Exploring Student and Faculty Reactions to Smartphone Policies in the Classroom

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Abstract

The current studies examined attitudes about classroom cell phone usage and reactions to cell phone policies among students and faculty. Study 1 documented students' and faculty's perceptions of appropriateness of cell phones in the classroom and about what classroom policies should be. Students reported greater leniency regarding cell phone use in the classroom and suggested stricter penalties for inappropriate use. Study 2 surveyed faculty and students about four cell phone policies ranging in level of leniency. The results indicated as policy leniency increased, cell phone use increased and enforcement decreased. Study 3 evaluated students' reactions to actual classroom cell phone policies. Students reported using their phones more than they anticipated and rated policy enforcement lower than expected, except under a prohibitive policy. These results indicate that differences remain between faculty and students and that there is a mismatch between what students prefer and perceive as effective cell phone policies.

INTRODUCTION

Cell phones are ubiquitous on college campuses, with the majority of faculty and students reporting that they own and use them (e.g., Baker et al., 2012; Tindell & Bohlander, 2012). Unfortunately, problematic internet and cell phone use among college students is increasing (Carbonell et al., 2018), and often a mismatch between student and faculty perceptions on phone use is observed. In fact, there exists an unresolved debate regarding whether smartphones serve as a hindrance or learning tool in classrooms (e.g., Baker et al., 2012; Langmia & Glass, 2014). The purposes of the current studies are 1) to attempt to replicate findings regarding similarities and differences in opinions regarding cell phone use in the classroom and 2) to examine student and faculty perceptions regarding cell phone policies and penalties for inappropriate use. Prior to describing the current study, it is important to understand where the differences in opinion (e.g., phones as a help or hinderance) originate from.

First, cell phones can afford opportunities to engage with material in different ways. For example, they can be used as "clickers" to encourage responding and critical thinking during lecture (Lee et al., 2013; Ma et al., 2018). Cell phones (and other devices) can also provide an opportunity to search for information when questions arise. For instance, Grinols and Rajesh (2014) suggested that smartphones could be used as a source of information in the completion of applied projects in the classroom. As such, faculty do encourage the use of cell phones (and laptops) in class to enhance learning (Loague et al., 2018). Students also recognize the value in being allowed to use their phones for class-related purposes of both accessing relevant information and to go beyond the content covered in class (Santos et al., 2018). Thus, cell phones, when used for academic purposes, may enhance the classroom experience and promote learning.

On the other hand, cell phones can also impede student learning. Ringing cell phones have been shown to impair student learning during both classroom and laboratory-based cognitive activities (e.g., End et al., 2010; Röer et al., 2014; Shelton et al., 2009). Perhaps more intrusive than an occasional cell phone ring is off-task cell phone use. A variety of studies have demonstrated that such cell phone use, including texting, surfing the internet, or playing games, impairs student learning (e.g., Bjornsen & Archer, 2015; Dietz & Henrich, 2014; Kates et al., 2018; Kuznekoff et al., 2015; Wood et al., 2012). Research suggests that although students often engage in unconscious multitasking in the classroom, most may not be aware of the decrements in their ability to encode information as a result of this divided attention, nor are they likely to realize that there is not an instant switch in attention (Grinols & Rajesh, 2014). Further, research suggests that students use their cell phones to avoid topics that are boring (e.g., Bolkan & Griffin, 2017; McCoy, 2016; Santos & Bocheco, 2017; Stephens & Panoja, 2016), which may further impair learning, as students use cell phones to disengage.

To address off-task classroom cell phone use, faculty have used a variety of methods. For example, Katz and Lambert (2016) provided bonus points to students who voluntarily put their cell phones in a box at the front of the room during class. They found that students who gave up their phones also scored better on exams but proposed that better and more motivated students may be more likely to participate and also perform better in classes, regardless. Roberts (2016) penalized cell phone use in the classroom and anecdotally reported that cell phone use was nearly eliminated over the course of four years. In a controlled experiment, Lee and colleagues (2017) found that taking students' phones away during lecture improved student performance on a test in a mock classroom, compared to students who were allowed to use their phones or students who were instructed not to use their phones. Similarly, in an actual classroom, Redner and colleagues (2020) punished cell phone use on some days (i.e., took grade points away for cell phone use during class) and allowed cell phone use on other days. They found that on days with a cell phone ban, students used their phones less, compared to days without a penalty for cell phone use. Additionally, students scored better on quizzes that covered material from the days with the ban, compared to quizzes that covered material from the days without a penalty for cell phone use.

While studies have evaluated strategies to stop inappropriate cell phone use and improve student learning, survey data also indicate that many instructors use policies, such as banning cell phone use in the classroom, with the goal of improving the learning environment (Berry & Westfall, 2015; Santos et al., 2018). Forkosh-Baruch and Meishar-Tal (2016) suggested that cell phone policies that involve attempting to stop inappropriate use focus on preventative measures. There is contradictory evidence about students' perceptions of such policies. For example, McCoy (2016) found that 52.83% of his sample believed that it was helpful to have policies to limit off-task cell phone use. However, students in another study believed that these policies were the least effective policies (Berry & Westfall, 2015). Further, students tend to disagree with the implementation of policies that ban cell phones or that require students to give up their phones (McCoy, 2016; Santos & Bocheco, 2017). In addition, recent research suggests that students feel that their personal freedoms are impeded by restrictive cell phone policies, which causes them to engage in behaviors to re-secure their feeling of freedom. These behaviors include using their cell phones even though it is restricted and engaging in behavior to seek revenge or to gain sympathy from others for perceived unfairness of said policies (Tatum et al., 2018). Surprisingly, however, when researchers restricted students from using cell phones during a single class period, students did not report significant increases in negative feelings or experience significant craving for their phones (Katz et al., 2018). In addition, students in a class with a restrictive cell phone policy actually rated the course *higher* than did students in a class with a relaxed cell phone policy (Lancaster, 2018).

However, there are other approaches that faculty may take. As an alternative to stopping unwanted use, faculty could take a proactive approach to teach students how to appropriately manage cell phones. For example, Ali (2013) proposed that a focus on teaching about etiquette may be beneficial for students to learn about appropriate use. Simsek (2018) recommended that faculty should focus on developing policies that encourage phone use to improve learning, rather than focus on punishing inappropriate cell phone use. Further, Flanigan and Kiewra (2018) advocated both teaching about the consequences of off-task cell phone use and self-regulation of cell phone use while also using more active learning activities in the classroom to minimize boredom. Lastly, Forkosh-Baruch and Meishar-Tal (2016) suggested that professors may adopt an indifferent perspective, in which the instructor either has no policy or does not enforce a policy. Nevertheless, research has shown that these permissive or indifferent policies are associated with poorer academic performance in the classroom (e.g., Aaron & Lipton, 2018).

While experimental research has attempted to implement various consequences for cell phone use (e.g., reinforcing nonuse in the Katz and Lambert [2016] study or punishing use in the Redner and colleagues [2020] study), other studies have also surveyed students and faculty about possible consequences for failure to follow stated cell phone policies. For example, in McCoy's (2016) study, the vast majority (77.19%) of students believed that the appropriate consequence was to talk to the student while more severe penalties of being asked to leave class (13.24%) or having the cell phone confiscated (9.57%) were supported by far fewer students. Similarly, Baker and colleagues (2012) found that among both faculty and students, the favored approaches for dealing with noncompliance with a cell phone policy was a private conversation with the offending student or making a joke in class about the cell phone use. In addition, Lancaster and Goodboy (2015) suggest that the best approaches for dealing with cell phone use include both rewarding appropriate cell phone use (or nonuse) and punishing inappropriate use.

Given that students and faculty may have opposing attitudes regarding cell phone use in the classroom, research has been conducted to evaluate similarities and differences of opinion. Across studies, there has been a consistent pattern of students having more accepting attitudes of cell phone use than faculty (Baker et al., 2012; Santos et al., 2018). In addition, there are differences in perceptions of cell phone policies, such that students continue to use their phones regardless of instructor policies banning cell phone use (Santos et al., 2018). However, given the rapid changes in technology, changing societal norms regarding cell phone use, and lack of research evaluating college students in the Midwestern United States, Study 1 aimed to explore current student and faculty perceptions of cell phone use in the classroom. Further, given the limited research on classroom policies, the current series of studies also aimed to understand attitudes regarding cell phone use policies and enforcement of such policies in the classroom among students and faculty. In Study 1, we compared faculty and student perceptions on cell phone policies through a series of quantitative ratings and by qualitative analysis of what cell phone policies *should* be. In Study 2, we compared faculty and students on their evaluation of sample cell phone policies. In Study 3, we asked students to report their perceptions of cell phone policies in actual courses both at the beginning and end of the semester.

STUDY 1

The purpose of Study 1 was two-fold. First, we aimed to replicate the Baker and colleagues (2012) study to determine whether differences among faculty and students continue to exist in attitudes regarding cell phones in the classroom. Second, we evaluated student and faculty perceptions regarding what cell phone policies should be in two ways. We asked students and faculty to rate their level of agreement with statements regarding cell phone policies and enforcement. Then we compared faculty and students' written responses to three questions regarding what a cell phone policy should include, what penalties should be imposed for inappropriate cell phone use, and how cell phone policies should be enforced. Specifically, we hypothesized that:

H1: Students would be more accepting of cell phone use in the classroom than faculty.

H2: Students would be less likely to propose strict cell phone policies than faculty.

H3: Students would be less strict with enforcement plans for violating cell phone policies than faculty.

METHOD
Participants
A total of 227 students from a mid-sized Midwestern university (122 females; 102 males; 3 other) completed a survey for course credit. Nearly all (99.6%) of the students reported owning a cell phone. There were 128 first-year students, 59 sophomores, 21 juniors, 17 seniors, and 2 dual- enrolled students. Students reported race/ethnicity as follows: Caucasian (87.7%), Other Asian (4.8%), African American (4.4%), Hmong (2.6%), Mexican American (1.8%), American Indian/Alaska Native (1.3%), Native Hawaiian (0.9%), Other Hispanic (0.9%) Laotian (0.4%), and Puerto Rican (0.4%). Nearly all (97.8%) of the sample were degree-seeking students.

Ninety faculty members (44 females; 36 males; 10 chose not to respond) completed the voluntary survey. The majority of the faculty sample owned a cell phone (95.6%). Faculty reported race/ethnicity as follows: Caucasian (77.8%), Other Asian (3.3%), Other Hispanic (2.2%), and American Indian or Alaska Native (1.1%). A total of 26 were classified as academic staff, 18 were assistant professors, 22 were associate professors, and 16 were full professors. Eight respondents chose not to answer this question. Instructors spent an average of 8.76 years ($SD = 7.10$) at their current university. In sum, 95.7% of faculty reported teaching at least some classes face-to-face, 19.6% taught hybrid courses, and 55.4% taught online. Note that faculty typically teach 4-5 courses per semester and may teach courses in different formats. Thus, these percentages will not sum to 100.

Materials
Technology Use. A portion of Baker and colleagues' (2012) electronic devices questionnaire was used for the purposes of this study, using questions only related to cell phone use. The full survey contained 54 questions across several major topics: smartphone habits, reactions to smartphones in the classroom, and thoughts on classroom policies and enforcement. A subset of the questions related to perceptions about cell phone use and cell phone policies were included for the purposes of the current study.

Demographics. Participants were asked to report their gender, age, race, and ethnicity. Students were additionally asked whether they were degree-seeking and for their year in school. Faculty were asked to additionally report their position title, duration of employment at the university, and the types of courses they taught (i.e., face-to-face, hybrid, online).

Procedure
This research was approved by the university's Institutional Review Board. During the spring of 2018, undergraduate students enrolled in psychology courses at a Midwestern university were offered the opportunity to participate in the study online in exchange for course credit. A separate sample of faculty from the same university was sent an e-mail invitation to complete the survey. Completion of the survey required approximately 15 minutes.

RESULTS
Figure 1 presents information aimed at replicating earlier quantitative studies (H1) of cell phone attitudes toward cell phone use in the classroom (i.e., Baker et al., 2012). A series of independent samples t-tests were conducted (using a Bonferroni correction to account for the potential increase in familywise error). Students and faculty significantly differed on four of eight items, all with medium to large effect sizes. Consistent with H1, students reported means reflecting greater leniency or flexibility regarding phones in the classroom. Although there were significant differences between faculty and students, opinions were shared for two items, where their mean agreement with the statement was on the same side of the scale midpoint, but with students seeking significantly more freedom. In only two cases, the significant differences crossed the midpoint, where one group generally agreed and the other group disagreed (i.e., phones should be allowed in the classroom and phones should be allowed as long as they are silent, with students indicating agreement with each of these statements). For the remaining items, students and faculty reported similar views.

The next set of analyses address the primary contribution of this study, extending what we already know about attitudes regarding cell phone *use* to that of cell phone *policies* in the classroom. This question was explored in two ways. First, students and faculty were asked to report their agreement with six statements about policies (Figure 2). Again, a series of independent samples t-tests with a Bonferroni correction were run to explore whether students and faculty differed in their views on policies about phones. For four of the six statements, significant differences were uncovered, with small to large effect sizes present. As was the case for attitudinal items above, students generally reported a desire for more flexibility, consistent with H2. Also consistent with the attitudinal items, for two of these differences, faculty and students differed in the degree of agreement, but not in whether they agreed or disagreed with a statement (i.e., both groups' mean agreement was on the same side of the scale midpoint). For two items (that the university should have a policy banning cell phone use and that there should be a consistent written policy applied to all courses) faculty agreed, while students disagreed. Both students and faculty, however, agreed that the policies should not be democratically determined on a class-by-class basis but that said policies should be discussed in class.

To further evaluate perceptions about cell phone policies, both students and faculty were asked to provide written responses to three questions on classroom cell phone policies. Two faculty members and two undergraduate students themed these responses independently (one faculty member and one student per comment) after an initial meeting during which the categories were generated. A theme consisted of a category with three or more statements. Any disagreements were discussed to come to consensus. Summative results are presented in Tables 1-3 by question. A moderate number of themes were reported by participants, suggesting a lack of consensus on this topic. The 3 or 4 most commonly cited themes are reported here, but please see the Tables 1-3 for a full list of themes. What faculty classroom cell phone policies consist of, and what students feel it should consist of, was asked first. The three most commonly reported faculty themes included no use allowed/stored (n = 47), phones must be silenced (n = 18), and lack of policy (n = 13; see Table 1). Students' most commonly reported suggestions for cell phone policies in the classroom differed from faculty members' and suggested an explicitly more flexible situation: instructor determines policy (n = 69), allowed if not distracting (n = 41), allowed (n = 37), and phones must be silenced (n = 34). These results support H2 suggesting that students would be less strict in what policies should be regarding classroom cell phone use.
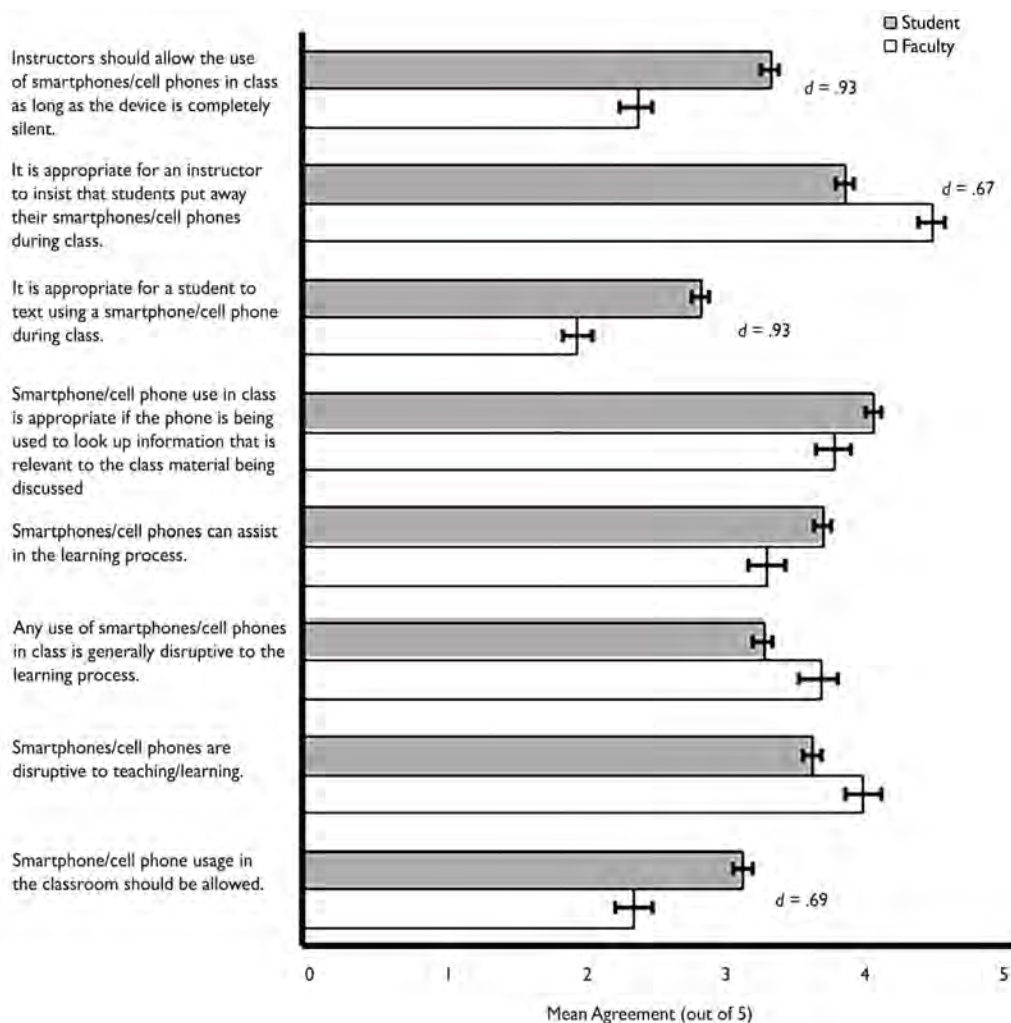
Figure 1. Comparison of Faculty (n = 80-83) and Students (n = 216-223) Regarding Cell Phone Attitudes in the Classroom (Mean ± SEM)
Note. Where a significant difference between students and faculty was observed, effect sizes are presented to the right (Cohen's d)

Table 1 Faculty and Student Qualitative Comments Regarding Classroom Cell Phone Policy

"What is your policy"?

Category	N	Faculty Exemplar	Category	N	Student Exemplar
No use, stored	47	"Technology should be put away."	Instructor determines policy	69	"The smartphone/cell phone policies should be determined by the professor."
Phone silenced	18	"Ask them to be on silent…"	Allowed if not distracting	41	"I think smartphones should be allowed in classrooms as long as they are on silent and they are not disrupting anyone."
No policy	13	"I don't have one."	Allowed	37	"Allow it in the classroom."
Allowed for emergencies	11	"No smartphone use unless an emergency."	Phone silenced	34	"I think the policy should just be that they need to be silent…"
Monitored	10	"No restrictions unless it is disruptive to anyone in the classroom."	Allow use for personal student need	31	"If it's an emergency you should be able to have it out."
Allowed for classroom use	9	"…Cell phones are often used during class projects."	No use, stored	22	"Any use of phones is prohibited."
Other	9	"Turn off unless there is a clear reason to keep on, discussed up front with instructor."	Allowed during independent work time or for class purposes	19	"You shouldn't be using the phone in-class unless its during class work time."
Allowed	7	"I'm okay with it as long as students are not disrupting the learning of others."	Not allowed during exams or select activities	16	"No use during exams…"
Allowed during breaks	5	"Cell phones can only be used on breaks."	Address students case by case if problematic	8	"They should be determined on a case by case basis."
Not monitored	3	"Ask people not to use them, but don't really police it."	Other	6	"I think that the smartphone/cell phone policy should include the amount of distractions that could cause other students if the policy is not followed."
			Mutual agreement	4	"…There should be a happy medium between student and instructor."
			Allowed during breaks	3	"If free time, you can use it."

Table 2 Faculty and Student Comments Regarding the Penalty for Disregarding the Cell Phone Policy

"What is the penalty for disregarding the cell phone policy"?

Category	N	Faculty Exemplar	Category	N	Student Exemplar
Natural consequences/no penalty	24	"There is no penalty."	Instructor tells student to leave classroom	69	"Asked to leave the classroom."
Verbal warning	16	"Student is warned to put it away."	Point penalty	53	"Loss of participation points."
Ask student to leave	13	"Ask the student to leave."	Verbal warning	49	"Warning."
Point penalty	12	"Point deduction."	Progressive consequences	46	"First verbal warning, second taken away, and if it still is an issue all classmates must have phones taken away and can be returned after class."
Progressive consequences	7	"Points are lost for the first instance and the amount of lost points increases for each distraction."	Instructor takes phone away	39	"Take the phone away."
Other	6	"The wrath of me."	Natural consequences/no penalty	30	"The student is punishing themselves by not effectively learning if they're constantly on their phone…"
Instructor Takes Phone	4	"I take it and put it on the teaching station. They pick it up when they leave."	Student instructed to store phone	21	"The teacher could tell the student to put it away."
Entertainment	3	"Students are required to perform the ring tone in front of the class if their phones ring."	Instructor discretion	18	"The penalty should be determined by the instructor and what they're determined cell phone policy is and how strictly they want to take it."
			Other	17	"Having a phone bucket to put phones in before class."
			Instructed to stop using phone	6	"Tell them to please stay off their cell phone."
			Academic misconduct	6	"…they should have a meeting with the dean of students to discuss the issue."
			I don't know/care/no preference	4	"I am not sure what the penalty should be…"

Table 3 Faculty and Student Comments Regarding Classroom Cell Phone Policy Enforcement

"How is the cell phone policy enforced"?

Category	N	Faculty Exemplar	Category	N	Student Exemplar
Verbal warning	39	"Verbal warning."	Verbal warning	62	"Initial requires and reminders if necessary."
Not enforced	17	"I don't."	Instructor discretion	47	"However they see fit."
Student instructed to store phone	12	"Explicitly ask offending students to put it away."	Syllabus policy	44	"It should be written in the syllabus…"
Instructor discretion	8	"Carry out whatever warning is issued."	Other	29	"…announce it on the first day of class."
Honor system	7	"I rely on them to police themselves…"	Enforce policy strictly	25	"Stay true to the penalty."
Ask student to leave	6	"If I observe use I ask the student to leave."	Stored/don't bring to class	23	"I feel like they should tell the student to put it away if it is disrespectful and disruptive."
Point penalty	5	"Grade is reduced if I see a student using their phone…"	Not enforcement	23	"They shouldn't."
Progressive consequence	4	"I give a warning. I give a 2nd, really stern warning. I ask them to leave class or leave their phone with me until the end of class."	Enforce stated syllabus policy	21	"Include it in syllabus, discuss it in class, and enforce it when needed."
Count as absent	3	"I have marked students absent for playing games on phones throughout entire class sessions."	Point penalty	17	"By taking points if students don't follow the policy."
Instructor takes phone away	3	"Keep taking the phone away and threatening no return."	Ask student to leave	13	"If a student doesn't follow the rules then they will be asked to leave."
			Unsure	8	"I have no idea."
Other	3	"Marked in a checklist."	Instructor takes phone away	5	"Phone has to be given to the instructor for the class course."
			Allowed for emergencies	4	"…used for emergencies only."

The second question regarded what the penalty for disregarding the policy is/should be. Faculty commonly reported the following: natural consequences/no penalty (n =24), a verbal warning (n = 16), student is asked to leave the classroom (n = 13), and a point penalty (n = 12). Students, interestingly, proposed somewhat more severe consequences: student asked to leave classroom (n = 69), a point penalty (n = 53), a verbal warning (n = 49), and a series of progressive penalties (n = 46), which contradicted H3 that students would be less strict than faculty in enforcement plans for violating classroom cell phone policies. The final question asked about enforcement of the policy. Faculty most commonly reported the following themes: a verbal warning (n = 39), lack of enforcement (n = 17), and instruction to store phone (n = 12). When students were asked how policies should be enforced, they most commonly suggested the following: a verbal warning (n = 62), instructor discretion (n = 47), and via what is listed in the syllabus policy (n = 44), which also contradicted H3.

DISCUSSION

Results suggest that, consistent with Baker and colleagues (2012), there continues to be a divide in attitudes regarding cell phones
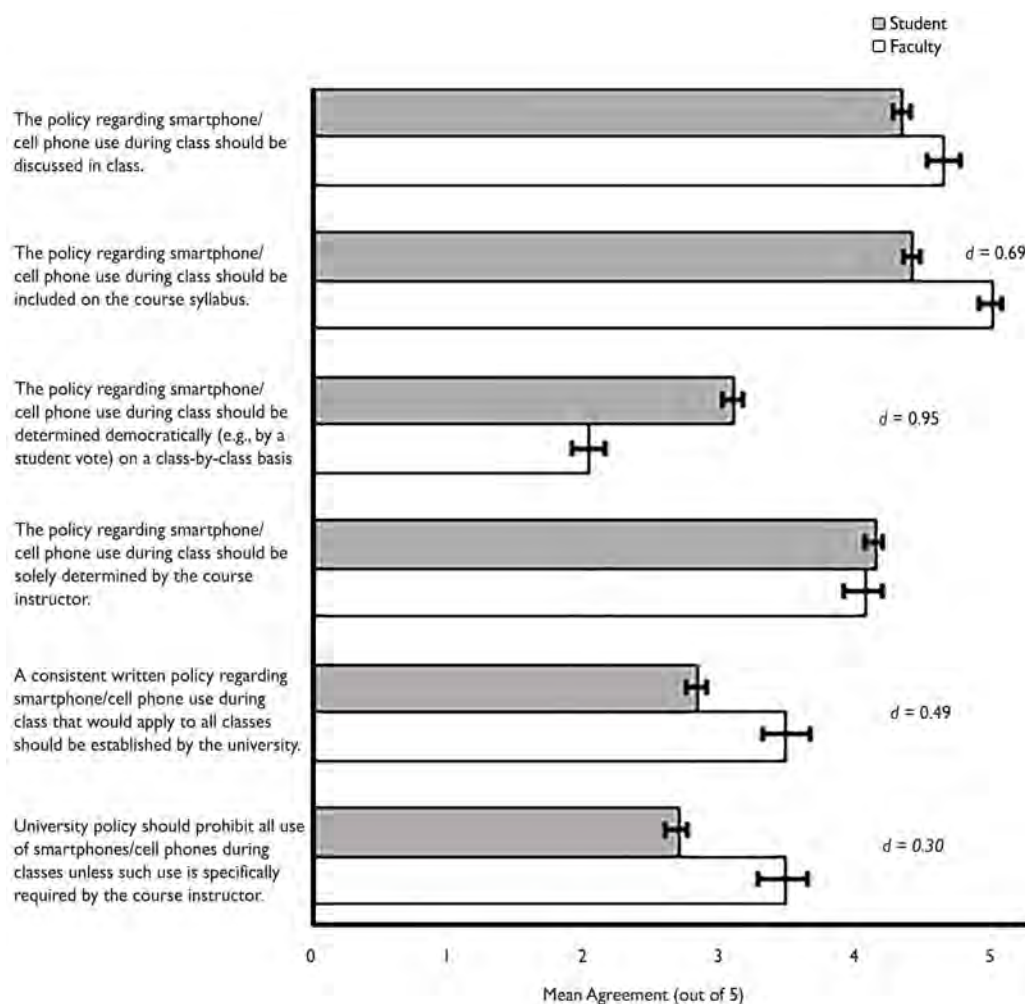
Figure 2. Comparison of Faculty (n = 80-83) and Students (n = 216-223) Attitudes Regarding Cell Phone Policies in the Classroom (Mean ± SEM)

in the classroom. However, the degree of difference in attitudes about cell phone use between faculty and students appears to be decreasing. Generally, students' attitudes on cell phones in the classroom have remained fairly consistent over time, when comparing the current study to previous research (e.g., Baker et al., 2012). However, the current faculty sample appears to be *less* disagreeable with cell phone use in the classroom, relative to Baker and colleagues' study.

In addition, a similar pattern of greater acceptance emerged for other perceptions about cell phone use in the classroom, including whether cell phones can assist with the learning process in the current study. Our results were also remarkably similar to those of Santos and colleagues' (2018) outcome in comparing students' and faculty's perceptions about silent cell phone use. These results may suggest that faculty are either changing their perspective on cell phone use or are resigned to their presence. In addition to documenting current perceptions on use and attitudes regarding cell phones in the classroom, the primary contribution of Study 1 was in exploring student and faculty attitudes toward classroom policies. We found both quantitative and qualitative differences between students and faculty. However, unexpectedly, students proposed somewhat more severe consequences than faculty for disregarding a classroom phone policy. Our results are not consistent with past research that found that students favored less severe consequences (Baker et al., 2012;

McCoy, 2016). Interestingly, Berry and Westfall (2015) reported that students perceived that more severe penalties, such as point deductions or removing students from class, were more effective than less severe penalties like verbal warnings, which indicates a potential mismatch between what students prefer and what will actually modify their behavior. There are a variety of potential explanations for this finding, but without asking a follow up question regarding the reasons for the proposed penalties, suggestions would be only speculative at this point. In sum, students were generally more accepting of phones/phone use in the classroom than faculty, but when asked to think about penalties for not adhering to policy, students were stricter than faculty.

STUDY 2

Study 2 extended our understanding of cell phone policies in the classroom by exploring faculty and student perceptions of different sample classroom cell phone policies: banning cell phone use, allowing cell phone use during breaks, allowing cell phone use for academic purposes, and allowing cell phone use at any time. Students and faculty were presented with one of four different cell phone policies. They were then asked to rate whether students would use their cell phone under the given policy and whether the policy was enforceable. Specifically, we hypothesized that:

H4a: Students would be less likely to believe that cell phone policies would reduce student cell phone use than faculty.

H4b. Students and faculty would perceive that the different types of policies would affect student behavior differently.

H5a: Students would rate any type of policy as more enforceable than faculty.

H5b. Students and faculty would rate the different types of policies as differentially enforceable.

METHOD
Participants
A total of 203 students from a mid-sized Midwestern university (114 females; 83 males; 5 alternative identity; 1 chose not to respond) completed the survey for course credit. There were 91 first-year students, 56 sophomores, 31 juniors, and 24 seniors, and 1 chose not to respond. Students reported race/ethnicity as follows: White (90.6%), African American (2.5%), Other Asian (2.5%), Hmong (1.0%), American Indian/Alaska Native (1.0%), Native Hawaiian (1.0%), Vietnamese (1.0%), and Laotian (0.5%). Students' average age was 20 years (*SD* = 2.63).

One hundred and two faculty members (45 females; 51 males; 1 alternative identity; 5 chose not to respond) completed the voluntary survey. A total of 33 were classified as academic staff, 27 were assistant professors, 18 were associate professors, and 21 were full professors, and 3 chose not to respond. Instructors spent an average of 8.52 years (*SD* = 6.85) working at their current university. Faculty reported race/ethnicity as follows: White (94.7%), African American (3.2%), and Other Asian (2.1%). The mean faculty age was 48 years (*SD* = 12.31). Only those participants (faculty and students) who passed a manipulation check about which policy they read were included in the results

Materials
Cell phone policies. Four cell phone policies were developed: 1) banning all cell phone use (No Use); 2) allowing cell phones to be used for during breaks but not during class (Breaks); 3) allowing cell phone use during for class-related purposes (Academic Use); and 4) allowing cell phone use whenever the student chooses (Laissez Faire). Each cell phone policy contained the same first two sentences. The third sentence was modified to reflect the specific policy. The wording for the policy banning all cell phone use is as follows: "I hope that you actively participate in this course. I find that active participation is the best way to engage you in learning the material (and it makes class discussions more fun). With this in mind, cell phones should be turned off and put away, and absolutely no phone use is permitted during class."

Cell phone policy questionnaire. Participants were asked to select a statement that they perceived best matched the policy that they were presented as a manipulation check. On a scale of 1 (*not at all*) to 5 (*very much so*), participants were asked to rate the enforceability of the policy they were presented over three items. An example item was, "The instructor is able to enforce violations of the cell phone policy." A single statement was used to assess participants' perceptions of student cell phone use under the policy presented on a scale of 1 (*not at all*) to 7 (*extremely likely*). Students were presented with one version: "Based on this policy, how likely would you be to use your phone in this classroom." Faculty were presented with a modified version of the same question, "Based on this policy, rate how likely you believe students would use their phones in this classroom."

Procedure
This research was approved by the university's Institutional Review Board. During the fall of 2019, undergraduate students enrolled in psychology courses at a Midwestern university were offered the opportunity to participate in the study online in exchange for course credit. A separate sample of the faculty from the same university were sent an e-mail invitation to complete the survey during the fall of 2019 and the winter of 2020. Completion of the survey required approximately 5 minutes.

RESULTS
To explore H4, a $2_{(status)} \times 4_{(policy)}$ between-subjects ANOVA was conducted on behavior ratings (Figure 3). First, there was a main effect for policy on behavior ratings, $F(3, 300) = 32.88$, $p < .001$, $\eta_p^2 = .25$. Bonferroni post-hoc tests revealed significant differences in the likelihood of use in class such that phone use would become more likely in class as the policies moved from most strict (No Use) to most lenient (Laissez Faire) in this order: No Use, on Breaks, for Academic Use, Laissez Faire approach (where phone use was most likely). There was also a main effect of status on behavior ratings, $F(1, 300) = 57.76$, $p < .001$, $\eta_p^2 = .16$ with faculty having higher ratings of likely use than students, supporting H4a. However, the interaction between status and policy was not significant, $F(3, 300) = 0.72$, $p = .539$, $\eta_p^2 = .01$, failing to provide support for H4b.
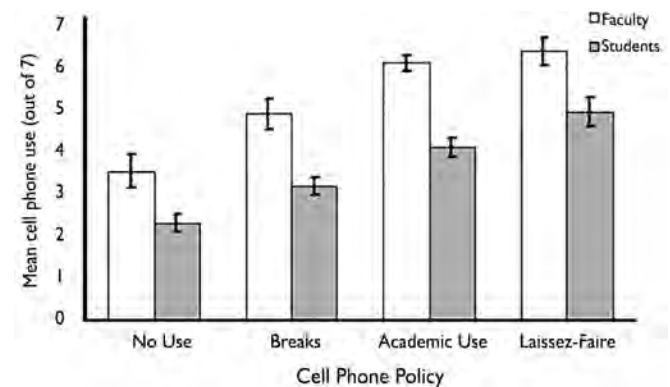
Figure 3. Comparison of Faculty (n = 21-29) and Student (n = 33-62) Mean Perceptions about the Effect of Different Cell Phone Policies on Student Cell Phone Behavior (Mean ± SEM)

H5 was examined with a $2_{(status)} \times 4_{(policy)}$ between-subjects ANOVA on enforceability (Figure 4). There was a main effect of policy on enforceability, $F(3, 297) = 22.08$, $p < .001$, $\eta_p^2 = .18$. Enforcement ratings varied based on the type of policy they were given. A Bonferroni post-hoc test was performed to determine where the significant differences were. There was a significant difference between the No Use policy and 1) the Academic Use policy and 2) the Laissez Faire policy. The Breaks policy was rated as more enforceable than the Laissez Faire policy, and lastly,

the Academic Use policy was rated as more enforceable than the Laissez Faire policy. There was also a main effect of status on enforceability, $F(1, 297) = 7.13$, $p = .008$, $\eta_p^2 = .02$, whereby students reported higher enforceability than faculty (supporting H5a). There was not a significant interaction between status and policy on enforceability, $F(3, 297) = 1.71$, $p = .165$, $\eta_p^2 = .02$, failing to support H5b.
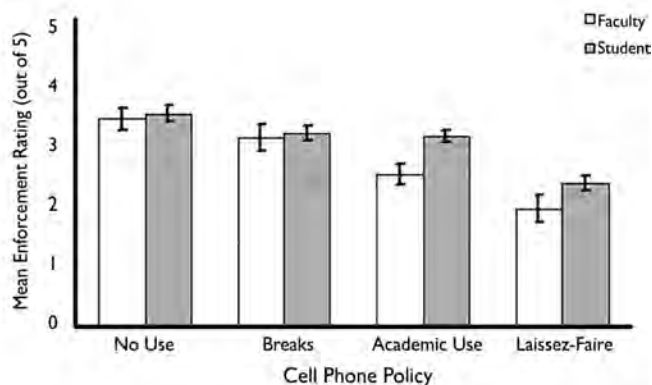

Figure 4. Comparison of Faculty (n = 20-28) and Student (n = 33-62) Perceptions about the Enforcement of Different Cell Phone Policies (Mean ± SEM)

DISCUSSION

To further explore faculty and student perceptions about cell phone policies, Study 2 evaluated perceptions about the expected cell phone behavior and enforceability of cell phone policies that focused on a complete ban of cell phone use, permitting cell phone use for academic purposes, permitting cell phone use only during breaks, and permitting cell phone use whenever the students chose to use their phones. Faculty and students both felt that a complete ban of cell phones from the classroom would reduce cell phone use relative to the other policies and that banning cell phones was more enforceable than other policies. Interestingly, students expected that cell phone use would be reduced more under any policy, compared with faculty. The majority of studies have compared faculty and student perceptions about what policies should be (e.g., Baker et al., 2012; Santos et al., 2018). Study 2 was novel in that it focused on students and faculty evaluating policy language that could be implemented in a course.

STUDY 3

The purpose of Study 3 was to evaluate student perceptions of real cell phone policies in the classroom. Students in four classrooms with different instructors were asked to complete a questionnaire rating the cell phone policy both at the beginning and end of the semester with the goal of understanding similarities and differences in student-reported experiences across a semester- long class. We hypothesized that:

H6: Among classes where there was an explicit policy presented on the first day, students would be better able to identify the policy.

H7a: Students would perceive that their behavior surrounding cell phone

use would be decreased by a stricter policy (e.g., no use) than by a more lenient policy (e.g., laissez faire).

H7b. Students would report using their phones at the end of the semester more than they expected to at the onset.

H8a. Students would perceive that laissez faire policies as less enforceable than more explicit policies.

H8b. Students would perceive that cell phone policies would be more enforceable at the beginning of the semester, compared to the end.

METHOD
Participants

Participants included 91 students (53 females; 56 males; 1 alternative identity; 1 elected not to respond) from four courses as follows: one course with a policy banning cell phone use (No Use; n = 34), one course with a policy that allowed phones for academic purposes (Academic Use; n = 11), and two courses with a policy in which phone use was discouraged verbally on the first day but not monitored or penalized during class for the rest of the semester (Laissez Faire1 [n = 27]; Laissez Faire2 [n = 19]). Students represented a wide range of majors and were largely more advanced: 5 first year students, 13 sophomores, 50 juniors, 40 seniors, and 1 dual-enrolled.

Materials

A questionnaire similar to the one used in Study 2 was used in Study 3. First, participants were asked to write a statement to summarize the course cell phone policy and then to select a statement that they perceived best matched the policy as a check on whether the students understood the policy. On a scale of 1 (*not at all*) to 5 (*very much so*), participants were asked to rate the enforceability of the policy they were presented over 3 items. An example item was, "The instructor is able to enforce violations of the cell phone policy." Students were also asked to mark yes or no to indicate whether they expected to use (at the beginning of the semester) or had used (at the end of the semester) their cell phone for several purposes: to send text messages, receive text messages, surf the internet, talk on the phone, and use social media. Total expected use and actual use variables were created by summing expected and actual use for these reasons, respectively.

Procedure

This research was approved by the university's Institutional Review Board. During the fall of 2019, undergraduate students enrolled in psychology courses at a Midwestern university were offered the opportunity to participate in the study during class. On the first day of class, students completed a survey after the course instructor reviewed the course syllabus with the class. During the

last week of the semester, students completed a second survey. Completion of each survey required approximately 5 minutes.

RESULTS

A chi-square test of independence revealed differences in students' ability to identify the cell phone policy for the course, $\eta_p^2(6, N = 105) = 67.18$, $p < .001$. Students in the class with the No Use policy correctly identified the policy 100% of the time. In the Academic Use condition, students largely reported a "prohibited" policy (92%), with only 1 student indicating the policy was for classroom purposes only. The other two (Laissez Faire1 and 2) policies were quite mixed in classification of policies, which supported H6.

Next, a $2_{(time)} \times 4_{(class)}$ mixed ANOVA was run to explore potential differences in cell phone use in the classroom over the course of the semester (Figure 5). There was a significant main effect of time on phone use, $F(1, 87) = 21.94$, $p < .001$, $\eta_p^2 = .20$, such that overall, students used their phones more during class than anticipated, supporting H7b. There was also significant main effect of class policy on phone use, $F(3, 87) = 6.90$, $p < .001$, $\eta_p^2 = .66$. Bonferroni post hoc comparisons indicated that the No Use policy resulted in less cell phone use than the Laissez Faire1 policy and the Academic Use policy also resulted in less cell phone use than the Laissez Faire1 policy. There was also an interaction between time and class policy on phone use, $F(3, 87) = 3.31$, $p = .024$, $\eta_p^2 = .10$. With the exception of the No Use policy class, students used their phones more than anticipated, suggesting that their cell phone use would be more hampered by a stricter No Use policy than by a more lenient policy (supporting H7a). In fact, the Academic Use and both Laissez Faire class policies resulted in significantly more cell phone behaviors in class than the No Use policy.
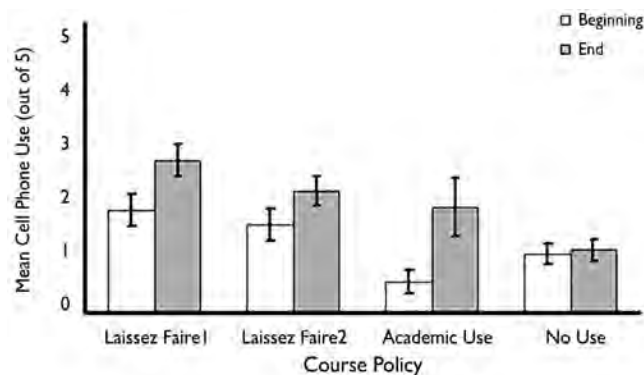
Figure 5. Comparison of Students' Perceptions (Mean ± SEM) at the Beginning and End of the Semester about the Effect of a No Use policy (n = 34), a policy permitting cell phone use for Academic Use (n = 11), and two policies permitting cell phone use (Laissez Faire1, n = 27; Laissez Faire2, n = 19)

Last, a $2_{(time)} \times 4_{(class)}$ mixed ANOVA was run to explore potential differences in cell phone policy enforceability over the course of the semester (Figure 6). There was a significant main effect of time on enforceability $F(1, 87) = 21.40$, $p < .001$, $\eta_p^2 = .20$, such that overall, students reported that policies were less enforceable over the semester than anticipated (supporting H8b). There was also a significant main effect of class on enforceability, $F(3, 87) = 27.65$, $p < .001$, $\eta_p^2 = .49$. Bonferroni post hoc tests revealed that both the No Use and Academic Use policies were rated as more enforceable than the Laissez Faire policies, supporting H8a. There was also an interaction between time and class policy on

enforceability ratings, $F(3, 87) = 5.40$, $p = .002$, $\eta_p^2 = .16$. With the exception of the No Use policy group, all other polices were rated as less enforceable at the end of the semester than anticipated at the beginning of the semester. The No Use policy was, in fact, rated as slightly more enforceable than initially expected among students.
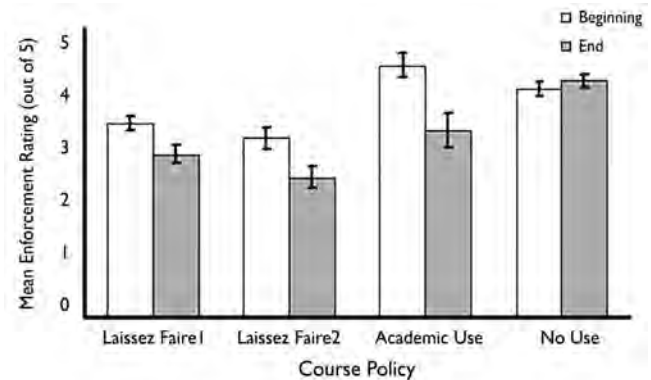
Figure 6. Comparison of Students' Perceptions (Mean ± SEM) at the Beginning and End of the Semester about the Enforceability a No Use policy (n = 34), a policy permitting cell phone use for Academic Use (n = 11), and two policies permitting cell phone use (Laissez Faire1, n = 27; Laissez Faire2, n = 19)

DISCUSSION

In Study 3, we obtained student perceptions of *actual* cell phone policies at the beginning and end of the semester, with a focus on whether the policy changed their behavior and their belief that the policy was enforceable. We found that in the course where no cell phone use was permitted, students perceived that their cell phone use would be low, and it was also self-reported as lower, compared with students in courses with policies that permitted cell phone use for academic reasons or permitted cell phone use at all times. In addition, students perceived that the policy banning cell phone use was more enforceable than the other policies.

Previous experimental research suggests that bans are effective and enforceable, particularly when there are clear consequences for inappropriate use (e.g., Redner et al., 2020; Roberts, 2020) or when non-use is reinforced (e.g., Katz & Lambert, 2016). However, student perceptions about these bans have been mixed. For example, McCoy (2016) found that students did not support a complete ban of cell phones from the classroom, but Lancaster (2018) found that when a policy that banned cell phone use was implemented in the classroom, students rated the course instructor more positively than when a policy allowing cell phones to be used was implemented. Taken together, these results suggest a disparity between preferences and policies that will potentially modify behavior.

GENERAL DISCUSSION

The primary purpose of the current set of studies was to explore both faculty and student perceptions of policies surrounding the use of cell phones in a college classroom. The three studies built on one another to contribute to our current understanding of their views. Our results indicated that there continues to be a divide among faculty and students regarding their attitudes about cell phone use in the classroom. In addition, when asked what cell phone policies should be, students requested greater flexibility, but also proposed more severe penalties than faculty. When

students and faculty were presented with sample policies, both students and faculty perceived that policies that banned cell phone use would decrease cell phone use more and were more enforceable than other policies, but students perceived that cell phone policies, regardless of the content, would reduce cell phone use in the classroom more than faculty did. When students were surveyed about their perceptions of actual cell phone policies, we found that students believed that a cell phone ban was more enforceable and resulted in reduced cell phone use, relative to more flexible cell phone policies. Taken together, these results indicate that stricter cell phone policies are perceived to be most effective for reducing cell phone use. However, while students perceive stricter policies to be both more enforceable and able to reduce cell phone use in the classroom, they prefer more flexibility.

PRACTICAL IMPLICATIONS
Although there are differences in perceptions about cell phone use in the classroom and about policies, there are commonalities among students and faculty. For example, in Study 1, students and faculty similarly perceived that cell phone use is disruptive and that it is acceptable for students to use their phones to look up relevant information for class. They also agreed that the cell phone policy can be determined by the instructor and that the policy should be discussed in class. Further, even though students and faculty sometimes differed in the strength of their opinion, their opinions were actually largely shared. By starting with these commonalities, it may be easier to co-exist in the classroom where there are also differences in perception.

Given our qualitative results, it is key that this information is presented in multiple formats (e.g., written and verbal), that this information is reiterated regularly, and that when students fail to comply with the policy, there should be clear consequences that are used consistently. Additionally, specific technology behaviors that are permitted (e.g., looking up information pertaining to the class discussion in order to contribute further, answering an important phone call) and times that they are allowed should be stated within these policies to allow for more clarity of the policy. These suggestions are consistent with Tatum and colleagues' (2018) recommendations for cell phone policy development to reduce negative reactions and retaliation behaviors among students.

Study 1 also indicates that faculty generally focus their policies on preventative measures as strategies for developing cell phone use policies in the classroom, and according to Study 2 and Study 3, students perceive that these policies can reduce their cell phone use to comply with these restrictive policies. Consistent with our results, past research does support that punishing inappropriate use can reduce cell phone use (e.g., Redner et al., 2020; Roberts, 2019). However, punishing behavior does not teach what is appropriate and may not prepare students for their professional lives. Others have advocated for more proactive approaches that focus on teaching etiquette or encouraging cell phone use to enhance the classroom (e.g., Ali, 2013; Simsek, 2018). In a series of recommendations based on their review of the literature, Flanigan and Kiewra (2018) suggested that creating active learning tasks to increase attention and involvement in the classroom, rewarding non-use of cell phones in the classroom, and embracing the cell phone for appropriate learning activities may be strategies to teach appropriate cell phone etiquette and to improve student learning. However, given the current results,

it is expected that while attempting to teach appropriate cell phone use, faculty should expect off-task cell phone use. Students in our studies did report an expectation of a greater amount of cell phone use under sample policies other than a complete ban (Study 2) and reported that they used their phones more in classrooms where actual policies other than a complete ban were implemented (Study 3).

LIMITATIONS AND FUTURE DIRECTIONS
While the objective was to focus on a population from the Midwestern United States, this focus also may limit our ability to generalize to those residing in other regions or countries in which cell phone culture may differ. Future studies could benefit from broadening the sample to include all regions in the United States for comparative purposes. Additionally, it would be useful to track student behaviors across their college experience, particularly if awareness training could be provided to a sample of students regarding distracted learning and study habits. For example, Flanigan and Kiewra (2018) suggested that it may be possible to teach students how to self-regulate their cell phone behavior, which may be a specific area to evaluate in the future. Regarding advancing our understanding of the intersection between attitudes and associated classroom practices, one potentially fruitful next question could explore reviewing syllabi for policies broadly to uncover common themes among them. It also would be interesting to experimentally explore student reactions to policies in the syllabus or to actually implement different cell policies in the classroom to see what impact this has on student grades and attitudes. There have been attempts to evaluate specific policies in the classroom (e.g., punishing cell phone use [Redner et al., 2020] or rewarding non-use [Katz & Lambert, 2016]), but there has not been a direct comparison of proactive and preventative cell phone policies on students' behavior, academic performance, and attitudes regarding the policies.

CONCLUSION
The current study evaluated perceptions about cell phone use and cell phone policies in the classroom in a Midwestern sample. In sum, our findings revealed that there continues to be a divide between faculty and students regarding cell phone use and what cell phone policies *should* be. However, when presented with policy language, students and faculty perceive policies that ban cell phone use to be the most effective in reducing cell phone use and the most enforceable compared with policies that afford students more flexibility in the classroom.

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REFERENCES

Aaron, L. S., & Lipton, T. (2018). Digital distraction: Shedding light on the 21st-century college classroom. *Journal of Educational Technology Systems, 46*(3), 363-378. https://doi.org/10.1177/0047239517736876

Ali, A. (2013). Etiquette, e-etiquette and cell phone use in the classroom. *Issues in Information Systems, 14*(2), 452-462.

Baker, W. M., Lusk, E. J., & Neuhauser, K. L. (2012). On the use of cell phones and other electronic devices in the classroom: Evidence from a survey of faculty and students. *Journal of Education for Business, 87*(5), 275-289. https://doi.org/10.1080/08832323.2011.622814

Berry, M. J., & Westfall, A. (2015). Dial D for distraction: The making and breaking of cell phone policies in the college classroom. *College Teaching, 63*(2), 62-71. https://doi.org/10.1080/87567555.2015.1005040

Bjornsen, C. A., & Archer, K. J. (2015). Relations between college students' cell phone use during class and grades. *Scholarship of Teaching and Learning in Psychology, 1*(4), 326–336. https://doi.org/10.1037/stl0000045

Bolkan, S., & Griffin, D. J. (2017). Students' use of cell phones in class for off-task behaviors: The indirect impact of instructors' teaching behaviors through boredom and students' attitudes. *Communication Education, 66*(3), 313-329. https://doi.org/10.1080/03634523.2016.1241888

Carbonell, X., Chamarro, A., Oberst, U., Rodrigo, B., & Prades, M. (2018). Problematic use of the internet and smartphones in university students: 2006–2017. *International Journal of Environmental Research and Public Health, 15*(3), 475-487. https://doi.org/10.3390/ijerph15030475

Dietz, S., & Henrich, C. (2014). Texting as a distraction to learning in college students. *Computers in Human Behavior, 36*, 163-167. https://doi.org/10.1016/j.chb.2014.03.045

End, C. M., Worthman, S., Mathews, M. B., & Wetterau, K. (2010). Costly cell phones: The impact of cell phone rings on academic performance. *Teaching of Psychology, 37*(1), 55-57. https://doi.org/10.1080/00986280903425912

Flanigan, A. E., & Kiewra, K. A. (2018). What college instructors can do about student cyber-slacking. *Educational Psychology Review, 30*(2), 585-597. https://doi.org/10.1007/s10648-017-9418-2

Forkosh-Baruch, A., & Meishar-Tal, H. (2016). Proactive, preventive or indifference? Reaction modes of faculty towards use of personal mobile devices in courses. *International Journal of Mobile and Blended Learning, 8*(2), 72-84. https://doi.org/10.4018/ijmbl.2016040106

Grinols, A. B., & Rajesh, R. (2014). Multitasking with smartphones in the college classroom. *Business and Professional Communication Quarterly, 77*(1), 89-95. https://doi.org/10.1177/2329490613515300

Kates, A. W., Wu, H., & Coryn, C. L. S. (2018). The effects of mobile phone use on academic performance: A meta-analysis. *Computers & Education, 127*, 107–112. https://doi.org/10.1016/j.compedu.2018.08.012

Katz, E. C., Earnest, D., & Lewis, C. (2018). Impact on negative mood and craving of a classroom policy prohibiting mobile technology use. *Journal of Technology in Behavioral Science, 3*(2), 69-76. https://doi.org/10.1007/s41347-017-0042-2

Katz, L., & Lambert, W. (2016). A happy and engaged class without cell phones? It's easier than you think.

Teaching of Psychology, 43(4), 340-345. https://doi.org/10.1177/0098628316662767

Kuznekoff, J. H., Munz, S., & Titsworth, S. (2015). Mobile phones in the classroom: Examining the effects of texting, Twitter, and message content on student learning. *Communication Education, 64*(3), 344–365. https://doi.org/10.1080/03634523.2015.1038727

Lancaster, A. L. (2018). Student learning with permissive and restrictive cell phone policies: A classroom experiment. *International Journal for the Scholarship of Teaching and Learning, 12*(1), article 5. https://doi.org/10.20429/ijsotl.2018.120105

Lancaster, A. L., & Goodboy, A. K., (2015). An experimental examination of students' attitudes toward classroom cell phone policies. *Communication Research Reports, 32*(1), 107-111. https://doi.org/10.1080/08824096.2014.989977

Langmia, K., & Glass, A. (2014). Coping with smartphone 'distractions' in a college classroom. *Teaching Journalism and Mass Communication, 4*(1), 13-23.

Lee, A. W. M., Ng, J. K. Y., Wong, E. Y. W., Tan, A., Lau, A. K. Y., & Lai, S. F. Y. (2013). Lecture rule No. 1: Cell phones ON, please! A low-cost personal response system for learning and teaching. *Journal of Chemical Education, 90*(3), 388-389. https://doi.org/10.1021/ed200562f

Lee, S., Kim, M. W., McDonough, I. M., Mendoza, J. S., & Kim, M. S. (2017). The effects of cell phone use and emotion-regulation style on college students' learning. *Applied Cognitive Psychology, 31*(1), 360-366. https://doi.org/10.1002/acp.3323

Loague, A., Caldwell, N., & Balam, E. (2018). Professors' attitudes and perceptions about technology use in the classroom. *Alabama Journal of Educational Leadership, 5*, 1–11.

Ma, S., Steger, D., Doolittle, P., & Stewart, A. (2018). Improved academic performance and student perceptions of learning through use of a cell phone-based personal response system. *Journal of Food Science Education, 17*(1), 27-32. https://doi.org/10.1111/1541-4329.12131

McCoy, B. (2016). Digital distractions in the classroom phase II: Student classroom use of digital devices for non-class related purposes. *Journal of Media Education, 7*(1), 5-32.

Redner, R., Lang, L. M., & Brandt, K. P. (2020). Evaluation of an electronics intervention on electronics use in a college classroom. *Behavior Analysis: Research and Practice, 20*(1), 4-12. https://doi.org/10.1037/bar0000158

Roberts, R. C. (2016). Preventing cell phone use in the classroom. *College Teaching, 64*(1), 145. https://doi.org/10.1080/87567555.2015.1125844

Röer, J. P., Bell, R., & Buchner, A. (2014). Please silence your cell phone: Your ringtone captures other people's attention. *Noise & Health, 16*(68), 34-39. https://doi.org/10.4103/1463-1741.127852

Santos, I. M., & Bocheco, O. (2017). University students' perceptions of personal mobile devices in the classroom and policies. In I. Tomayess, P. Kommers, T. Issa, P. Isaisas, & T. B. Issa (Eds.). *Smart Technology Applications in Business Environments* (pp. 303-320). IGI Global.

Santos, I. M., Bocheco, O., & Habak, C. (2018). A survey of student and instructor perceptions of mobile technology usage and policies for the classroom. *Education and Information Technology, 59423*(2), 617-632. https://doi.org/10.1007/s10639-017-9625-y

Shelton, J. T., Eliott, E., M., Eaves, S, D., & Exner, A. L. (2009). The

distracting effects of a ringing cell phone: An investigation of the laboratory and the classroom setting. *Journal of Environmental Psychology, 29,* 513-521.

Simsek, A. (2018). Disruptive versus supportive use of mobile technologies in the classroom. In U. I. Ogbonnaya, and S. Simelane-Mnisi (Eds.), *Beyond Familiar Territories: South Africa International Conference on Educational Technologies Proceedings* (pp. 53-62). Retrieved from http://aa-rf.org/saicet2018/.

Stephens, K. K., & Pantoja, G. E. (2016). Mobile devices in the classroom: Learning motivations predict specific types of multicommunicating behaviors. *Communication Education, 65*(4), 463- 479. https://doi.org/10.1080/03634523.2016.11 64876

Tatum, N. T., Olson, M. K., & Frey, T. K. (2018). Noncompliance and dissent with cell phonepolicies: A psychological reactance theoretical perspective. *Communication Education, 67*(2),226-244. https://doi.org/10.1080/03634523.2017.141 7615

Tindell, D. R., & Bohlander, R. W. (2012). The use and abuse of cell phones and text messaging in the classroom: A survey of college students. *College Teaching, 60*(1), 1-9. https://doi.org/10.1080/87567555.2011.604802

Wood, E., Zivcakova, L., Gentile, P., Archer, K., De Pasquale, D., & Nosko, A. (2012). Examining the impact of off-task multi-tasking with technology on real-time classroom learning. *Computers & Education*, *58*(1), 365–374. https://doi.org/10.1016/j.compedu.2011.08.029 614