a value of .40 on any other factor. For this reason, items with less than .50 factor loading points in their primary factors and items with more than .40 factor loading points in any other factors were omitted. Factors with less than .60 *Cronbach's alpha* and items that negatively affected the reliability coefficient of each factor were omitted, too.

To test all hypotheses proposed in the present study, Pearson product-moment correlation (with *pair-wise exclusion of missing cases*), t-test, and ANOVA analysis were utilized. And then, to assess the relative predictive value of the various independent variables (i.e., demographic variables, Internet activities, gratifications of the Internet,

Depression, and Internet Self-Efficacy), they were entered into a multiple regression analysis with Internet Addiction Tendency as the dependent variable.

For regression analyses, each categorical variable was coded as follows: Gender was coded as "*1 = female*" and "*2 = male*"; Household income was coded as *"1 = under $20,000", "2 = $20,000 to $34,999", "3 = $35,000 to $49,999",* and *"4 = $50,000 or more"*; Ethnicity was recoded into dummy variables which had two values (*"0 = No"* and *"1 = Yes"*) in each ethnicity group.

CHAPTER 3

RESULTS

To answer Research Question 1 about what the gratifications of the Internet are, seven factors with *eigenvalues* above 1.0, which accounted for 67.4 percent of the total variance, were extracted from the initial set of Internet gratifications. Table 8 presents the final results of factor analysis and reliability coefficients. For each factor, multiple linear regression analyses were conducted to examine their predictability from basic demographic parameters such as gender, age, education, ethnicity, and household income.

Factor 1 was characterized as Virtual Community (*eigenvalue* = 5.61, variance after rotation = 16.02%, α = .92). This factor represented a new variety of social interaction gratification one can seek exclusively online. It reflected both Social-Integrative and Personal-Integrative related gratifications as well as Social Incentives and Status Incentives proposed by LaRose et al. (2001). In other words, this factor suggested that Internet users seek to make a new self-image that is totally different from that in real life (e.g. "get people to think I'm cool" and "improve my standing in the world") through forming new personal relationships on the Internet. However, it differes from the concept of parasocial interaction (for more discussion, see in Giles, 2002) in that the interactions are with real people, as opposed to symbolic interactions with media personalities. The factor of Virtual Community might best be categorized as a process (or ritualized) gratification because of the combination of Social-Integrative and Personal-Integrative related gratifications.

Table 8 Internet Gratifications Factors

Factor 1: Virtual Community	Factor Loading
Develop a romantic relationship	.858
Find more interesting people than in real life	.818
Get people to think I'm "cool"	.811
Meet someone in person who I met on the Internet	.778
Find companionship	.764
Meet new friends	.745
Improve my standing in the world	.720
Feel like I belong to a group	.692
Get support from others	.530
Eigenvalue	5.61
Variance explained	16.02%
Reliability (*Cronbach's Alpha*)	.92
Factor 2: Information Seeking	**Factor Loading**
Learn about local community events	.815
Get useful housing information	.795
Find employment listings that fit me	.753
Get information about local community and government programs	.750
Get information to improve my health	.701
Get immediate knowledge of big news events	.509
Get useful information about products or services	.504
Eigenvalue	4.08
Variance explained	11.67%
Reliability (*Cronbach's Alpha*)	.88
Factor 3: Aesthetic Experience	**Factor Loading**
Find cool new Web pages	.845
See attractive graphics	.827
Find new interactive features	.785
See Web pages with pleasing color schemes	.777
Find Web pages that easy to navigate	.745
Eigenvalue	3.86
Variance explained	11.03%
Reliability (*Cronbach's Alpha*)	.89
Factor 4: Monetary Compensation	**Factor Loading**
Find bargains on product and services	.769
Find ways to make more money	.738
Get products for free	.715
Find profitable financial information	.653
Save money on phone calls	.590
Eigenvalue	3.08
Variance explained	8.79%
Reliability (*Cronbach's Alpha*)	.85
Factor 5: Diversion	**Factor Loading**
Have fun	.826
Feel excited	.804
Feel entertained	.782
Feel relaxed	.614
Eigenvalue	2.96
Variance explained	8.45%
Reliability (*Cronbach's Alpha*)	.87

Table 8 (cont'd)

Factor 6: Personal Status	Factor Loading
Improve my future prospects in life	.722
Get up to date with new technology	.689
Find information that reflects my culture	.676
Eigenvalue	2.27
Variance explained	6.50%
Reliability (*Cronbach's Alpha*)	.80
Factor 7: Maintenance of Relationship	**Factor Loading**
Get in touch with people I know	.807
Get through to someone who is hard to reach	.701
Eigenvalue	1.75
Variance explained	4.99%
Reliability (*Cronbach's Alpha*)	.63
Total Variance explained	**67.4%**

For the first factor of Virtual Community, the linear regression model was significant, $F(9, 466) = 4.983, p < .001$, explaining 8.8 percent of the total variance in Factor 1 (Table 9). Being white was the most significant predictor of Virtual Community gratification, $\beta = -.596, p < .01$, indicating whites were less likely to expect Virtual Community gratification. Education was the second significant predictor, $\beta = -.142, p < .01$. Also, males than females ($\beta = .115, p < .05$) were found to seek more this gratification on the Internet. It appears that non-white males who had lower education level were more satisfied with Virtual Community function of the Internet than the others.

Factor 2 represented a theme of Information Seeking (*eigenvalue* = 4.08, variance after rotation = 11.67%, $\alpha = .88$). All the items were clearly related to contexts external to the Internet, such as community events, housing and the news of the world (e.g., "learn about local community events" and "get immediate knowledge of big news events"). Cognitive-related gratifications such as these may be categorized as a content (or

instrumental) gratification. However, the regression model for Factor 2, Information Seeking, was found to be non-significant, F (9, 469) = 1.840, *ns.*

The third factor was termed Aesthetic Experience (*eigenvalue* = 3.86, variance after rotation = 11.03%, α = .89), because all the items loaded on it seemed to signify artistic aspects related to the design of Web sites on the Internet (e.g., "see attractive graphics" and "see Web pages with pleasing color schemes"). Looking back upon Katz et al.'s (1973) reference that Affective needs are related to strengthening aesthetic, pleasurable, and emotional experiences, by and large, this factor appears to be an Affective-related gratification, and consequently can be considered a process gratification.

Table 9 Regression for Demographics Predicting Factor 1 (Virtual Community)

Independent Variables	β	*t*	*p*
Gender	.115	2.518	.012
Age	.085	1.884	.060
Education	-.142	-3.125	.002
Household Income	.004	.089	.929
Ethnicity			
African American	-.328	-1.939	.053
White American	-.596	-2.637	.009
Asian	-.222	-1.549	.122
Hispanic	-.194	-1.746	.082
Others	-.146	-1.423	.155

Note. Table reports standardized Betas. Gender was measured as *"1 = Female"* and *"2 = Male."* Household Income was measured as *"1 = Under $20,000," "2 = $20,000 to $34,999," "3 = $35,000 to $49,999,"* and *"4 = $50,000 or more."* Ethnicity was recoded into dummy variables which had two values ("*0 = No*" and "*1 = Yes*") in each group. R = .296. R^2 = .088, Adjusted R^2 = .070. F (9, 466) = 4.983, $p < .001$.

For Factor 3, Aesthetic Experience, the linear regression model was significant, F (9, 469) = 2.626, $p < .01$, and 4.8 percent of the variance was explained by the model (Table 10). Two demographic variables—education ($\beta = -.152$, $p = .001$) and gender ($\beta = -.104$, $p < .05$)—were found to be significant indicators in predicting Aesthetic Experience gratification factor. That is to say, less educated people were more likely to be gratified with their aesthetic experiences on the Internet than well educated people. And, females were more likely to seek and to be satisfied with their aesthetic experiences on the Internet than males.

Table 10 Regression for Demographics Predicting Factor 3 (Aesthetic Experience)

Independent Variables	β	*t*	*p*
Gender	-.104	-2.241	.026
Age	.053	1.145	.253
Education	-.152	-3.285	.001
Household Income	.004	.094	.925
Ethnicity			
African American	-.112	-.648	.517
White American	-.160	-.692	.489
Asian	-.146	-1.006	.315
Hispanic	-.046	-.411	.682
Others	-.028	-.260	.795

Note. Table reports standardized Betas. Gender was measured as *"1 = Female"* and *"2 = Male."* Household Income was measured as *"1 = Under $20,000," "2 = $20,000 to $34,999," "3 = $35,000 to $49,999,"* and *"4 = $50,000 or more."* Ethnicity was recoded into dummy variables which had two values ("*0 = No*" and "*1 = Yes*") in each group. $R = .219$. $R^2 = .048$, Adjusted $R^2 = .030$. F (9, 469) = 2.626, $p < .01$.

Factor 4 was named Monetary Compensation (*eigenvalue* = 3.08, variance after rotation = 8.79%, α = .85). It reflected using the Internet simply for the purposes of financial gain (e.g., "find ways to make more money" and "get products for free"). Since the monetary benefits are obtained in the real world outside of the Internet, this should be considered a content gratification. For Monetary Compensation factor, prediction using the linear regression model failed, F (9, 469) = 1.675, *ns*, since the significance level was greater than .05.

The fifth factor appeared to be a Diversion gratification (*eigenvalue* = 2.96, variance after rotation = 8.45%, α = .87). This factor included such items as "have fun" and "feel relaxed." This is the exact case of process gratification that "results from the pleasurable experience of media content and is realized during consumption" (Swanson, 1992, p. 310). Thus, it should be also categorized into a process gratification.

The regression model predicting this factor was significant, F (9, 469) = 2.494, p < .01, and explained 4.6 percent of the total variance in Diversion gratification (Table 11). But education alone was found to be a significant predictor, β = -.188, p < .001, in the prediction model, while other demographic variables were not. The model shows that those who had lower education levels were likely to expect and thus be more gratified with diversion on the Internet than were those who had higher levels of education.

The sixth factor named as Personal Status (*eigenvalue* = 2.27, variance after rotation = 6.50%, α = .80) reflected Personal Integrative Needs, defined by Katz et al. (1973) as related to strengthening credibility, confidence, stability, and status of the individual (e.g., "improve my future prospects in life"). Therefore, this factor was included in the category of process gratifications, too.

Table 11 Regression for Demographics Predicting Factor 5 (Diversion)

Independent Variables	β	*t*	*p*
Gender	.024	.522	.602
Age	.058	1.263	.207
Education	-.188	-4.068	.000
Household Income	-.014	-.291	.771
Ethnicity			
African American	-.013	-.075	.940
White American	-.088	-.381	.704
Asian	.029	.200	.842
Hispanic	-.064	-.568	.570
Others	-.044	-.413	.680

Note. Table reports standardized Betas. Gender was measured as *"1 = Female"* and *"2 = Male."* Household Income was measured as *"1 = Under $20,000,"* *"2 = $20,000 to $34,999,"* *"3 = $35,000 to $49,999,"* and *"4 = $50,000 or more."* Ethnicity was recoded into dummy variables which had two values ("*0 = No*" and "*1 = Yes*") in each group. $R = .214$. $R^2 = .046$, Adjusted $R^2 = .027$. $F(9, 469) = 2.494$, $p < .01$.

Explaining 8.8 percent of the total variance in the factor, the linear regression model was found to be significant in predicting Personal Status factor, $F(9, 466) = 5.009$, $p < .001$ (Table 12). Education ($\beta = -.124$, $p < .01$) was the most significant predictors of Personal Status gratification, followed by gender ($\beta = .122$, $p < .01$) and age ($\beta = .111$, $p < .05$). In other words, less educated and older people used more the Internet for Personal Status gratification than more educated and younger people. It is also shown that males were more likely to seek to enhance personal status on the Internet than females.

Table 12 Regression for Demographics Predicting Factor 6 (Personal Status)

Independent Variables	β	*t*	*p*
Gender	.122	2.666	.008
Age	.111	2.456	.014
Education	-.124	-2.726	.007
Household Income	-.070	-1.526	.128
Ethnicity			
African American	.111	.659	.510
White American	-.057	-.254	.800
Asian	.092	.640	.522
Hispanic	-.007	-.061	.951
Others	.098	.954	.341

Note. Table reports standardized Betas. Gender was measured as *"1 = Female"* and *"2 = Male."* Household Income was measured as *"1 = Under $20,000," "2 = $20,000 to $34,999," "3 = $35,000 to $49,999,"* and *"4 = $50,000 or more."* Ethnicity was recoded into dummy variables which had two values ("*0 = No*" and "*1 = Yes*") in each group. $R = .297$. $R^2 = .088$, Adjusted $R^2 = .071$. $F(9, 466) = 5.009$, $p < .001$.

The final factor, named as Maintenance of Relationship (*eigenvalue* = 1.75, variance after rotation = 4.99%, α = .63), contained two items: "get in touch with people I know" and "get through to someone who is hard to reach." It reflected the thought that the Internet is a useful tool for remaining communications and relationships with the already-known acquaintance. In contrast to the first factor, Virtual Community, that emphasized communication with new people who were newly met on the Internet not in real life, Maintenance of Relationship focuses on maintaining relationships with existing acquaintances. However, in the broad sense that social interaction among people is a continuing process, it also might be characterized as a process gratification.

For Maintenance of Relationship, the regression model accounts 4.1 percent of the total variance and was significant, F (9, 466) = 2.230, $p < .05$ (Table 13). As shown in the table, age was found to be a significant indicator, $\beta = .107$, $p < .05$, in the prediction model. Education was another significant predictor, $\beta = -.096$, $p < .05$. In other words, the gratification of Maintenance of Relationship was affected by Internet user's age and education among various demographic variables so that the older and the less educated was more likely to seek and obtain Maintenance of Relationship gratification than the younger and the highly educated.

Table 13 Regression for Demographics Predicting Factor 7 (Maintenance of Relationship)

Independent Variables	β	*t*	*p*
Gender	-.079	-1.686	.092
Age	.107	2.300	.022
Education	-.096	-2.064	.040
Household Income	-.053	-1.126	.261
Ethnicity			
African American	.124	.714	.475
White American	.209	.904	.366
Asian	.233	1.589	.113
Hispanic	.070	.618	.537
Others	.049	.462	.644

Note. Table reports standardized Betas. Gender was measured as *"1 = Female"* and *"2 = Male"*. Household Income was measured as *"1 = Under $20,000," "2 = $20,000 to $34,999," "3 = $35,000 to $49,999,"* and *"4 = $50,000 or more."* Ethnicity was recoded into dummy variables which had two values ("*0 = No*" and "*1 = Yes*") in each group. $R = .203$. $R^2 = .041$, Adjusted $R^2 = .023$. F (9, 466) = 2.230, $p < .05$.

Hypotheses concerning how the amount of time spent in doing various Internet activities (H1) and demographic variables such as Internet user's age (H2-A) and education (H2-B) were examined through the correlation matrix as shown in Table 14. And then, in terms of H2-C and H2-D that predicted no differences of gender and ethnicity in Internet addiction tendency, a t-test (Table 15) and an ANOVA (Table 16) were conducted respectively.

Table 14 Correlations between Internet Activities and Internet Addiction Tendency

	1	2	3	4	5	6	7	*M*	*SD*
IAT	.11*	-.04	.07	.30***	.24***	.16**	.16**	4.15	1.39
1. Age		.03	.00	.07	.06	-.04	-.01	25.24	15.33
2. Edu			-.03	.09	.08	.05	.19***	13.74	2.26
3. HI				-.02	.02	-.03	-.07	3.10	1.15
4. WB					.24***	.18***	.18***	26.87	35.53
5. EM						.37***	.24***	19.99	21.11
6. CR							.33***	6.15	20.97
7. NG								3.75	12.91

Note. IAT = Internet Addiction Tendency, Edu = Education, HI = Household Income, WB = Web Browsing, EM = E-Mail, CR = Chatrooms, NG = Newsgroups.

*p < .05. **p < .01. *** p < .001

Table 14 shows that, while age did not affect any of the various Internet activities, education had positive relationships with newsgroups activity. That is, the higher one's

level of education was, the more amount of time he or she spent in newsgroups ($r = .19, p < .001$). It was also found that there are significant correlations among four types of Internet activities.

In terms of the hypothesized relationships between Internet activities and Internet Addiction Tendency, it was found that all kinds of activities were positively related to Internet addiction, leading to rejection of H1-A that predicted no significant relationship between the amounts of time spent Web browsing and Internet Addiction Tendency. However, the amount of time using e-mail ($r = .24, p < .001$), chatrooms ($r = .16, p < .01$), and newsgroups ($r = .16, p < .01$) were found to have positive relations to Internet Addiction Tendency as expected. Thus, H1-B, H1-C, and H1-D were supported.

Table 14 also shows that H2-A that Internet user's age will be negatively related to Internet Addiction Tendency should be rejected, because age was found to be positively related to Internet addiction ($r = .11, p < .05$) contrary to the expectation. In addition, education was found not to have positive relationship with Internet Addiction Tendency ($r = -.04$, *ns*), so that H2-B was not supported, either.

According to the results of a t-test (Table 15), the amounts of time in Web browsing was significantly different between male ($M = 31.11$, $SD = 38.76$) and female ($M = 19.54$, $SD = 27.67$), $t\,(412.03) = 3.61, p < .001$ (two-tailed). E-mail was also different in the amounts of using time between male ($M = 18.28$, $SD = 22.26$) and female ($M = 22.97$, $SD = 18.68$), $t\,(374.48) = -2.35, p < .05$ (two-tailed). However, there was no gender difference in the other activities related to chatrooms and newsgroups. For Internet Addiction Tendency, different from the hypothesis, male respondents ($M = 4.33$, $SD = 1.30$) reported higher levels of Internet Addiction Tendency than did female

respondents ($M = 3.86$, $SD = 1.47$), t (372.70) = 3.59, $p < .001$ (two-tailed). Thus, H2-C that predicted no gender difference in Internet addiction was rejected.

Table 15 Differences of Gender in Internet Addiction Tendency

Mean (standard deviation)	Male	Female	t
Internet Addiction Tendency	4.33 (1.30)	3.86 (1.47)	3.59***
Internet Activities			
Web browsing	31.11 (38.76)	19.54 (27.67)	3.61***
E-mail	18.28 (22.26)	22.97 (18.68)	-2.24*
Chatrooms	5.92 (19.57)	6.59 (23.35)	-.32
Newsgroups	4.21 (14.09)	2.96 (10.57)	.98

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

Table 16 presents the mean score of Internet Addiction Tendency and Internet Activities for each type of ethnicity. In terms of Internet activities, there were significant ethnical differences only in using e-mail, F (4, 427) = 3.908, $p < .01$, while there was no difference among different ethnical groups in using Web browsing, F (4, 427) = .676, *ns*, chatrooms, F (4, 427) = 2.005, *ns*, and newsgroups, F (4, 427) = .560, *ns*. For e-mail activity, African Americans ($n = 65$) were found to spend more time than any other group. Their mean time spending in e-mail activity for a day was 27.96 minutes ($SD = 28.19$). On the other hand, Hispanics ($n = 23$) spent less time than others in e-mail, $M = 15.95$, $SD = 14.73$.

Table 16 Internet Addiction and Activities as a Function of Ethnicity

Race	IAT	Internet Activities				*N*
		WB	EM	CR	NG	
AA	3.87 (1.55)	27.96 (39.52)	27.96 (28.19)	8.72 (20.93)	4.93 (11.66)	65
WA	4.09 (1.33)	26.08 (34.55)	18.00 (17.30)	4.42 (19.17)	3.37 (13.23)	342
Asian	5.05 (1.17)	35.02 (43.10)	26.14 (22.49)	12.45 (26.48)	6.07 (16.05)	42
Hispanic	4.04 (1.49)	22.74 (32.03)	15.95 (14.73)	5.42 (13.75)	2.26 (4.89)	23
Others	4.12 (1.58)	24.33 (29.85)	27.13 (48.79)	11.33 (26.69)	3.67 (8.12)	20
Total	4.14 (1.39)	26.94 (35.71)	20.08 (21.16)	5.94 (20.36)	3.76 (12.97)	492
F	5.447***	.676	3.908**	2.005	.560	

Note. Values enclosed in parentheses represent standard deviations for the means. AA = African American, WA = White American, IAT = Internet Addiction Tendency, WB = Web browsing, EM = E-mail, CR = Chatrooms, NG = Newsgroups. $*p < .05$. $**p < .01$. $***p < .001$.

As shown in Table 16, for the relationship between ethnicity and Internet Addiction Tendency which was hypothesized into H2-D, the result of one-way analysis of variance shows that there were significant differences among five ethnical groups in Internet Addiction Tendency, $F(4, 487) = 5.447$, $p < .001$. Thus, H2-D that expected no ethnical difference in Internet Addiction Tendency was rejected, too. After *Tukey post hoc* test, it was found that Asian group's average level of Internet addiction ($M = 5.05$, $SD = 1.17$) was higher than other ethnic groups except 'others' at 95 percent confidence level.

Hypotheses concerning how process and content gratifications are linked to Internet addiction (H3-A and H3-B), how depression and Internet self-efficacy are

associated to Internet addiction (H4 and H5), as well as how depression and Internet self-efficacy are related to each of the two types of Internet gratifications (H4-A, H4-B, and H5-A) were examined through the correlation matrix in Table 18.

Table 17 Correlations between Internet Gratifications, Depression, Self-efficacy and Internet Addiction Tendency

	1	2	3	4	5	6	7	8	9
IAT	**.45*****	.08	.09	**.27*****	**.39*****	**.31*****	**.27*****	**.27*****	**.37*****
1. VC		.17***	.12**	.44***	.39***	.48***	.26***	.26***	.19***
2. IS			.48***	.52***	.44***	.40***	.36***	-.11*	.25***
3. AE				.35***	.46***	.34***	.29***	-.06	.24***
4. MC					.46***	.53***	.26***	-.02	.33***
5. Div						.50***	.38***	.09*	.30***
6. PS							.37***	.06	.32***
7. MR								.00	.29***
8. Dep									-.04
9. ISE									

Note. IAT = Internet Addiction Tendency, VC = Virtual Community, IS = Information Seeking, AE = Aesthetic Experience, MC = Monetary Compensation, Div = Diversion, PS = Personal Status, MR = Maintenance of Relationship, Dep = Depression, and ISE = Internet Self-Efficacy. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Both Hypotheses H3-A and H3-B received mixed support. The Virtual Community ($r = .45, p < .001$), Diversion ($r = .39, p < .001$), Personal Status ($r = .31, p < .001$), and Maintenance of Relationship ($r = .27, p < .001$) process gratifications were

positively related to Internet Addiction Tendency, but the Aesthetic Experience (r = .09, *ns*) process gratification was not. The Information Seeking gratification was unrelated to Internet Addiction Tendency (r = .08, *ns*) as predicted in H3-B. However, the Monetary Compensation factor was positively related to Internet Addiction Tendency (r = .27, p < .001), contrary to Hypothesis 3-B.

Hypothesis 4 that presumed positive relationship between Depression and Internet Addiction Tendency was supported (r = .27, p < .001). Respondents' levels of Depression were positively related to Virtual Community (r = .26, p < .001), Diversion (r = .09, p < .05). However, there were no significant relationships between Depression and the other process gratifications such as Aesthetic Experience (r = -.06, *ns*), Personal Status (r = .06, *ns*), and Maintenance of Relationship (r = .00, *ns*). Also, it was found that Depression was negatively associated with Information Seeking (r = -.11, p < .05) as predicted by Hypothesis 4-B, but not with Monetary Compensation (r = .02, *ns*). Thus, both Hypothesis 4-A and Hypothesis 4-B were partially sustained.

Hypothesis 5 that predicted Internet user's Self-Efficacy would be positively related to Internet Addiction Tendency was supported for this sample (r = .37, p < .001). In addition, this relationship between Internet Self-Efficacy and Internet Addiction Tendency seemed to be supported by the fact that Internet users' beliefs in their self-efficacy was positively related to both process and content gratifications: Virtual Community (r = .19, p < .001); Information Seeking (r = .25, p < .001); Aesthetic Experience (r = .24, p < .001); Monetary Compensation (r = .36, p < .001); Diversion (r = .30, p < .001); Personal Status (r = .32, p < .001); and Maintenance of Relationship (r = .29, p < .001). Thus, hypothesis 5-A received full support.

Finally, to gain an overall understanding of the relationships between all the independent variables including demographic characteristics, Internet activities, Internet gratifications, depression, and Internet self-efficacy (which were all inter-correlated, Table 8) and Internet Addiction Tendency, a multiple regression analysis was performed. The regression model for Internet addiction is introduced in Table 18.

The combination of demographic variables, four Internet activities, seven Internet gratifications, Depression, and Internet Self-Efficacy significantly predicted Internet Addiction Tendency, F (22, 393) = 10.901, $p < .001$, explaining 37.9 percent of the total variance in Internet Addiction Tendency. After controlling other variables, household income ($\beta = .090$, $p = .031$) among demographic variables was found to be the only significant predictor of Internet Addiction Tendency. Among Internet activities, Web browsing ($\beta = .177$, $p < .001$) and e-mail ($\beta = .141$, $p < .01$) were positively related to Internet addiction.

In terms of Internet gratifications, Virtual Community ($\beta = .198$, $p < .001$) and Diversion ($\beta = .198$, $p < .001$) were significantly related to Internet Addiction Tendency. Finally, both Depression ($\beta = .220$, $p < .001$) and Internet self-efficacy ($\beta = .168$, $p < .001$) were found to be significant indicators in predicting Internet Addiction Tendency.

Table 18 Multiple Regression: Predicting Internet Addiction

Independent Variables	β	*t*	*p*
Demographic Variables			
Gender	.001	.019	.985
Age	.041	.994	.321
Education	-.067	-1.571	.117
Household Income	.090	2.169	.031
Ethnicity			
African American	-.116	-.876	.382
White American	-.161	-.852	.395
Asian	.012	.094	.925
Hispanic	-.062	-.664	.507
Others	-.045	-.538	.591
Internet Activities			
Web Browsing	.177	4.112	.000
E-mail	.141	3.098	.002
Chatrooms	-.074	-1.640	.102
Newsgroups	.051	1.196	.232
Internet Gratifications			
Virtual Community	.198	3.806	.000
Information Seeking	-.094	-1.778	.076
Aesthetic Experience	-.091	-1.793	.074
Monetary Compensation	.040	.745	.457
Diversion	.177	3.479	.001
Personal Status	-.018	-.347	.729
Maintenance of Relationship	.053	1.148	.252
Depression	.220	5.135	.000
Internet Self-Efficacy	.168	3.523	.000

Note. Table reports standardized Betas. Gender was measured as *"1 = Female"* and *"2 = Male."* Household Income was measured as *"1 = Under $20,000," "2 = $20,000 to $34,999," "3 = $35,000 to $49,999,"* and *"4 = $50,000 or more."* Ethnicity was recoded as dummy variables which had two values (*"0 = No"* and *"1 = Yes"*) in each group. $R = .616$. $R^2 = .379$, Adjusted $R^2 = .344$. $F(22, 393) = 10.901, p < .001$.

CHAPTER 4

DISCUSSION

The present study applied the uses and gratifications approach and social cognitive theory to develop an understanding of the relationships between Internet users' gratifications, depression, as well as Internet self-efficacy and their tendencies to become addicted to the Internet. The primary result of this study is that several Internet gratifications, depression, and Internet self-efficacy were found to be positively related to indicators of Internet Addiction Tendency. This provided support for the initial conceptualization that habitual Internet use could be equated with emerging Internet addictions and that depression and self-efficacy play a catalytic role in the development of habitual use. In other words, active seeking of the gratifications on the Internet, which is also mediated by psychological conditions such as depression and self-efficacy, may lead users to become out of control over their online behavior as the amount of time spending online increases. This verifies Stone and Stone's (1990) notion that habitual media use is often the result of prior active media selection.

An exploratory factor analysis identified key underlying factors of Internet gratifications: Virtual Community, Information Seeking, Aesthetic Experience, Monetary Compensation, Diversion, Personal Status, and Maintenance of Relationship. These gratifications explain 67.4 percent of the total variance. Of these, Virtual Community had no exact parallel in previous research. It expands on social process gratifications found in prior research to reflect both Social Integrative Needs and Personal Integrative Needs simultaneously. This means that forming new personal relationships using a fictitious handle allows one to transform himself or herself mentally into a new person on the

Internet (Young, 1997). In fact, a lot of people use the Internet to form new relationships that are totally different from their real-life relationships (Parks & Floyd, 1996). This factor also finds precedent in Turkle's (1995) ethnographic research that detailed how Internet users use the medium to explore new social identities. For this reason, it is plausible that social integrative needs are subdivided into creation of new relationships and maintenance of existing relationships, which are two distinctive factors.

Different from the results of Internet gratifications studies in the functional alternative approach (e.g., Ferguson & Perse, 2000), which view the Internet as a functional alternative to television and suggest Internet uses may be more motivated by a desire for entertainment or diversion than by any other motivation, especially information seeking motivation, this study shows that the Internet still functions well as an information or educational tool for the college students population. Information Seeking factor was found to be the second important factor explaining 11.67 percent of the total variance, while Diversion was the fifth factor that explained 8.45 percent of the total variance in Internet gratifications and followed Monetary Compensation. This result seems to be rather consistent with the results of empirical studies (Charney & Greenberg, 2001; J. E. Katz & Aspden, 1997; Stafford & Stafford, 2001; UCLA Center for Communication Policy, 2001) that stressed more distinctly content-oriented gratifications. This suggests a possibility that, for college students, the Internet might be considered as a different medium from television so that they may be utilized for totally different purposes, for example, television for entertainment and diversion and the Internet for information seeking and surveillance.

Although the results of this study cannot be generalized to the general population due to the distinctive characteristics of college students, it is still interesting and worthwhile to note some implications of demographic variables in uses and gratifications of the Internet. Firstly, after conducting multiple regression analyses for each of the seven Internet gratification factors, an interesting pattern was observed. The linear regression equations, which included demographic variables such as gender, age, education, household income, and ethnicity as independent variables to predict each Internet gratification, were significant only for the process gratifications but not for the content gratifications. Neither the regression model for Information Seeking, F (9, 469) = 1.840, nor the regression model for Monetary Compensation, F (9, 469) = 1.675, was significant, while all the other regression models for process gratifications were statistically significant. This might mean that instrumental Internet use for a specific goal such as Information Seeking and Monetary Compensation can be conducted by all Internet users regardless of their demographic characteristics only when certain needs arise but not always. On the other hand, process-oriented uses are more likely to be driven by needs based on socio-biological conditions such as gender, age, education, household income, and ethnicity (i.e., demographic characteristics). This result also seems to provide a good support for the main assumption of the study that Internet addiction is related to using the Internet for process gratifications but not for content gratifications.

With respect to gender, male users are more likely to use the Internet for Virtual Community and Personal Status gratifications, spending more time in Web browsing than female Internet users. On the other hand, female users tend to use the Internet for Aesthetic Experience than male users. This result indicates that gender difference still

exists in some aspects even in the college environment. Thus, gender differences in Internet gratifications may be larger when the general population is considered. This suggests that there might be other psychological variables (e.g., sensation seeking) that are mediated by gender in explaining the difference in Internet gratifications and Internet activities (especially Web browsing in this study) between males and females.

Age was found to be a significant demographic factor only in predicting Personal Status and Maintenance of Relationship. Results showed that there were positive relationships between age and gratifications of Personal Status as well as Maintenance of Relationship. However, there were no age effects in the amount of time spent in different Internet activities. These results need to be interpreted with caution, along with education variable, because the data were gathered from college students so that the difference in age (the average age of the respondent is 25.24 and its standard deviation is 15.33) might be diluted by the small amount of variation in their education (the average years of education is 13.74 years and its standard deviation is only 2.26 years). Interestingly, education was found to have negative relations to all of the process gratifications. That is, the less educated the user is, the more likely to use the Internet for process gratifications he or she is. Also, the less educated user tends to spend relatively more time in Web browsing and using newsgroups. Given the limited time of college student's campus life, it can be easily understood that senior students use the Internet more for Personal Status gratification, searching for some useful information on the Web and Maintenance of Relationship gratification sharing information with other people in newsgroups, in preparing for career and social lives after their graduation. And, the negative relationships of education to the process gratifications suggest that those with high levels of education

may tend to be more critical of the Internet and use the Internet only for specific outcomes. Or, seniors may know how to do research more effectively than freshmen. According to this view, the hypothesis (H2-B) proposed in this study needs to be revised into "Internet user's education will be negatively related to Internet addiction tendencies" and examined in terms of educational differences in process gratifications in the future.

Difference in household income did not show up for any of the Internet gratifications and Internet activities. There was no relationship between household income and Internet activities either. Although it was not hypothesized due to the lack of consistent results, this result indicates that there is no gap between haves and have-nots among college students in using the Internet. This results can be attributed to the distinct characteristics of college environment that is favorable to students' uses of the Internet.

Except for Virtual Community and the amount of time using e-mail, ethnical differences did not show up for Internet gratifications and Internet activities respectively. White Americans were found to be less motivated and less use the Internet for Virtual Community than any other racial group. In terms of e-mail usage, African American people spent the most amount of time, almost double than that of Hispanic people. It may suggest that the so-called digital divide based on ethnic differences may not exist once Internet access has been achieved, at least not in the USA where the Internet has become an important communication medium for everyone's daily lives as access to the Internet has become easier.

Considering the relationships between demographic variables and Internet addiction tendencies, gender, age, and ethnicity were found to have influence on potential Internet addiction tendency. Specifically, it seems that male users more than female users

and old (i.e. college seniors) users more than young users (i.e., college freshmen) are more vulnerable to Internet addiction. Also, potential Internet addicts are most likely to be found among Asian people followed by other racial groups, White American, Hispanic, and African American people in order. These results seem to run counter to the results of recent studies (Brenner, 1997; Nie & Erbring, 2000; Petrie & Gunn, 1998; Young, 1996) that found there were no significant differences between men and women or among different ethnicities. These results suggests that demographic variables may be fundamental and pre-dispositional factors that can be used to explain and predict people's degrees of Internet addiction, but it should be noted that these causal relationships from demographic variables to Internet addiction tendencies can be fully understood only when various Internet gratifications and Internet activities are examined as moderators of the causal relationships.

The seven Internet gratifications found in this study were dichotomized into process and content gratifications on the basis of distinctions between ritual and instrumental gratifications (Cutler & Danowski, 1980; McGuire, 1974; A. M. Rubin, 1984, 1994; Stafford & Stafford, 1998). Process gratifications are social and emotional dimensions which included Virtual Community, Aesthetic Experience, Diversion, Personal Status, and Maintenance of Relationship. These gratifications addressed the needs that can be gratified in the process of using the medium in order to look for something interesting. On the other hand, content gratifications are more outcome-oriented which included Information Seeking and Monetary Compensation. These gratifications refer to more purposive uses of the medium in order to fulfill specific needs. In this study, although the process gratifications were found to drive the majority of

Internet use among college students, the content-oriented motivations for Information Seeking and Monetary Compensation were also so important that could not be neglected. This means that college students' Internet uses should not be viewed as only process-oriented (ritualistic) or only content-oriented (instrumental) since the Internet gratifications for college students encompass both dimensions.

However, it must be mentioned that the dichotomy of content (instrumental) and process (ritualized) gratifications needs to be reconsidered on the basis of inconsistent results of continuing research. The hypotheses based on the arbitrary distinction between content and process gratifications were not well supported as expected. This can be attributed to the inherent invalidity of that distinction in the Internet medium. In fact, the distinction between content and process gratifications may disappear on the Internet since there is no clear boundary between the real world and the so-called virtual reality. Moreover, when we consider that an increasing number of real world transactions, including education, shopping and financial transactions are mediated through the Internet, the distinction between processes internal to media consumption and external outcomes (contents) perhaps becomes somewhat irrelevant. Therefore, there is a possibility that each use might fulfill both process and content gratifications at the same time. For instance, one might be satisfied with information seeking process itself as well as the content or outcome of the online behavior. This is consistent with Lin's (1993) findings that certain gratification-expectations were associated with dualistic motivational goals and behavioral outcomes.

Another possible explanation is that, for example, Monetary Compensation might be a process gratification in the sense that the transactions in question are completed

entirely inside the Internet media system, even though they secure instrumental outcomes in the real world. On the other hand, the Internet as an interactive medium allows people to select specific content from a variety of data, some of which is useful in fulfilling certain gratifications but much of which is not. Thus, the process of searching for worthwhile information, even if it is for process gratifications, can become an instrumental and outcome-oriented behavior in itself. In this sense, Aesthetic Experience might be termed a content gratification because it clearly implies attempts to attain desired goals (e.g., "find cool new Web pages" and "See attractive graphics") which will not be sought any more once they are achieved immediately at a given moment. Had that categorization been made at the outset, both hypotheses of H3-A and H3-B would have been fully confirmed.

Indeed, all gratifications could be considered content-oriented in the sense of "seeking a desired outcome." Even diversionary gratifications such as seeking entertainment or relieving boredom may be seen in this light. From a social cognitive perspective (Bandura, 1986) these reflect the pursuit of self-reactive incentives: efforts to adjust our own internal states. Prevailing conceptualizations of the origins of addictions (e.g., Marks, 1990; Marlatt et al., 1988) stress the role played by operant conditioning, also known as instrumental learning. In effect, the addictive behavior becomes conditioned by repeated association with pleasurable feelings that may result from obtaining a desired gratification from the Internet (see further discussion in LaRose et al., 2002). Whether the pleasurable outcomes are obtained completely "inside" the media system, in a fulfillment of a process gratification, or instrumentally "through" the media system is ultimately irrelevant. Thus, both process and content gratifications could lead to

media addiction. The inconsistent relations of Depression to each of content gratifications and process gratifications and the consistent relations of Internet Self-Efficacy to each gratification factor corroborate this view.

The data analyzed in this study supported the view that there is a positive relationship between depression and Internet addiction tendency. It was found that those college students who had higher degree of depression were more likely to show higher degree of Internet addiction tendencies. However, due to the limitation of research design, any causal relationship should not be drawn to the conclusion that depression must be present for some of the Internet addiction symptoms to be developed. Still unclear is whether depression leads people to Internet addiction as explained by the *stress reduction theory* (Holmes & Rahe, 1967) and the *cognitive-behavioral model of pathological Internet use* (Davis, 2001a; Young & Rodgers, 1998b) or, contrarily, excessive use of the Internet leads people to experience depression symptoms as shown in Kraut et al.'s (1998) Internet Paradox study.

While it is obvious that this results suggests the need for a more elaborated and systematic research design such as the longitudinal study, it should be noted that depression and Internet addiction tendency are interactive factors that are working together in a reciprocal way. Those who suffer from psychological problems may be more easily enticed with the distinctive characteristics of the Internet use, such as anonymity and interactivity, while they are trying to get out of the aversive psychological state of depression. The Internet may be more convenient compared to the other methods of mood management. Also, extremely stimulating content, such as pornography, that is not readily available in other media can be obtained on the Internet. These characteristics

of the Internet may lead stressed and depressed people to a temporary relief. However, increased use of the Internet also may further aggravate addicts' depression by producing feelings of guilt and negative affect about their excessive uses and inability to control themselves. In this way, the relation of depression to Internet addiction becomes an endless process in which the depressed and addicted user of the Internet continuously seeks out for more sensational stimulus. As LaRose and his colleagues (2002) argued, "media usage may spiral out of control if individuals are intent on pursuing immediate relief from depressed feelings; this action can end in deepening depression if adverse life consequences result. The repetition of this cycle may then form a conditioned response linking dysphoria states with media use" (p. 12).

In light of these findings, it is suggested that people select stimuli that can help adjust the post-exposure psychological state, and that a certain kinds of stimuli have the potential to affect the user's dependency on them. It should be noted, however, that the type of stimulus could be the medium itself in a broad sense as well as the specific kind of content available in a certain medium. That is, different kinds of media may have different effects on users' psychological well-being due to their distinctive media characteristics and potential for mood management. Given the ubiquity of the Internet in people's everyday lives and its use the Internet for the purpose of entertainment (mood management), it is imperative to examine more closely the relationship between depression and Internet use as well as Internet addiction.

Limitations and Implications for Future Research

The generalizability of the present findings is limited by the nature of the convenience sample of college students. Samples drawn from other populations, especially those including larger portions of novice users who have not as yet formed Internet habits, could yield different results. There may also be reciprocal relationships among variables. Therefore, time series data is necessary to determine the direction of causality. For example, those with high levels of depression may use the Internet more to get out of distress, thus perceiving more gratifications of the Internet because they are more familiar with the capabilities of the Internet.

A new Internet gratification discovered in this study (i.e., Virtual Community) indicates some potential limitations in the uses and gratification research tradition. Specifically, a single set of gratifications for the television medium (i.e., A. M. Rubin, 1983) has been dominant for two decades, which prevented certain new gratifications relevant to new media from being probed. In addition, the gratifications have been examined through *post hoc* factor analysis and built into a typology rather than deduced from theoretical frameworks. On the other hand, the endeavor to generate a new dimension of gratifications has been made through some studies that examined the unique attributes of the new medium (e.g., Papacharissi & Rubin, 2000) or induced Internet users to answer what they think as the needs gratified by the Internet (Charney & Greenberg, 2001). Furthermore, some other items were derived from theoretical framework outside of the uses and gratifications tradition which is related to behavioral incentives: e.g., the status and social incentive categories originated from social cognitive theory (Bandura, 1986). These cases suggest some guidelines for future research of uses and gratification

tradition; some innovative approaches might generate considerable benefit for this research tradition both operationally and conceptually.

Further research could also help to identify crucial points where intervention may be advisable so that users can realize the Internet's full potential while avoiding harmful abuse. The present results suggest some intriguing possibilities. If information seeking is to some extent the "antidote" for the Internet "drug," then interventions that train users to use the medium more effectively to seek personally relevant information might counter the formation of habitual usage patterns. Also, improvements in the aesthetic qualities of information-oriented sites could help attract users away from Internet venues such as chatrooms and multi-user environments with relatively lean production qualities.

From a scholarly perspective, it is perhaps reassuring to know that we may understand Internet addiction tendencies in terms of a well-established theory of media attendance and exposure, that is the uses and gratifications theory. But it is also alarming to realize that normal media usage motivations may be the breeding ground for harmful behavioral addictions which may beset generations of Internet users to come. The learning theory mechanisms that underlie behavioral addictions are present in everyone, and the media stimuli that may condition media addictions are virtually unavoidable. So, an intriguing question for further research is why everyone isn't an Internet addict, and what factors lead some to lose control while many others learn to moderate their own media consumption behavior.

In sum, the present study has repositioned the question of Internet addiction from the fringes of psychiatry and psychopathology to one of the central concerns of the field of communication research: the motivations of media use. In the circumstances that

studies on Internet addiction have focused on mainly psychological and pathological factors, this kind of exploratory study that approaches the problem with a communication theory is of much significance. If we are able to learn more about the phenomenon of Internet addiction, properties of the Internet through the uses and gratifications approach, or other forms of communication research, then we will be better able to use this new medium in our own lives and for the benefit of society.

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