Running head: MP3 uses and gratifications

Uses and Gratifications of MP3 Players by College Students: Are iPods More Popular than Radio?

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Abstract

Ownership of MP3 players, such as Apple's iPod, continues to grow at a steady pace in the US. College students are one age group that is active in the adoption of these devices. Based on a uses and gratifications framework, this study examined how college students are using this technology as compared to radio listening. Results showed that more than half of the respondents in a national random sample own some type of MP3 player. Motivations for using the players included boredom, stimulation, entertainment, relaxation/escape, and loneliness. An important finding was that the use of MP3 players appears to be serving as a substitute for listening to traditional radio for this age group.

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MP3 players, such as the Apple iPod with its signature white earbuds and audio cable (Carlisle, 2005), are becoming an increasingly important component in the mix of "on-demand" technologies that offer people more control of media content (Rose & Lenski, 2006). According to a report by Arbitron/Edison Media Research, the percentage of Americans that owns an iPod grew from 6% in 2005 to 11% in 2006 (Rose & Lenski, 2006). That same study also reported that an additional 14% of the population owns another type of MP3 player, which compares with 10% ownership in the previous year. The growth in downloadable content has become such a cultural phenomenon that the New Oxford American Dictionary named "podcasting" its word of the year in 2005 (Palser, 2006). Although podcasting is used as a generic term to denote a variety of online content, the concept is often associated with the iPod.

Such developments in digital technology are increasingly impacting both audiences and the media. From the audience perspective, patterns of media use are characterized by portability, control, convenience, and on-demand content (Rose & Lenski, 2005), thus transcending the limitations of time and space that are inherent in traditional media (Drotner, 2005). Furthermore, compared with traditional media content that is provided by few sources, podcasting enables audiences to also become content producers (Berry, 2006).

On the provider side, local broadcast and print media are offering audio content for downloading from their Web sites (Potter, 2006; Romano, 2005). Major networks and other content producers also are taking advantage of portable content. For a per item fee, visitors to Apple's iTunes site can download music videos, Pixar animations, and select television programming from ABC, the Disney Channel ("iTunes music store," 2005), ESPN and NBC (Whitney, 2006).

Desire for on-demand content is evident in the increasing level of audience activity. In February 2006, just five years after the introduction of the audio iPod, Apple announced that the one-billionth song had been downloaded from its iTunes store ("iTunes music store," 2006). In October 2005, Apple followed the popularity of its audio product by unveiling the video version of the iPod ("Apple unveils," 2005). Less than 20 days after the new device was introduced, the company reported that it had sold one million videos through its iTunes store ("iTunes music store," 2005). In January 2006, Apple announced that the number had skyrocketed to eight million downloaded videos (Whitney, 2006). However, the number of downloads actually used on iPods is unclear, since users might simply play content on their computers rather than on the MP3 device.

To date, research about the use of MP3 players has often focused on general audience profiles and demographics (e.g., Rainie & Madden, 2005; Rose & Lenski, 2005), although some market research reports have compared iPod ownership to the use of other new media (Rose & Lenski, 2005) or have linked the ownership of the devices with purchasing habits of owners (e.g., "New media usage," 2005). Albarran et al. (2006) studied MP3 player usage as part of a study of the uses and gratifications of new media technologies. However, scholarly research focused on MP3 players is scarce. The purpose of this study is two-fold: to provide a quantitative examination of college student uses and gratifications of MP3 players, and to examine whether those devices serve as a substitute for traditional broadcast radio.

iPod user profile

Research organizations have provided some information about the characteristics of individuals who use iPods or MP3 players. A study of adult users (18 and older) of MP3 players by the Pew Internet and American Life Project (Rainie & Madden, 2005) found that ownership is related to age. About a fifth of the respondents between the ages of 18 and 28 owned a device, with a steady decline in the percentage of ownership in older age groups. The study also found that males (13% were more likely to own an MP3 player than females (9%). Furthermore, the study further noted that owners of the devices had a higher income and that they tended to use the Internet more than non-owners. The report pointed out that the latter is most likely due to the use of online sources for content.

An Arbitron/Edison Media Research study that included ages 12 and older found that 22% of those Americans owned an MP3 player in 2006 (Rose & Lenski, 2006). The study further noted that, between 2005 and 2006, growth of ownership of the technology was especially high among 12-17-year-olds. Affinity for the iPod, in particular, was also noteworthy, with 45% of all respondents indicating that they "'love' using the device" (Rose & Lenski, 2006, p. 8) compared with the love of other technologies on that list, which included broadband Internet (41%), HDTV (34%), and satellite radio (33%). In comparison, less than a quarter (21%) of respondents said they loved "local AM/FM radio" (p. 8).

Uses and gratifications and New Media

Uses and gratifications serves as an appropriate theoretical foundation for examining the uses of MP3 players. Paramount to uses and gratifications is the idea that people are active in their selection of media and content to satisfy certain needs, and that media use comprises but one form of activity among a multiplicity of options through which individuals may fulfill those needs (Katz, Blumler, & Gurevitch, 1974). Scholars subsequently argued that media activity should not be considered a singular concept. For example, Blumler (1979) posited that there are varying levels of activity in relation to types of media, audience motivations, and media uses. Similarly, Levy and Windahl (1985) argued that levels of activity are dependent upon the individual; both regarding the extent of activity and at what time a person exercises that activity. Levy and Windahl further suggested that activity is based on social factors, media content, and media availability. Selectivity may further relate to a particular type of medium and what it offers. This might include content that is especially characteristic of the medium, attributes of the medium in relation to the needs it serves, and where exposure to the medium occurs (Katz, Blumler, & Gurevitch, 1974).

Historically, uses and gratifications has been a fruitful approach in understanding audience uses of traditional media. Much of that research has focused on television. For example, Rubin (1984) categorized television viewers as either ritualized or instrumental. Individuals characterized as ritualized were habitual and frequent in their viewing patterns. In comparison, those who were instrumental tended to be purposeful, selective, and goal oriented in their viewing. A few studies have considered the uses and

gratifications of radio. In one such study, Towers (1985) examined the use of radio news in relation to other media and listener demographics. He found that people who listened more frequently to the radio did so for entertainment and the immediacy of news, while those who listened less frequently did so to fill time.

More recently, scholars have recognized the importance of applying uses and gratifications to digital technologies such as the Internet (Newhagen & Rafaeli, 1996). Ruggiero (2000) noted that it is a beneficial theory for 21st century technologies, since scholars continue to examine why a medium is used. Ruggiero also argued that researchers need to expand uses and gratifications theory and to adapt the theory to the characteristics of new communication technology. This returns to Katz, Blumler and Gurevitch's (1974) notion that uses and gratifications is associated with the attributes of a particular medium.

Given the prominence of digital technologies, questions persist about whether new media will take the place of older media. Research regarding media substitution has paralleled the chronological development of computers and the Internet in relation to television. Coffey and Stipp (1997) found that there was little competition between time spent on the computer and television viewing, but that study was conducted while the Web was in its infancy. In a subsequent study, Ferguson and Perse (2000) found that entertainment via the Web was important, but that use of the Web did not take the place of television for passing time, relaxing or companionship. Lin (2001) found that there was some displacement of the Internet for newspapers for individuals who spent less time with traditional media. However, she concluded that online media was not likely to displace traditional media unless new media could improve on content, and offer "superior technical benefits, and greater cost efficiency" (p. 36). Dimmick, Chen and Li (2004) found that the Internet did displace television news and newspaper news for some people, but not to a great extent. Lin (2004) examined Webcast users and found that online content was seen as a substitute for newspapers and radio. There was also some relationship between using Webcasting more and viewing television less.

Rather than viewing the emergence of new communication technologies as replacements, new media may both complement and compete with traditional media (Hulsink, 2005). A study of college students by Althaus and Tewksbury (2000) found that the Web served as a supplement for news but as a competitor for entertainment television. The more recent phenomenon of video downloads might actually benefit over-the-air programming rather than take audiences away from it. For example, in January 2006, NBC credited a 5.1 rating for “The Office” among 18-49 year olds to downloads of the program on Apple’s iTunes site (Whitney, 2006). One executive of the network stated that the technology was attracting viewers to the broadcasts of the show.

Some recent research has examined the use of new audio technologies in relation to older media. Free (2005), compared college student listenership of traditional AM and FM radio with the new delivery channels of Internet radio, digital radio via cable, and satellite radio. Free found that more than nine in ten respondents used traditional radio. People who used traditional radio did so for entertainment and information. However, those who used new media radio did so for convenience, lack of commercials, quality, and increased choices.

Book and Grady (2005) examined satellite radio "enthusiasts" and found that subscribers listened less to terrestrial radio. A high percentage of subscribers were satisfied or very satisfied with satellite radio, but dissatisfied with traditional radio. Respondents to their survey indicated that problems with traditional AM/FM radio included repetitious music selections, the quality commercials, and the feeling that "announcers talk too much" (p. 35). However, Book and Grady also noted that later adopters of satellite radio were not as dissatisfied with terrestrial radio. Additionally, traditional radio was still viewed as important for "morning drive time" and "local information" (p. 7).

In a study by Arbitron/Edison Media Research (Rose & Rosin, 2006), more than three-quarters of respondents indicated that new radio technologies would not change their listening to traditional AM/FM radio. Two-thirds of those who listened to satellite radio said their time with traditional radio would stay the same. The researchers concluded that digital radio technologies did not appear to be affecting time spent listening (TSL) to traditional radio. A follow-up study by Edison Media Research, however, found

"While much recent attention has been focused on teens who may not be learning to use radio at all, 18-to-24 TSL has declined by an even larger percentage (24%). TSL in 1993 was 95 quarter-hours per week; it is now 72 quarter-hours. Listening 12-24 is falling significantly faster than among those 25-plus" (Webster, 2006). Indeed, MP3 players have apparently driven some radio programmers to experiment very successfully with "Jack" radio formats that emulate listening to an iPod in the shuffle mode where songs play at random (Demerjian, 2006).

Albarran et al. (2006) studied college student uses of traditional and new media radio. Results of the research showed that MP3 players rated highest as an entertainment resource compared with AM/FM radio, streaming Internet radio, and satellite radio. Half of the students surveyed indicated that they did not listen to traditional AM/FM radio stations. Additionally, MP3 players were rated highest among a number of perceived gratifications except for usefulness of obtaining information. Furthermore, when asked which technology they would keep if they had one choice, more than two-thirds of respondents selected MP3 players. The authors, however, called for more research using national samples rather than convenience samples.

We propose using a national sample to test previous findings:

H1: MP3 players will serve as a substitute for traditional audio media.

Gender

Previous studies (e.g., Perse & Ferguson, 1993) have looked at new media devices as toys rather than tools, noting that males are more likely, for example, to monopolize the use of remote control devices in the home. Thus, we suspect (but have no previous findings to test) that males use their MP3 players more often, so the following research question was posed:

RQ1: What is the relationship between gender and MP3 use?

Affinity

If not actually addicted to their iPods, students seem to exhibit some strong affinity for them. In June 2006, a lifestyle survey revealed that 73 percent of a college student sample rated using an iPod slightly higher than drinking beer, which was 71% (Snider, 2006). Given the rapid diffusion of the new

media and its extensive use, a growing body of literature has focused on the potential for addictive behavior. Conceptually, the strong attraction to iPod use could be a form of addiction or antecedent stage. Or it might be simple affinity, similar to the way people exhibit strong affinity for using the Internet, a condition that may also precede addiction. In their overview of research on this topic, Chou, Condron, and Belland (2005) noted that scholars have been interested in issues such as the definition of Internet addiction and terminology associated with it, motivations for usage, and how behaviors might be measured and treated. Young (1998) suggested that excessive use of the Internet might have a number of negative effects on activities such as academics, jobs, interpersonal relationships with family and friends, and sleep.

Several studies have examined the issue of addictive Internet behavior, specifically as it relates to college students in the US. In one study, LaRose, Lin, and Eastin (2003) suggested that "deficient Internet self-regulation," was a better descriptor than addiction, since the former allows for a range of behaviors. LaRose and colleagues found that deficient self-regulation was associated with habits of Internet use. Song, LaRose, Eastin, and Lin (2004) examined college student uses of the Internet in relation to potential addiction. They found that "several gratifications" revealed in their study were "positively related to Internet addiction tendencies" (p. 390).

An examination of addictive behaviors, or at least media habits, associated with the use of MP3 players is also warranted. On college campuses, it is common to see students listening to their devices while walking to (and sometimes during) class. Students seem to live with the technology that has become part of their routine. The portability of the devices suggests a potential for more addictive behavior that computers. Of particular interest is whether the level of listening serves as an indicator of the user's behavior and amount of control or self-regulation (LaRose, Lin, and Eastin, 2003). Issues to consider are the amount of time spent listening to the player and the levels at which extensive use might constitute addictive behavior. Even if the term *addictive* is an exaggeration, the level of affinity toward MP3 devices warrants investigation.

Affinity for MP3 players has not been studied by scholars, so we pose the second of our research

questions:

RQ2: Does affinity predict MP3 use?

Satisfaction

Satisfaction with a particular medium is another element of affinity, but media satisfaction has been typically measured as a dependent measure rather than an independent variable. Perse and Ferguson (1993) examined television satisfaction in relation to new media variables and found that instrumental viewing motives, television exposure, and receiving informational gratifications from television viewing were the strongest predictors of television satisfaction. Based on that earlier study, Ferguson and Perse (2004) looked at predictors of audience satisfaction for digital video recorders users(e.g. owners of TiVo, a popular brand of DVR) and reported that DVR satisfaction was also predicted by instrumental uses, rather than ritualistic uses (Rubin, 1984). But portable audio media are not the same as television, so we pose the following research question (instead of stating a hypothesis):

RQ3: What are the predictors of MP3 satisfaction?

Portable Devices

A few studies have specifically focused on the use of portable media devices. Chen (1998) had college students keep diaries of their usage of the pre-digital Walkman stereo. Chen observed that students structured their lives around the Walkman, so that they would complete their listening to a song even though they had arrived that their destination. Interpersonally, the device served as a companion, while at the same time separating the user from his or her social and auditory environments and creating a private listening experience. Quality and portability were also key in that students perceived the Walkman as better than listening to radio stations. Bull (2001; see also Bull, 2000) also analyzed Walkman users and found that use of the device offered the listener a personalized music selection, and control of thoughts, time and experience.

A qualitative study by Bull (2005) specifically examined iPod use. Much of Bull's findings paralleled those of prior Walkman research. First, Bull observed that power, control and self-sufficiency were key factors of users regarding control over the time and the space in which they listened to music on

the iPod. The second observation was that the device offered a higher level of options and flexibility compared with earlier personal stereo devices. Third, Bull found that listening was individualized and provided privatized content. Finally, use of the iPod was an intentional action with perceived benefits such as "mood maintenance" (p. 349).

Given the literature on uses and gratifications of specific media devices (e.g., Albarran et al., 2006), we pose our final research question:

RQ4: What are motivations for the use of MP3 players?

Method

A random national sample of 320 college students was generated from a two-stage cluster sample using the first and last names of subscribers to Facebook, a popular social networking site. Information on the distribution of first names for people born in the early 1980s is available from the Social Security Administration government web site at http://www.ssa.gov/OACT/babynames/. Last names are reported by the U.S. Census Bureau, based on information by decade (http://www.census.gov/genealogy/names/). Combining both sites supplies exact figures for live births and enumerated last names, along with the frequency of first and surnames.

Using these known distributions, we constructed a sampling frame of first names ranked by their probability of appearing in the top 1000 names for males and top 1000 names for females. In the case of college students on facebook.com, there are many more Jessicas and Ashleys than Tamikas and Shondas, but the names all occur on the top-1000 list, accounting for 90.0 percent of all live female births and 79.5 percent of all live male births in the 1980s (http://www.ssa.gov/OACT/babynames/decades/names1980s.html).

Nearly 89,000 surnames are listed by the Census Bureau 1990 website (http://www.census.gov/genealogy/names/dist.all.last). Because the Facebook database allow partial last names (e.g., the first two letters), a data reduction method simplifies the chance of actually locating a match. That is, drawing Jessica Jasko at random would surely fail to produce a list of matches, but Jessica

Ja____ would permit the researcher to select one random name from a relatively small subsample of females who match.

We constructed an Excel spreadsheet designed to randomly draw an equal number female and male students born 1983 to 1987 who belong to the www.facebook.com social network that boasts 85 percent penetration among college students (Arrington, 2005). Generating a random list of numbers using the Excel rand() function, which was reformatted as percentages, allowed a random first name drawn, in proportion to the number of people with that name. Using the same spreadsheet, we generated random two letter combinations for the beginning of thousands of names representing ninety percent of all surnames in the United States with 271 combinations.

After drawing the random list of partial names that comprised the first stage of the cluster sample, student volunteers were given a subset of the list and then trained to search matches on facebook.com, a site with which they had great familiarity. On their own, they used a random number generator in Microsoft Excel to select a name from the matches, careful to skip over the home institution and any names/pictures that did not match the target group (college-age students). This random selection was the second stage of the cluster sample. The students then sent a message to the randomly selected name: "Hi, I saw your name and wondered if you'd help me complete an extra-credit assignment for my class. Please paste the URL below to your browser and complete a short questionnaire. Thanks for your help." To be fair, the professor later sampled one student name from the home institution, so that every college student in the U.S. and Canada had an opportunity to fill out the survey. A handful of searches were also conducted via "random keyboard entry" resulting in a very small number of highly unusual matches (e.g., Asdjklf Adf at Florida State).

A record of chosen students and institutions was kept to facilitate reminder messages. Having the students produce a list also allowed some quality control on how well the names were randomly selected. A student who consistently reported surname matches like Small instead of Smith or Maag instead of Masterson were suspected of skipping the randomization of partial names. In this study, everyone followed the instructions.

The Sample

The contact sample of 1557 names was sent the invitation between April and June 2006, with 320 usable responses after a first and second wave of invitations. The probability sampling method was designed to give every college student in the United States, or at least the 85 percent who are registered on Facebook, a nearly equal chance of being chosen for a personal solicitation.

Demographics

Age of college student respondents ranged from 16 to 27 years (M = 20.16, SD = 1.71). Female respondents outnumbered males (58.9%), although sampling was strictly 50/50. As the soliciting message was framed as being helpful, one might assume the females respondents rated higher than males in terms of helpfulness.

Ipod Ownership

Students who reported owning an iPod (or similar MP3 player) account for 51.1 percent of the sample, which is consistent with the population in 2006 among all college students. Jacobs Media reported in December 2005 that half of listeners to the "alternative" music format (closely associated with the college-age audience) owned iPods or MP3 players (Jacobs, 2006).

Ipod Use

Respondents were asked how many times per week they downloaded music to their iPod (M = 3.06, SD = 6.24), with 37.5 percent reporting once per week, followed by zero times (19 percent) and twice (16 percent). A better question would have used a verbal frequency instead of an absolute number, because even a rare or seldom downloader might average a fractional number of uses (i.e., non-zero) in an average week. The use of the word "download" also may have created some confusion because a respondent might transfer music from a CD (or a friend's iPod) without using the Internet.

Respondents were asked about their use of podcasts and downloaded videos, but the numbers were negligibly tiny. Another indicator of use was the number of songs contained by the iPod, as self-reported by the owners, which ranged from 0 to 7500 (M = 1270.17, SD = 1452.76) with half of the respondents reporting 800 or more songs.

Actual use of the iPod was less problematic, with a little under two and a half hours per day reported as the average time spent per user. Respondents were asked how many hours and minutes they used their iPods on a typical day (after being prompted to include morning, afternoon, and evening). Time ranged from 0 to 900 minutes (M = 145.54, SD = 136.98), with 7.2 percent indicating zero minutes, 31.2 percent from 1 to 60 minutes, 24.7 percent from one to two hours, and 14.4 percent from two to three hours.

Affinity

Respondents completed five Likert items about their level of affinity toward their iPods, derived from prior research on television motivation (Rubin, 1981).[1] Responses to these five items were summed (after reverse coding an item that stated the opposite of affinity) to create an iPod affinity score, which ranged from 0.0 to 39.0 (M = 8.69, SD = 9.57, alpha = .87).

Radio Use

Respondents were asked how many hours and minutes they listened to the radio on a typical day (after being prompted to include morning, afternoon, and evening). Time ranged from 0 to 780 minutes (M = 121.78, SD = 136.98), with 18.9 percent indicating zero minutes, 31.6 from 1 to 60 minutes, 16.9 percent from 1 to 2 hours, and 11.5 percent from two to three hours.

Motivations

Respondents completed a set of 9-point Likert statements about their motivations for iPod use, based on a list of 24 motivations used in previous research on the uses and gratifications of mass media (Rubin, 1984). We conducted a principal components factor analysis with varimax rotation on those 24 items, applied rules of a minimum eigenvalue of 1.0, and suppressing absolute values less than 0.5.

The solution identified 5 components accounting for 66.50 percent of the variance: boredom, stimulation, entertainment, relaxation/escape, and loneliness (see Table 1). A scale was constructed from each component, summing the responses to the relevant items. Boredom ranged from 0.0 to 24.0 (M = 14.09, SD = 6.34, alpha = .67), stimulation ranged from 0.0 to 36.0 (M = 9.41, SD = 8.19, alpha = .82), entertainment ranged from 0.0 to 24.0 (M = 15.15, SD = 4.85, alpha = .72), relaxation/escape ranged

from 0.0 to 48.0 (M = 25.33, SD = 11.69, alpha = .85), and loneliness ranged from 00.0 to 24.00 (M = 4.33, SD = 5.41, alpha = .81)

Table 1 About Here

Satisfaction

Respondents completed three Likert items about how satisfied they are with iPod use, derived from prior research (e.g., Perse & Ferguson, 1993, 2000).[2] Responses to these three questions were summed to create an iPod satisfaction score. MP3 satisfaction ranged from 0.0 to 24.0 (M = 15.59, SD = 5.28, alpha = .83).

Results

A comparison of radio use between owners and non-owners of iPods yielded a significant difference, suggesting that iPod use substitutes for time spent listing to the radio ($t = 4.005$, $p < .001$). Radio use for respondents without iPods was about two and a half hours, measured in total daily minutes (M = 156.76, SD = 155.11), but radio use for iPod owners was over an hour less, again measured in minutes (M = 90.82, SD = 124.03). Thus, Hypothesis 1 was supported.

Gender differences (RQ1) were not noted for any form of downloading or total use, but the number of songs was greater for males (M = 1759.68, SD = 1757.99) than females (M = 935.32, SD = 1091.99) yielding a statistically significant difference ($t = 4.327$, $p < .001$). No gender differences were found for time spent listening to the radio, overall or among subsets of iPod owners or non-owners.

Affinity and use (RQ2) were related ($r = .36$, $p < .01$, N=149), providing an answer to the second research question. (When compared to the motivations in RQ4 using a stepwise regression, affinity ($\beta = .34$, $p < .001$) and boredom ($\beta = .18$, $p < .05$) were the only two significant predictors.)

Motivations as a group did contribute significantly to the explained variance in iPod satisfaction (RQ3). A hierarchical regression entered the number of downloads followed by the number of songs and

finally the groups of motivations (see Table 2). Downloading was significant until the motivations were brought in. Number of songs remained significant in the final two steps. The only statistically significant motivation component was entertainment ($\beta = .20$, $\underline{p} < .05$), with a beta weight slightly greater than the number of songs ($\beta = .19$, $\underline{p} < .05$).

Table 2 About Here

Regressing the motivations on amount of iPod use (RQ4) produced some evidence of the relative importance of the component reasons (see Table 4). A stepwise regression (omitting affinity, which is not a motivation) showed that two motivation factors accounted for 14 percent of the variance: relaxation/escape ($\beta = .23$, $\underline{p} < .05$) and stimulation ($\beta = .21$, $\underline{p} < .05$). When the number of songs and weekly downloads were included, both items made insignificant contributions to the model.

Table 3 About Here

Discussion

The Internet has become an important component in the lives of college students (Jones, 2002; McMillan & Morris, 2006). They have been more active than the general population in the use of this technology, as well as in their use of specific features such as downloads and instant messaging (Jones, 2002). More recently, iPods and other MP3 players have been added to the technology mix. Overall, the use of MP3 players continues to experience growth in the US as evidenced in recent research (Rose & Lenski, 2006). The results of the present study, which focused on MP3 usage among college students, lends support to the continued importance of technology for that age group. Just over half of the respondents in this study indicated that they owned an MP3 player.

Specific usage of MP3 players was primarily for music purposes, with respondents indicating more interested in that type of content than podcasts and video downloads, which is consistent with a

subsequent study by AC Nielsen (Wallenstein, 2006). Nielsen monitored a panel of 400 iPod users in the U.S. in October 2006 and found that less than 1% of content items played by iPod users on either iTunes or the device itself were videos. Among video iPod users, that percentage barely improved, up to 2.2%. Videos on iPods have yet to catch on.

Just over a third of respondents indicated that they download music once a week to their players, but 19 percent said they did not download music at all. Acquisition of content for their MP3 players was uncertain. Using the term "downloading" might have been interpreted as having acquired content through the Web when there are other means of obtaining content, including transferring music from another MP3 player or from one's own CD collection. Additionally, although the video iPod had been released several months before this study was conducted, the number of students who downloaded video was very small. Therefore, despite the increasing numbers of venues available for audio or video podcast downloads, students appear to be using those resources in a very limited manner.

Another indicator of activity is the number of songs that respondents have on their players. The number of songs ranged from zero to 7500, with an average of more than 1200 songs. Half of the students had 800 or more songs on their devices. One explanation for the wide range in the number of songs that respondents said were housed on their MP3 players might be due to differing types of devices. Technical specifications, such as the amount of storage space, limit some players to hundreds of songs, while other devices may contain thousands. However, the number of songs on an MP3 player simply might be due to the user's desired music repertoire.

An important issue in prior research has been whether new media is a substitute for older media (e.g., Dimmick, Chen & Li, 2004; Ferguson & Perse, 2000; Lin, 2001, 2004). In the present study, the hypothesis that iPods will serve as a substitute for traditional radio was supported. There was a significant difference in the amount of time iPod owners spent listening to their players compared with time in a day they estimated listening to radio stations. On average, individuals without MP3 players listened to nearly two and a half hours of radio per day, which is over an hour more than the amount of time that owners of MP3 players spent with radio. That students are turning to portable media is consistent with Albarran et

al.'s (2006) study of college student uses of radio and new media, which found that half of the respondents did not listen to traditional AM/FM radio.

There were five motivations for using MP3 players that resulted from a factor analysis of uses and gratifications statements. These findings showed that students use these devices not just for entertainment, but in connection with boredom, stimulation, loneliness, and as a means of relaxation or escape. This supports Bull's (2005) findings about iPod use, in that users viewed the device as offering benefits such as "mood maintenance" (p. 349). Chen's (1998) research regarding Walkman stereos revealed that users of that technology viewed the device as a companion. Findings of the present study suggest that the devices may, at least in part, serve an interpersonal communication function. However, when examining the relationship between the six motivations and amount of usage, only relaxation/escape and stimulation were significant predictors of student iPod use. Even when behavior predictors such as number of songs and number of weekly downloads were considered, none of these motivations predicted MP3 player use.

Whether or not extensive use of MP3 players might coincide with addictive behavior is also a question. Compared with prior Internet addiction studies, MP3 players represent a different perspective because there is no capability of creating online relationships. Coupled with Bull's (2005) findings about privatized media, the use of MP3 players potentially might decrease interpersonal connections while isolating the user from his or her environment. In this study, we substituted affinity for addiction and found more predictive power than we had anticipated, for a measure that did score highly as a variable.

Gender did not seem to be an issue in the use of MP3 players. There were no differences between males and females in downloading content or total usage. However, we did find that males tended to have many more songs on average on their players than did females. One explanation might relate to variations in repertoire. Prior research has shown that men and women have different repertoires of television channels and programs (Nathanson, Perse, & Ferguson, 1997; Neuendorf, Atkin, & Jeffres, 2001). Perhaps the dynamics that have been observed in those studies also exist regarding the number of songs on a person's MP3 player. For example, does the number of songs on a player indicate instrumental or expressive orientation toward this technology (see e.g., Nathanson, Perse, & Ferguson, 1997)? The

present study asked only about the number of songs that are resident on the person's player, but not whether the students listened to specific sets of songs or artists, or if they set their player to randomize playback among all songs. Therefore, additional research is necessary to answer that question.

Findings of the present study and other related studies represent early examinations of the relationship between listeners of traditional radio and MP3 players. However, if these results are an indication of future trends, continued changes in patterns of media use by younger audiences have important implications for radio broadcasters. Station talk about offering 'more music' is largely a non-issue for owners of MP3 players, since those consumers are not tied to content by time or programming format (Berry, 2006, p. 158). Owners can listen to many hours of their favorite music without announcers or commercials. Regarding online versus traditional media use, Lin (2001) suggested that media substitution is more likely to occur when one medium is perceived as offering certain benefits over existing media. This notion is especially evident in the inherent characteristics of MP3 devices. Owners can listen when they want, where they want, and to the content they want. In his study of iPods and radio, Berry (2006) concluded that this technology might not signal the demise of "the radio star," but that a "retuning" may be in order for broadcasters (p. 158). At the very least, new technologies are challenging radio (Albarran et al., 2006).

This study also has a number of limitations one of which is the response rate. Only 320 usable responses were received from the more than 1500 people who received an invitation to take the survey, even with follow-up correspondence. The Web was the most expeditious means of administering the questionnaire to obtain a national sample. However, invitation recipients might not have been interested in ceasing their activities on Facebook to take the survey. Another possible limitation was the use of some terminology in the questionnaire. For example, students were asked how many times they downloaded music to their MP3 players. Downloading might have different meanings to different people. A similar confusion of terms has been noted regarding "podcasting" (Rose & Rosin, 2006). This necessitates a clarification of technological concepts in questionnaires.

The results of this study prompt additional examinations of MP3 player usage. Given the level of

use of these devices, researchers should consider whether owners might become addicted to this technology. Certainly the levels of affinity we measured were fairly small, but given the self-report nature of the responses perhaps a different way of measuring addiction should be tried. This would extend existing research about Internet behaviors to the use of portable media. Perhaps as LaRose, Lin, and Eastin (2003) suggested, the notion of deficient self-regulation might better explain a range of habits involving the use of these devices rather than just the concept of addiction. Scholars also might examine the relationship between psychological antecedents and the usage motivations that were revealed in the present study's factor analysis. For example, the loneliness motivation might be regressed against an instrument such as the UCLA Loneliness Scale (see e.g., Russell, Peplau, & Ferguson, 1978; Russell, 1996). This also might assist in determining whether there is a connection between device usage and the notion of isolation (Bull, 2005). Additional appropriate instruments also could be used to study the other motivations. Future research also might consider differences in MP3 usage by focusing on instrumental versus expressive motivations (Nathanson, Perse, & Ferguson, 1997), especially in relation to the number of songs that owners have on their players and their playback selection.

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Table 1

MP3 Motive Principle Components Analysis

I use my iPod because	Relaxation/ Escape	Stimulation	Entertainment	Loneliness	Boredom
It's a habit, just something I do (2.88, 2.66)	0.63				
It relaxes me (5.80, 2.16)	0.65				
It allows me to unwind (5.31, 2.56)	0.68				
So I can forget about school, work or other things (3.25, 2.76)	0.72				
It's a pleasant rest (4.99, 2.52)	0.67				
So I can get away from what I'm doing (2.95, 2.85)	0.70				
It helps me learn things about myself and others (1.07, 1.79)		0.75			
It's thrilling (3.06, 2.61)		0.69			
So I can talk with others about what I find (1.47, 2.10)		0.77			
It's exciting (3.31, 2.64)		0.72			
It helps me learn what could happen to me (0.67, 1.37)		0.58			
So I can try out media content that my friends tell me about (2.72, 2.94)		0.59			
It entertains me (6.73, 1.70)			0.76		
It's enjoyable (6.81, 1.56)			0.80		
It amuses me (4.52, 2.65)			0.76		
It makes me feel less lonely (1.59, 2.21)				0.85	
So I won't have to feel alone (1.69, 2.30)				0.80	
So I can be like my friends and family who use iPods (0.97, 1.78)				0.70	
It gives me something to occupy my time (5.82, 2.47)					0.56
Just because it is available (4.71, 2.85)					0.79
When I have nothing better to do (3.56, 2.82)					0.66
*When there is no one else to talk or be with (4.22, 2.87)					
*It passes the time away, particularly when I am bored (4.69, 2.79)					
*So I can get away from the family or others (2.52, 2.72)					
Sum of Squared Loadings	3.43	3.33	2.71	2.60	1.95
Eigenvalue of unrotated factor	7.53	2.25	2.15	1.65	1.09

Variance explained in unrotated solution	31.4	9.4	8.9	6.9	4.5
Mean	25.33	9.41	15.15	4.33	14.09
SD	11.69	8.19	4.85	5.41	6.34
alpha	0.85	0.82	0.72	0.81	0.67

Note: Item means and standard deviations are in parentheses.

* Items excluded from further analysis.

Table 2

Hierarchical Multiple Regression Summary:

Regressing MP3 Satisfaction

	Step Entered	R^2	R^2 Change	Final ß
Music Downloads per Week	1	.07**	.07**	.13
Number of Songs	2	.11**	.04	.19*
Motivations	3	.24***	.13	
Boredom				.11
Stimulation				.04
Entertainment				.21*
Relaxation/Escape				.18
Lonlieness				-.09

Note. Step 1: $F(1, 113) = 8.12$, $p < .01$
Step 2: $F(1, 112) = 5.17$, $p < .05$
Step 3: $F(5, 107) = 3.79$, $p < .01$

Final $F = 4.89$***

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

Table 3	
Multiple Regression: Predicting the Use of MP3 Players	
	MP3 Player Use Per Day
Relaxation/Escape	0.23*
Stimulation	0.21*
Boredom	0.08
Entertainment	0.11
Loneliness	0.08
# of songs	0.15
Music downloads per week	0.14
R	0.37
R^2	0.14
F	10.5***
Df	2, 129
Note: Standardized regression coefficients. * p < .05, ** p < .01, ***p < .001.	

1 The five affinity items were: " I would rather use my iPod than do anything else," "I could easily do without using my iPod for several days [this item was reverse coded]," "I would feel lost without an iPod," "Whenever I'm unable to use my iPod, I really miss it," and "Using my iPod is one of the more important things I do each day."

2 The three satisfaction items were: "How valuable did you find your iPod use in the past week?", "How pleasing was your iPod use during the past week?", and "How satisfied were you with your use on an iPod during the past week?"