

Running head: MOBILE PHONES IN COLLEGE CLASSROOMS

Perceptions of mobile phones in college classrooms:
Ringing, cheating, and classroom policies

By

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Abstract

Over the last decade the mobile phone has become a rapidly emerging technology presenting both opportunities and challenges to many areas of the social landscape, including higher education. The purpose of this study was to explore some of the challenges associated with mobile phones in college classrooms. A sample of faculty and students was surveyed to assess the extent to which the technology is considered a serious source of distraction in the classroom, concerns about use of the technology for cheating, and attitudes about policies restricting it from ringing and being used during class. Collectively, participants reported strong perceptions of ringing as a problem and support for formal policies restricting mobile phones in college classrooms. Faculty/student status was not related to any of the attitude measures, but age consistently was. Younger participants tended to be more tolerant of mobile phone interruptions during class and reported less support for policies restricting ringing and use. The discussion offers implications and avenues for future research.

In recent years the mobile phone has become one of the fastest growing communication technologies ever, with subscriptions reaching over two billion worldwide (Wireless Intelligence, 2005). The far-reaching adoption and use of this technology is transforming our social landscape as individuals increasingly transform the public sphere into private space through mobile communication practices. The mobile phone is now a common artifact in myriad public places, offering a means for social connection for the user and unsolicited melodies, chirps, and half-conversations for co-present others. Because social norms for behavior in many of these places conflict with those for phone conversations (Love & Kewley, 2003; Palen, Salzman, & Youngs, 2001), mobile phone use in public presents as many challenges as it does opportunities, and is consequently becoming an active area of social science research. Studies have examined mobile phone use in many settings, including restaurants, grocery stores, buses, trains, and movie theaters (see for example Campbell, 2004; Campbell & Russo, 2003; Ling, 1996, 2002; Murtagh, 2001; Rice & Katz, 2003; Wei & Leung, 1999), yet there remains “no public consensus as to what should be appropriate boundaries or acceptable etiquette for these private behaviors in public space” (Wei & Leung, 1999, p. 13). The purpose of this study was to extend this line of research by exploring attitudes about mobile phone use in the college classroom, a setting that has received relatively little attention from mobile communication researchers.

While the literature on mobile phone use in classrooms is thin, there has been some research shedding light on the topic. Wei and Leung (1999) found classrooms to be among the least acceptable places for mobile phone use. Participants in their study reported being much more tolerant of mobile phone use on streets, at meetings, at friends’ houses, at shopping malls, and in public transportations systems. Campbell (2004) found similar results

in a study assessing perceptions of mobile phone use in various public settings. Participants in the study reported talking on a mobile phone while on public sidewalks, in grocery stores, and on buses to be socially acceptable, while they strongly regarded use of the technology in classrooms and movie theaters as unacceptable. Campbell and Russo (2003) also reported findings that mobile phone use in college classrooms is particularly appalling and that students frequently complain about the distraction from ringing during class time.

Despite sentiments against mobile phone use in the classroom, research shows that it is not an uncommon occurrence. For example, one study found that a third of university students in the US play video games on their mobile phones and laptops during class (Gilroy, 2004 as cited in Katz, 2005). Other studies from Korea, Norway, and the US indicate that various forms of mobile phone use take place in classrooms all over the world (Katz, 2005). In addition to using the technology as a form of diversion and social connection, some students have found ways to use the technology for cheating by accessing information online during an exam, taking and distributing photos of exams, and texting answers to exam questions (Katz, 2005).

It is important to recognize that not all mobile phone use in educational contexts is objectionable. For example, Katz (2005) reported on uses of the technology for tutoring, accessing Internet resources, and connecting students, instructors, and parents in efforts to coordinate school-related activities. Others have noted the potential of the technology to support anytime, anywhere learning (Mifsud, 2003), new forms of collaboration in distance education (Milrad, 2003), distributed intelligence (Fischer & Konomi, 2005), and knowledge communities through “m-learning,” the mobile evolution of Internet-based e-learning (Nyiri, 2002). Despite these constructive uses of the technology in educational contexts, mobile

phones are still generally regarded as a nuisance in the classroom, evidenced by the research discussed above and a study showing that 85% of a sample of higher education instructors in the US agreed that professors should ban mobile phones from being used in university classrooms (Gilroy, 2004 as cited in Katz, 2005). Indeed, many educational institutions in the US have formal policies banning mobile phone use in classrooms and on school grounds, especially in K-12 schools, although state laws against the technology in schools have loosened because of safety concerns in the aftermath of the school shootings in Columbine, Colorado in 1999 and the terrorist attacks on September 11, 2001 (Katz, 1999, 2005).

Building from these lines of research, the purpose of this study was to explore instructor and student attitudes about mobile phones in college classrooms. Although both opportunities and challenges associated with mobile telephony in college classrooms are fruitful avenues for research, the focus of the present study is on the latter of the two, recognizing the former as an important area for future investigation. That is, this study examined faculty and student attitudes about the mobile phone as a source of distraction during class, the mobile phone as a potential resource for cheating, and policies banning the technology from ringing or being used during class. Better understanding of the extent to which these are serious challenges can help in determining whether and how these challenges should be addressed. While the challenges associated with mobile phones in college classrooms are no longer new, the research in this area still is, resulting in a lack of theory to drive testable hypotheses about faculty and student perceptions of mobile phones in college classrooms. Therefore, this investigation was guided by exploratory research questions, beginning with the following:

RQ1: How do students and faculty perceive mobile phone use in the college classrooms?

Conceivably, certain participant characteristics may influence perceptions of mobile phones in college classrooms. For example, faculty and students may differ in their attitudes because of the very different roles these individuals play in the educational process. Therefore, another research question was developed to explore whether this characteristic and others grounded in the literature are related to participant perceptions.

In addition to faculty/student status, one's experience with the technology and degree of use may also influence attitudes about mobile phones in college classrooms. Other areas of mobile communication research support this supposition. For example, Mante (2002) found that users in a study regarded the technology as more of a necessity than did non-users, Katz, Aakhus, Kim, and Turner (2003) found that history of ownership factored into certain perceptions of the technology, and Palen, et al. (2001) found that tolerance for mobile phone use in public increased after participants became heavier users of the technology. These studies show that mobile phone ownership, degree of use, and experience with the technology can influence perceptions and attitudes towards it. Therefore, these variables were included in the analysis to see whether they predict participant attitudes.

Finally, this study included age and gender as predictor variables of interest. Research indicates that some trends in the adoption, perceptions, and uses of mobile communication technology can be linked to age and gender. For example, young people tend to regard the technology as fashion (Alexander, 2000; Green, 2003; Ling, 2003; Ling, 2004; Lobet-Maris, 2003; Skog, 2002) and use the mobile phone to demonstrate affiliation with peers (Fortunati, 2002; Johnsen, 2003; Licoppe, 2003; Ling, 2004; Ling & Yttri, 1999, 2002; Taylor &

Harper, 2001), while older adults have been found to emphasize mobile phone use for instrumental purposes and safety/security (Ling, 2004; Ling & Yttri, 1999, 2002). Regarding gender, Skog (2002) found that male participants in a study stressed the technical functions of mobile phones, while females valued social aspects, such as design, ring tone, and color. Research in Norway reveals differences in the adoption patterns of males and females when the technology was fairly new, but that these differences have diminished over time (Hjorthol, 2000; Ling, 2000; Ling, 2004; Ling & Haddon, 2003). The following research question was developed to explore the relationship between these participant characteristics and attitudes about mobile phone use in college classrooms and related policies.

RQ2: To what extent are participant characteristics (faculty/student status, mobile phone ownership, amount of monthly use, length of ownership, age, gender) related to attitudes about mobile phones in college classrooms?

Method

Participants

One hundred seventy-six individuals participated in this study (59% female, 41% male). Ninety-six participants were students, and 80 were faculty members from a variety of academic disciplines at a university in the Western region of the US. Among the students, 49 were seeking an undergraduate degree, 44 were seeking a graduate degree, and 3 were taking courses without seeking a degree. The mean age for the sample was 36 (25 for students, 49 for faculty). Eighty-four percent ($n = 148/176$) of the participants in the study owned a mobile phone. On average, participants reported 481 minutes of total mobile phone use per month, seven text messages sent per month, eight text messages received per month, and four years of mobile phone ownership.

Procedure

Surveys were used to assess participant attitudes about mobile phones in college classrooms. For the student portion of the sample, surveys were administered during the classes of undergraduate and graduate level courses in a variety of topics. All students who were solicited to participate agreed, resulting in a 100% response rate from this portion of the sample. Surveys were administered to the faculty portion of the sample using the campus mail system. One hundred twenty-five surveys were mailed to faculty members, and 80 were completed and returned, providing a response rate of 64% for the faculty sub-sample. Surveys took about 10 minutes to complete on average. All participants received an informed consent form notifying them that participation was voluntary and confidential. Data were collected during the 2004-2005 academic year. Prior to data collection, the author received permission to conduct the study from the university's institutional review board.

Instrumentation

An original self-report survey containing 27 items was used to assess attitudes about mobile phone use in college classrooms and demographic information. The attitudinal items were loosely grounded in the literature. For these items, participants were asked to respond using a 5-point Likert scale with response options ranging from "Strongly agree" to "Strongly disagree." For demographic items, participants were either prompted to circle a response from a list provided (e.g., faculty/student status) or to write in a numeric response (e.g., estimated average monthly minutes of use).

Prior to data collection, a pilot study with 31 participants was conducted to help with instrument development. Written comments were solicited from the pilot participants to evaluate item clarity. Reliability was assessed using a preliminary factor analysis and

Cronbach alpha scores. Based on participant feedback, preliminary factor loadings, and alphas, minor adjustments were made for the final version of the survey. Following data collection, negatively worded items were recoded, and a principal components factor analysis was conducted with a varimax rotation on the 20 items assessing attitudes about mobile phone use in the classroom and related policies (the other seven items were for demographics). The criteria for loading on a factor were (1) an eigenvalue greater than 1.00, (2) a factor loading of at least .60, and (3) maximum loading of .40 on a secondary factor. A Cronbach's alpha of at least .70 was used to further determine whether an item should be retained in the scale subsequent to factor analysis. Six items were removed from the analysis for not meeting these criteria. The remaining 14 items yielded four interpretable factors for attitudes about mobile phone use in college classrooms and policies. Table 1 shows factor loadings and descriptive statistics for each factor.

Four items loaded above .70 on the first factor (alpha = .86). These items were labeled "policy" because they reflect participant attitudes about policies restricting mobile phone ringing and use in college classrooms. Three items loaded highly on Factor 2 (alpha = .83), each .73 or greater. These items represent the extent to which participants regarded a ringing mobile phone as a serious distraction during class, so this factor was labeled "ringing." Factor 3 contains four items that loaded above .61 (alpha = .78). This factor was labeled "complaint" because the items assess the extent to which mobile phone use in the classroom is a perceived source of complaint among students and faculty members. Three items loaded .76 or higher on the fourth factor (alpha = .80). These items assess the extent to which the mobile phone is perceived as a potential resource for cheating, therefore Factor 4 was labeled "cheating."

[Insert Table 1 about here.]

Analysis

For RQ1, exploring collective attitudes about mobile phones in the classroom, descriptive statistics were examined with emphasis on the mean scores for the four dependent variables: ringing, complaint, cheating, and policies. A series of linear multiple regression analyses were conducted to evaluate RQ2, exploring how well participant characteristics predicted the attitude measures. Predictor variables, examined as one set of unordered predictors, included student/faculty status, mobile phone ownership status, average monthly minutes of use, history of mobile phone ownership, age, and sex. The criterion variables were the indices for the attitude measures: ringing, complaint, cheating, and policies. Continuous variables that were statistically significant predictors of the attitude measures (i.e., age) were re-parameterized into nominal-level data, so that mean scores for the categories (i.e., age groups) could be examined using multivariate analysis of variance (MANOVA) procedures.

Results

Research Question 1

Participants generally reported negative attitudes about mobile phones in college classrooms. As shown in Table 1, participants in the study regarded ringing during class as a serious problem ($M = 4.17/5.00$, $SD = .86$) and supported policies restricting mobile phones in college classrooms ($M = 4.02/5.00$, $SD = .89$). Overall perceptions of the technology as a resource for cheating and a topic of complaint were not as strong with means of 3.38 ($SD = .99$) and 3.19 ($SD = .94$), respectively. These findings point to ringing as a serious source of irritation and distraction for both students and faculty members in the study and support for formal policies placing restrictions on the technology during class time.

Research Question 2

Table 2 shows that the linear combination of the predictor variables (i.e., age, sex, faculty/student, mobile phone ownership, mobile phone usage) was significantly related to perceptions of policies restricting mobile phones in the classroom, $R = .37$, $F(6, 160) = 4.21$, $p < .01$; ringing as a class distraction, $R = .37$, $F(6, 160) = 4.14$, $p < .01$; and use of the technology for cheating, $R = .29$, $F(6, 160) = 2.40$, $p < .05$. Age was the only participant characteristic to consistently predict the attitude measures. Younger participants reported significantly less support for policies (beta = .31) and more tolerance for ringing during class (beta = .41) than did older participants. Age also approached significance ($p < .07$) for predicting for perceptions of the technology as a resource for cheating. Again, younger participants tended to report less concern about this than did older participants (beta = .25). The only other predictor variable yielding statistical significance was sex. Females reported being slightly less tolerant of ringing than did males in the study (beta = -.17.).

[Insert Table 2 about here.]

In order to further explore the effects of age on the attitude measures, this variable was re-parameterized from interval to nominal-level data, and MANOVA tests were conducted with age as the dependent variable with four levels (18-23, 24-32, 33-48, 49-75) and the attitude measures (i.e., policy, ringing, complaint, cheating) as the dependent variables¹. These levels for age were selected because each grouping represents 25% of the sample. Means and standard deviations for the attitude scores by age group are reported in Table 3. Results of the MANOVA revealed significant differences among the age groups, Wilks' $\Lambda = .76$, $F(12, 428) = 3.99$, $p < .001$, multivariate partial $\eta^2 = .09$. Analysis of variance (ANOVA) was conducted for each dependent variable as follow-up to the

significant MANOVA. A Bonferroni procedure was used to protect against Type 1 error, so each ANOVA was tested at the .01 level. Statistically significant differences were found in the ANOVAs for perceptions of policy, $F(3, 8.36) = 12.48, p < .001$, partial $\eta^2 = .19$; ringing, $F(3, 5.25) = 8.14, p < .001$, partial $\eta^2 = .13$, and cheating, $F(3, 3.51) = 3.74, p < .01$, partial $\eta^2 = .06$. Post hoc analyses to the significant ANOVAs consisted of pairwise comparisons, using Tukey's HSD, to determine which age groups differed significantly for each of these dependent variables. Table 4 shows that the youngest age group (18-23) differed significantly from all other age groups for perceptions of policy and ringing, and that this age group also differed significantly from the oldest group for perceptions of the mobile phone as a source of complaint and cheating. With one exception, other comparisons among the age groups did not yield statistical significance. Collectively, the findings demonstrate the trend that the youngest participants had more positive assessments of mobile phones in college classrooms than did older participants in the study, and that they were particularly more tolerant of ringing during class and less supportive of policies restricting their use than were participants in the other age groups.

Discussion

Ling (2004) explained that the mobile phone “clashes with many social situations, particularly those governed by a heightened sense of normative expectations” (p. 125). There is no question that class is one of those social situations heavily governed by social norms, which might explain why participants reported the mobile phone to be so distracting during class and supported policies restricting its use. On the surface, the reasons why the classroom is heavily governed by norms (and thus, why mobile phones should not ring during class) may seem self-evident. However, the normative expectations of the college classroom and

the resulting attitudes about mobile phones in class merit examination beyond what seems to be intuitive on the surface.

First, we can look at some of the properties of the typical classroom setting. Many settings, such as restaurants and public transportation, are simultaneously public and private spaces. That is, individuals in these environments are able to socially negotiate “symbolic fences” in order to establish their own territories for personal use, using architectural features such as booths to help them stake out private territory (Ling, 2004). Classrooms are distinct from these other settings because they tend not to allow for privacy to the same extent. Therefore, the atmosphere of a classroom is generally more weighted toward the public end of the public-private continuum, making it less appropriate for a mobile phone intrusion. In addition, class tends to be a collective-focus social gathering. Goffman (1963) explained that during collective-focus events, “participants turn their minds to the same subject matter and ... often a group atmosphere develops ... a heightened sense of moral responsibility for one’s acts also seems to develop” (p. 89). There is an expectation of politeness in the other settings as well, but when there is no single event to focus on collectively, distractions such as a mobile phone call can be less taxing on the experience of the audience and the constitution of the social stage. This is especially true in settings with little or no background noise (Ling, 2004). Public places such as restaurants, buses, and grocery stores frequently provide background noise for their patrons and chatter is both common and acceptable in these settings. Of course it depends on the context, but when a phone rings during class, it typically does not have to compete with background noise and easily garners the attention of co-present others. Even a vibrating phone can be a class interruption, especially if the device is rattling against a hard surface, such as a desk or table.

In addition to these properties, one must also consider the importance of the experience of being in certain social settings. Presumably, the classroom is a less appropriate place for mobile phone intrusions than many other places because of the importance of what people experience during class. When one goes to the grocery store, the experience of being in the store is usually secondary to the products one walks out with. Likewise, the experience of being on a bus is usually not as important as arriving at the destination. However, the experience of being in a classroom is another matter. Like the store or the bus, the classroom offers an ultimate purpose – to learn something (ideally, that is). However, the experience of being in the classroom is much more influential on the ultimate purpose than is the case with settings such as public transportation or the grocery store. Learning is heavily mediated through the experience of being in the classroom. If that experience is interrupted by a mobile phone distraction, there is more at stake than is the case with grocery shopping or commuting on public transportation. On a related note, the status of both class and teacher can be threatened by mobile phone ringing and use (Ling, 2004).

Although participants in the study collectively reported strong attitudes about ringing as a source of distraction and support for policies restricting mobile phone use in class, it is noteworthy that youth significantly predicted more tolerant attitudes, and that the youngest age group (18-23) was especially tolerant of mobile phones in the classroom when compared to the other age groups. No other participant characteristics were linked to the attitudinal measure, not even faculty/student status¹. This finding for age is consistent with previous research demonstrating that young people tend to have very positive perceptions of the technology and regard the mobile phone as an important tool for social connection. Adolescents are particularly known for their use of the mobile phone to demonstrate and

reinforce network membership (Johnsen, 2003; Ling, 2004; Ling and Yttri, 1999, 2002; Taylor & Harper, 2001). Although adolescents and young adults are members of distinct age groups, there are some strong similarities in their mobile phone adoption and usage patterns (see Ling, 2004). The research suggests that for both adolescents and adults in their early 20s, the mobile phone is an extremely important tool for connection to one's network of peers, whereas older adults have been found to use the technology more for logistical coordination and safety/security (Ling, 2004; Ling & Yttri, 1999, 2002). It is plausible that the important role the mobile phone plays in the social lives of young people contributes to their more tolerant attitudes about the technology in the classroom. This supposition applies not only to students, but teachers as well. As Katz (2005) concluded, "younger teachers seem to accept [mobile-communication technologies] more easily than their older counterparts" (pp. 102-103).

It is important to emphasize the fact that this study merely provides evidence for the trends in the findings; it does not prove them. As noted earlier, this is an exploratory study meant to be part of foundational research. The size and nature of the sample hinders the ability to infer the findings to the greater population, and future research should aim for randomized sampling techniques that take into account differences in geographic region, academic discipline, class size, etc. Although this was a modest study, the results do point to some constructive areas for further investigation. For example, if the findings for support for formal policies are indeed accurate, we still do not know the extent to which such policies are effective in reducing mobile phone intrusions during class. It would also be interesting to examine whether there are contradictions in people's beliefs and behaviors about the technology (i.e., if everyone is concerned about ringing during class, then whose phones are

ringing?). Additionally, future research should explore perceptions of various forms of mobile phone use in class and the social context of those uses. For example, it is conceivable that text messaging during class is considered rude, but that it is not as serious of a distraction as is ringing. It is also possible that factors such as ring volume and type influence level of distraction. Another area for further research is use of the technology for cheating. Future studies should explore the extent to which this is a problem and how students use the technology toward this end. Sometimes new communication technologies that make cheating easier can also be used to combat the problem. For example, while the Internet opens a world of opportunity for students to plagiarize, it also can be used to detect and hinder the practice with programs such as turnitin.com. Future research on mobile phone use for cheating should be open to ways the technology can effectively be used to prevent as well as support it.

Rather than seeking new solutions to address the challenges highlighted in this study, it may be tempting for instructors and institutions to simply impose restrictions on use of mobile communication technologies in college classrooms. The findings of this study provide evidence that such policies, at least those banning phones from ringing during class, may be well supported. However, it is important not to lose sight of the constructive uses of the technology in educational contexts. As noted earlier, mobile phones are being put to good use as tools for learning and educational coordination (Fischer & Konomi, 2005; Katz, 2005; Mifsud, 2003; Milrad, 2003; Nyiri, 2002). Therefore, researchers and policy makers should look beyond the problems associated with the technology and also explore the opportunities as this topic continues to gain momentum as an area of interest.

End Note

1. Even though faculty/student status was not a significant predictor of attitudes in the regression tests, the author was concerned it might confound the significant findings for age. Ideally, the effects of faculty/student status would have been controlled for during the MANOVA procedure on age groups by treating it as a covariate, however this would have violated the assumption that a covariate involves interval-level data. In order to address the concern of confounding effects, the author performed a MANCOVA with faculty/student status as the independent variable while controlling for age as an interval-level covariate. Results showed that faculty/student status did not account for a significant amount of variance, Wilks' $\Lambda = .98$, $F(4, 163) = 1.00$, $p = .41$, but that age did, Wilks' $\Lambda = .92$, $F(4, 163) = 3.76$, $p < .01$, multivariate partial $\eta^2 = .09$.

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Table 1

Factor Loadings and Descriptive Statistics ($N = 176$)

Item	Policy	Ringling	Complaint	Cheating
I would agree with a university policy against mobile phone use (i.e., talking, text messaging, etc.) during class time.	.79	.15	.20	.17
I would agree with an instructor's policy against mobile phone use (i.e., talking, text messaging, etc.) during class time.	.76	.16	.04	.14
I would agree with a <i>university</i> policy against mobile phones ringing during class time.	.75	.29	.25	.16
I would generally <u>not</u> agree with policies against mobile phone use in the classroom.	.71	.11	.21	.13
I think it is rude when students do not turn their ringers off or to silent mode during class.	.07	.81	.12	.09
When a mobile phone rings during class, it is a serious distraction.	.33	.75	.25	.02
I find it bothersome when a mobile phone rings during class time.	.30	.74	.23	.12
I do <u>not</u> think mobile phones are a serious problem in my classes.	.13	.25	.74	.17
Too often do I hear mobile phones ringing during class.	.06	.16	.74	.02
I complain to others about mobile phones ringing or being used in classrooms.	.30	.27	.69	.12
I hear people complain about mobile phones ringing or being used in classrooms.	.22	.03	.62	.34
I have heard/read about mobile phones being used for cheating in school.	.07	.16	.03	.84
I think mobile phones have the potential to be an effective resource for cheating on tests, quizzes, etc.	.20	.11	.15	.83
I think mobile phones have the potential to be	.18	.01	.37	.77

an effective resource for cheating on tests, quizzes, etc.				
I do not mind when someone answers his/her mobile phone during class if he/she leaves the room to answer the call.	.06	.40	.07	.14
Generally, I think mobile phones are a source of distraction in my classes.	.28	.45	.45	.17
I do not mind when students use their mobile phones during class as long as they are not <i>talking</i> on the phone (i.e., it's OK if they text message, browse the Web, etc.)	.53	.06	.04	.05
If a student gets an important call on his/her mobile phone during class, I think it is OK for him/her to take the call during class time as long as he/she leaves the room.	.29	.03	.22	.04
I would agree with an instructor's policy against mobile phones <i>ringing</i> during class time.	.63	.47	.18	.09
It irritates me when a student answers a mobile phone during class.	.53	.48	.23	.11
Eigenvalues	3.81	2.93	2.74	2.32
% of variance	19.05	14.63	13.72	11.62
Cronbach's alpha	.86	.83	.78	.80
Mean	4.02	4.17	3.19	3.38
Standard deviation	.89	.86	.94	.99

Note. Descriptive statistics for factors with multiple items are reported at the composite level (i.e., on a scale of 1-5), rather than the aggregate level (e.g., 5–20). Range = 1-5 for all factors.

Table 2

Multiple Regression Results for Variables Predicting Attitudes about Mobile Phones in University Classrooms

Predictor variables	Attitudes about policy			Attitudes about ringing			Source of complaint			Resource for cheating		
	<i>t</i>	β	Beta	<i>t</i>	β	Beta	<i>T</i>	β	Beta	<i>t</i>	β	Beta
Age	2.32*	.02	.31	3.13**	.02	.41	.57	.01	.08	1.83 [#]	.02	.25
Sex	-1.79	-.25	-.14	-2.27*	-.30	-.17	-1.37	-.21	-.11	.22	.03	.02
Student/faculty	.26	.06	.03	-.85	-.20	-.11	.46	.12	.06	-.45	-.12	-.06
Owner/non-owner	-.64	-.14	-.06	-1.43	-.31	-.13	-1.73	-.42	-.16	.98	.25	.09
Minutes of use	-.66	.00	-.06	.54	.00	.04	-.57	.00	-.05	-1.53	.00	-.13
History of ownership	-.25	.00	-.02	-.70	.00	-.06	.29	.00	.02	1.09	.00	.09
Linear combination	$R=.37, F(6, 160)=4.21^{**}$			$R=.37, F(6, 160)=4.14^{**}$			$R=.25, F(6, 160)=1.73$			$R=.29, F(6, 160)=2.40^*$		

Note. [#] $p < .07$. * $p < .05$. ** $p < .01$.

Table 3

Means and Standard Deviations for Attitude Measures by Age Group

Age group	Policy		Ringing		Complaint		Cheating	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
18-23	3.36	.87	3.67	.79	2.81	.90	3.15	.97
24-32	4.09	.77	4.30	.63	3.21	.75	3.18	.95
33-48	4.29	.81	4.33	.86	3.31	.98	3.41	1.07
49-75	4.29	.82	4.44	.89	3.36	.99	3.78	.87
Overall	4.00	.90	4.18	.85	3.17	.93	3.38	.99

Note. Higher mean scores reflect more support for policies and stronger perceptions of ringing as a distraction, students and faculty complaints, and use for cheating.

18-23 ($n = 43$), 24-32 ($n = 41$), 33-48 ($n = 43$), 49-75 ($n = 42$).

Table 4

Tukey HSD Post Hoc Comparisons of Attitudes among Age Groups

Mean Differences for Attitude Scores				
Comparison	Policy	Ringing	Complaint	Cheating
18-23 * 24-32	-.72**	-.63**	-.40	-.02
18-23 * 33-48	-.93**	-.66**	-.50	-.26
18-23 * 49-75	-.93**	-.78**	-.55*	-.62*
24-32 * 33-48	-.20	-.03	-.10	-.23
24-32 * 49-75	-.21	-.15	-.15	-.60*
33-48 * 49-75	.00	-.12	-.05	-.37

Note. A positive mean difference reflects a higher mean score for the first age group in the comparison.

Higher mean scores reflect more support for policies and stronger perceptions of ringing as a distraction, students and faculty complaints, and use for cheating.

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