Evaluating the Effects of Academic and Social Breaks on Off-Task Behavior in a College Classroom

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Evaluating the Effects of Academic and Social Breaks on Off-Task Behavior in a College Classroom

by

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A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science
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Date of Approval:
June 16, 2023

Keywords: abolishing operation, mobile device use, socialization, technology use

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ACKNOWLEDGMENTS

I would like to express my gratitude to Dr. Sarah Bloom for all of the expertise and encouragement that she has so graciously given to me throughout this process. I would also like to extend a thank you to my committee members, Dr. Anthony Concepcion and Dr. Heather Zerger for all of their guidance and insight.

I would also like to say thank you to the research assistants, Elaine Kim and Mallory Platte for all of the time and attention they gave to this research.

Lastly, I would like to give a special thanks to my parents, grandparents, sister, my partner, and of course my dog for all of their continuous support and unwavering love. Without a support system as wonderful as the one they have provided for me over the years, none of this would have been possible.
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ABSTRACT

Educators and researchers aim to develop effective teaching practices to increase on-task behavior and decrease off-task behavior during class time to ensure positive outcomes for students. The types of off-task behavior observed in classrooms with high school and college populations have changed in recent years due to the prevalence of accessible technology. The purpose of this study was to evaluate the effects of social and academic breaks on off-task behavior in the college classroom. The social break allowed for a time for students to socialize and/or engage with a mobile device, and the academic break allowed for students to take a break from regular class while still remaining on-task. Participants’ off-task behavior occurred at high rates, with most off-task behavior being related to technology usage rather than socializing with a peer. Although the social break was rated as more favorable by the consenting students, neither the academic break nor the social break consistently decreased off-task behavior following the break. However, the least amount of off-task technology usage occurred during the academic break itself rather than during the data collection periods before and after the breaks. This may have implications for interactive pedagogical practices.
CHAPTER 1: INTRODUCTION

Developing and identifying methods of teaching and managing behavior in the classroom setting has been a consistent focus for teachers and researchers alike for many years (Freiburg & Lamb, 2009; Greenwood, 1999). A long-standing goal for teachers in the U.S. education system has been to increase on-task behavior and decrease off-task behavior in classrooms (Reinke et al., 2008; Stage & Quiroz, 1997). Talking to peers is reported to be a distraction and a source of off-task behavior in classrooms (Attia et al., 2017). However, talking to peers is an easily observable behavior that can be addressed using classroom management techniques. More challenging to observe are topographies of off-task behavior related to technology, which has increasingly become more prevalent in classroom settings. The emergence of cell phones and laptops has presented challenges for teachers in recent decades with students having more easily accessible distractions during class time (Attia et al., 2017).

Research shows that off-task behavior in the form of mobile device use, as well as talking in class, occurs at high rates in college classrooms. Attia et al. (2017) found that 42% of students rated talking to peers as an extreme distractor in the classroom. These researchers looked at other types of disruptive behavior in the classroom and of 17 distractors identified, 6 involved using a form of technology during class time. Tindel and Bohlander (2012) found that out of 269 students surveyed 95% of college students bring their phones to class and only 9% of them turn their phones off during class. They also found that 92% of students have sent or received a text in class and 30% of students report doing it every class period. Additionally, laptops are used to take notes in class, however they are not always used for on-task behavior; many end up on other
websites or completing other tasks during class time. Internet use for non-academic activities during class is frequent for laptop users. A study by Ravizza et al. (2017), used a proxy server to track all internet use during class time and found that an average of 37 min out of a 1 hr and 40 min class period was being spent off-task and online. Off-task device and internet use in classrooms is linked to lower exam scores when compared to students who do not engage in off-task internet use in class (Gingerich & Lineweaver, 2014; Ravizza et al., 2013), and therefore poses a threat to academic success.

Many studies have looked at the prevalence of off-task technology usage in the classroom (Ravizza et al., 2017; Tindel & Bohlander, 2012) as well as its correlation to academic outcomes (Gingerich & Lineweaver, 2014; Ravizza et al., 2013), but only a few evaluate interventions to decrease it. Hernan et al. (2019) looked into the implementation of the Good Behavior Game in a classroom setting in an effort to decrease cell phone usage. They found that implementing the Good Behavior Game in high school classrooms did not decrease mobile device usage unless it was coupled with placing the students’ phones in clear boxes. Another study by Neuwirth (2022) used an app designed to help students manage their time and monitor their cell phone usage to decrease absenteeism in class, however the study did not evaluate the effects of cell phone usage on off-task behavior during class time.

One approach that has been evaluated in college classrooms is to schedule breaks from instruction during class. For example, participants in a study by Peiris et al. (2021) reported feeling higher levels of concentration following engagement in a physical break during class time as well as stating that the break helped them refocus. Additionally, there are a few studies that have evaluated other types of breaks in college classrooms to improve student outcomes, including meditation breaks (Kirby et al., 2020) and physical breaks (Littleberry et al., 2021).
These studies aimed to improve academic outcomes or to evaluate students’ opinions surrounding the feasibility of breaks. Yet, none of these studies directly aimed to decrease off-task behaviors such as socialization or device usage in the classroom. However, Littleberry et al. (2021) and Peiris et al. (2021) surveyed both students and staff and found that both groups reported the implementation of breaks to be feasible and enjoyable in college settings. Despite the reported feasibility and favorability of implementing breaks in college classrooms, the majority of literature involving breaks is not seen with college students.

Instead, breaks, specifically physical brain breaks, have been evaluated in many studies conducted in elementary classrooms (Egger et al., 2019; Popeska et al., 2018; Weslake & Christian, 2015). Roger Anunsen (2004) first proposed “brain breaks.” The term Brain Breaks® has since been trademarked by The Foundation for Global Community Health (2011), but today is used as a broad term in the literature as well as in schools, to describe a variety of structured activity breaks. Throughout the rest of this paper the term “brain break” will be used in reference to structured physical activity breaks.

A study by Waal (2020) examined brain breaks and their effect on 8th grade student engagement. A brain break was implemented halfway through the class period, consisting of 2 min of physical activity followed by 1 min of relaxation and breathing exercises. Many of the students reported finding these breaks enjoyable. There was an increase in the engagement of the students as a result of the brain break that included both physical exercise and meditation.

The majority of the brain break research has focused on the physical/active component of the breaks and associated outcomes (Ackerman, 2018; Carlson et al., 2015; Egger et al., 2019). However, there is limited research on the implementation of other types of breaks in the classroom. Therefore, it is possible that different kinds of breaks other than a physical one could
be more effective or have different types of benefits to students. The following studies by Weslake and Christian (2015) as well as Pellegrini et al. (1995) evaluated different types of breaks as well as other possible variables present in breaks that could be improving student outcomes.

Weslake and Christian (2015) are some of the only researchers to have conducted research that compares physical brain breaks to other types of breaks. They compared physically active brain breaks, subject-related breaks, and breathing and relaxation breaks. Following the relaxation break the students refocused quickly, but rated the breaks as being not enjoyable and some of the students even refused to participate. The study also found that when students engaged in breaks related to class material it took them less time to refocus on class material following the break than it did for the students to refocus after the physical break, while reporting similar levels of enjoyment for both.

Weslake and Christian (2015) stated that although the literature favors physical brain breaks, they may not be very efficient when compared to other breaks. This is one of the only studies to report on some of the drawbacks surrounding physical brain breaks, reporting more conversation and distraction as well as more restlessness after the physical break than before it. Additionally, the authors found benefits to refocus time when implementing a subject-related break as it can provide an escape from the usual style of class while allowing for a quicker transition back to class material than the physical break offered. Although Weslake and Christian (2015) found benefits of implementing an alternative kind of break, they did not evaluate the effects of the subject-related break on off-task behavior following the break. Therefore, research on subject-related breaks and their impact on off-task behavior is lacking in the literature and
could have benefits to students without having some of the drawbacks (i.e., longer refocus time and more conversation) that can follow physical brain breaks.

Pellegrini et al. (1995) did not implement a brain break, but rather a recess break. The researchers compared inattention in class prior to the recess break to inattention in class following the break. They also compared two different deprivation periods, one short and one long. In the short deprivation period the students had been deprived of recess for 30 min less than they had in the long deprivation period. Researchers found that following both breaks inattention in students was lessened. Because the researchers looked at the students’ behavior on the playground, not just before and after recess they were able to identify some variables that other studies on brain breaks have not examined. They reported that children exhibited much more interaction with peers on the playground following a longer deprivation period between recess breaks rather than when a recess break had occurred recently.

Conclusions of Pellegrini et al. (1995) also call into question the superiority of physical brain breaks. The study displays how difficult it is to say with certainty whether a decrease in off-task behavior after a physical break such as recess is due to the physical component offered during recess or something else such as a social component (Pellegrini et al., 1995). Brain breaks often do not simply offer a time to engage in a solo physical break where one cannot interact with peers. Typically, brain breaks or recess breaks are filled with both physical exercise and peer interaction as the children are often free to discuss the activity that they are engaging in together as it is happening. Pellegrini et al. (1995) not only found an increase in attentiveness following both of the recess breaks, but they also found that the longer children are deprived of recess the more they socialized with one another during the break. Therefore, the longer deprivation period could have acted as an establishing operation for socialization during the
break. Likewise, access to socialization during recess could have acted as an abolishing operation (AO) for socialization/off-task behaviors following the break. There are not many, if any, studies in the literature that isolate the social component that is often present during physically active breaks. Therefore, it is difficult to rule out the possibility that access to social interaction during physical breaks could be acting as an AO for off-task behavior following brain breaks in related studies.

Implementation of AO’s is well documented as a behavioral intervention employed with children to decrease behavior. Many of these studies involve reducing stereotypy in children with Autism Spectrum Disorder (ASD). Rispoli et al. (2013) completed a functional analysis of stereotypy and determined that for their participants, it was maintained by automatic sources of reinforcement. Then they conducted a single stimulus preference assessment (Piazza et al., 2000) to identify stimuli that matched and might compete with the automatic reinforcement produced by the participants’ stereotypy. They then provided presession access to the matched stimuli prior to work sessions. They found that there was a decrease in stereotypy during work sessions when the matched stimuli were presented prior to work as access to stereotypy before working. They hypothesized that the presession access acted as an AO for stereotypy during work sessions.

O’Reilly et al. (2009) examined AOs as an intervention for problem behavior maintained by access to tangible items with two children diagnosed with ASD, one being 5 years old and the other 8 years old. They evaluated the effects of no presession access, brief presession access, and presession satiation of preferred tangible items and found lessened levels of problem behavior following satiation of the tangible item. Rispoli et al. (2011) conducted a similar study with three 5- and 6-year-olds and also found that presession satiation of tangible reinforcers decreased
problem behavior. However, Rapp (2004) provided presession access to preferred items to a 10-year-old child with Down syndrome who engaged in stereotypy. The child showed heightened levels of stereotypy following presession access to preferred items. Because of the conflicting results surrounding providing presession access to decrease problem behavior, more research in this area is needed.

Despite some conflicting results, generally positive effects of providing AOs to decrease undesirable behavior has been documented in the literature with younger populations. It is possible that it may have similar effects on college students’ off-task behavior. Presenting a break that acts as an AO by providing a time for students to freely engage in off-task behaviors (i.e., socialization, mobile device usage, or both) could decrease off-task behaviors in the college classroom.

There is limited intervention research on mobile device usage and other off-task behaviors in college classrooms, despite the large body of research that displays the prevalence and negative effects of it (Ravizza et al., 2017; Tindel & Bohlander, 2012). Additionally, there is limited research on the implementation of various breaks in college classrooms, despite research pointing to potential benefits of different types of breaks with younger populations as well as reports of positive attitudes toward breaks in college settings. This begs the need for a study that evaluates classroom management tactics at the collegiate level in the form of breaks to decrease off-task behaviors such as mobile device usage and socialization. Research described above explores the benefits of providing access to an AO to decrease behaviors following access (O’Reilly et al., 2009; Rispoli et al., 2013). Additionally, research mentioned above displays the possible benefits of implementing an academic break (Weslake & Christian 2015). Yet, these practices have not been applied to decrease off-task behaviors such as socialization and mobile
device usage in the college classroom setting. Therefore, the purpose of this study was to evaluate the effects of implementing a social/mobile device break as well as an academic break to decrease off-task behavior in the college classroom.
CHAPTER 2: METHOD

Participants and Setting

Five participants participated in this study, four female and one male. The participants were pursuing an M.S. in Applied Behavior Analysis at the University of South Florida. They were in the second semester of their first year of the program. The students in this cohort ranged from 21-29 years old and were enrolled in four courses for the semester which met on Mondays and Wednesdays from 9:30 a.m. to 3:15 p.m. The first course of each day being Ethics in Behavior Analysis, the course in which the study took place.

The individuals enrolled in the course were given a brief description of the study and were shown an IRB-approved flier made using Powerpoint™ that was displayed using the classroom projector system. The researcher then passed out consent forms while the teacher was out of the room. Those who chose not to sign the consent form were not considered as possible participants. After obtaining consent the researcher as well as research assistants took anecdotal notes on the consenting students’ off-task behavior. These notes concerned how off-task the individual students were as well as what type of off-task behavior they were engaging in. Following this, the research team discussed which consenting students engaged in high rates of off-task behavior as well as which ones did not. They also discussed the type of off-task behavior as well as the location of the students and how difficult it would be to observe their behavior and came to a consensus regarding which consenting students should be observed during data collection. These participants were selected based on rate of off-task behavior, seating location, and whether or not they consented to participate in the study. To obtain a representative sample,
participants with varying rates of off-task behavior were selected. The research team then used the data collection sheets to practice taking data on the five potential participants that were selected from the 23 consenting students. They found that of the five consenting students selected, some engaged in high percentages of off-task behavior (80% and 90% off-task) whereas some engaged in low percentages (5%, 10%, and 15% off-task) and they felt confident that they could reliably collect data on all five participants at the same time based on their seating location.

Five participants were selected for data collection to acquire a sufficient amount of data in the event that a student dropped the program or withdrew consent. Students were not told if they were selected to participate in the study and all students enrolled in the course experienced the intervention, as it was part of the course design. The course instructor was not told who was a participant in the study. All phases of the study were completed at the University of South Florida in a classroom setting. The students were all oriented toward the teacher while sitting at tables. The 3-credit course was largely lecture based and met twice a week for 1 hr and 15 min. Attendance was variable.

**Materials**

When the academic break was implemented, the participants were provided one or multiple discussion prompts related to the class topic (See Appendix A). They were then told to discuss their thoughts on the question or questions with nearby peers. When given the social break, the students had the opportunity to use their own phones, computers, tablets, or other mobile devices. The data collectors used a partial interval recording data collection sheet using 30-s intervals created by the researcher to record data on off-task behavior (See Appendix B). The participants were also provided a social validity questionnaire at the end of the study that
was created by the researcher (See Appendix C). A treatment integrity checklist was used to collect data on the professor’s implementation of the breaks (See Appendix D).

**Target Behavior**

The dependent variable was the percentage of intervals during which off-task behavior was observed. Off-task behavior was any instance of a student looking at their phone and using their finger to touch the screen at least once during the interval. Off-task behavior was also any instance of the participant looking at their laptop as well as using their hand to move the mouse on their computer or typing while something other than a note taking website or application was on their screen (e.g., online shopping or social media). Additionally, off-task behavior included any interactions that were irrelevant to a current class activity or event, such as talking with a nearby peer about a football game. In contrast, saying “thank you” after being passed a worksheet or “bless you” after a peer sneezed was not counted as an off-task behavior, as it pertained to a current event taking place in class. Off-task behavior also did not include bathroom breaks or writing of any kind.

**Data Collection**

Data were collected on five participants’ behavior throughout the duration of the study by the researcher as well as two research assistants. The data collectors collected data by observing the five participants for 10 min prior to the implementation of the break as well as recording data on off-task behavior for 10 min following the implementation of the break. Additionally, off-task behavior during the 5-min academic break was also recorded. Data were collected using a data sheet created by the author (See Appendix B). Partial-interval data were collected using intervals of 30 s. The data sheet specified what specific off-task behavior was exhibited (i.e., phone usage, computer usage, or talking to a peer). The researcher and research assistants had the option to
circle P if the participant engaged with their phone during the specified interval as well as C for computer use and T for talking. If one type of off-task behavior was already observed in an interval the other two types of off-task behavior could still be circled if they occurred. The primary data collector also collected anecdotal notes on behaviors that they deemed relevant such as headphone usage or eating.

The participants were allowed to engage in all three of the off-task behaviors during the social break, therefore, there is no off-task behavior reported from the social breaks as allowed topographies of behavior included what would have been otherwise considered off-task behavior. Data on off-task behavior were collected during the academic breaks to observe if the participants engaged in the academic breaks as instructed. Participants were considered off-task during the academic break if they were engaging with their phone or computer, in contrast to the data collection periods during the lectures where talking was considered off-task. Talking about class content was encouraged during the academic breaks and because there was no way to discern between talking about class content and off-task talking, talking was not considered off-task during the academic breaks. In summary, off-task behavior collected during the data collection periods prior to and following the breaks was related to phone usage, computer usage, or talking. Whereas off-task behavior that was reported during the academic breaks was only related to phone or computer use and no off-task behavior was reported during the social breaks as all off-task behavior was encouraged during these breaks.

The percentages of off-task behavior seen in Table 1 were calculated by adding all of the percentages of off-task behavior recorded during the data collection periods prior to or following either of the breaks together. This number was then divided by the number of times the participant experienced that type of break and was multiplied by 100. For example, to get the
percentage of off-task behavior that was observed for Participant 1 prior to the academic breaks, the percentages of off-task behavior that were observed prior to each of the academic breaks were added up and divided by 4 and then multiplied by 100 to get the average percentage of off-task behavior prior to the academic breaks. The total was divided by 4 because the participant experienced 4 academic breaks.

The total percentage during which off-task behavior was observed that is displayed in Table 2 was calculated by adding up the total number of intervals during which any off-task behavior was recorded during class time. This included, prior to and following both breaks as well as any off-task behavior observed during baseline. This number was then divided by the total number of intervals observed and multiplied by 100.

The types of off-task behavior depicted in Table 2 were calculated by totaling the number of intervals during which each type of off-task behavior was observed and dividing it by the total number of intervals where any type of off-task behavior was observed per person and multiplying it by 100. For example, Participant 1 was on their phone for 15.43% of the 65.79% of intervals with off-task behavior, or 15.43% of Participant 1’s off-task behavior was phone usage. The percentages of all three types of off-task behavior do not equal 100% for any of the participants because the researchers observed multiple different types of off-task behaviors within the same intervals.

The percentages of off-task technology use observed during data collection periods (prior to and following the breaks as well as during baseline) and during the academic breaks is displayed in Table 3. The percent of off-task technology use observed during class was calculated by adding up the total number of intervals during which phone or computer use was observed and dividing it by the total number of intervals observed per person. This number was
then multiplied by 100. The percent of intervals during which technology use was observed during the academic breaks was calculated by adding up the total amount of intervals during which off-task technology use was observed during the academic breaks and dividing it by the total number of intervals observed and multiplying it by 100.

**Interobserver Agreement (IOA)**

A trained research assistant was the primary data collector for this study. Training consisted of reviewing the operational definitions of the target behaviors and an opportunity to practice collecting data using 30 s intervals. The data sheets were then compared for agreements (both observers agreed that each behavior did or did not occur in each interval) and disagreements (one observer reported a behavior whereas the other did not). The primary data collector was present to take data in most class periods and the other research assistant or the researcher collected interobserver agreement data for 33% of sessions or six out of 18 sessions. Reliability for activity within interval data was calculated by dividing each observation into consecutive 30 s intervals, calculating the number of agreements within each interval by dividing the number of behaviors with agreement (both observers agree that the behavior did or did not occur during that interval) by the total number of possible behaviors (3), averaging these fractions, and multiplying by 100%.

The data were 91.17% in agreement with a range of 65.03% - 100% for all participants. The lowest IOA value observed for all participants was 65.03% with the second lowest IOA value being considerably higher at 77.34%. It should be noted that the session with the lowest IOA was on the second day of data collection and behavior definitions were reviewed following this session. Participant 1 had an IOA value of 87.86% with a range of 65.03% - 98.35%. Participant 2 had an IOA value of 94.41% with a range of 90.02% - 97.53%. Participant 3’s IOA
value was 93.01% and ranged from 86.68% to 97.5%. Participant 4’s IOA value was 93.1% with a range of 89.18% - 100%. Participant 5’s IOA value was 87.46% and ranged from 77.34% - 100%.

Treatment Integrity

Treatment integrity data were collected on the professor’s implementation of the breaks for 33% of the sessions and was found to be 100%. A sample of the treatment integrity checklist can be found in Appendix D.

Social Validity

A 5-point Likert-type scale questionnaire was distributed at the end of the study to all of the consenting students in the course (Likert, 1932). The students were asked questions concerning which break they enjoyed the most as well as which break they found to be the most effective in decreasing off-task behavior in the classroom, as well as if they enjoyed taking part in the study. This questionnaire is located in Appendix C.

Experimental Design

A multi-element design was used to evaluate the effects of the two breaks on off-task behavior. An academic or social break was implemented with the entire class, once during each class period following baseline. The break that was implemented was alternated every class period following the baseline phase in a way that ensured that the same break was not provided on the same day of the week every time it was implemented. For example, the academic break would be implemented on Monday and the social break would be implemented on Wednesday. The following week the social break would be Monday and the academic break would be Wednesday.
Procedures

Baseline

In the baseline condition, the instructor conducted class and did not provide breaks during class time. The participants were able to choose their seats on the first day of class and were asked to remain in their same seats for the remainder of the course. The data collection period was broken into two segments, pre-observation and post-observation, although a break was not implemented during the baseline phase. There were data collected for 10 min during the same time frame that data were going to be collected during intervention. The research team then stopped collecting data for 5 min, as this is when the break would be implemented during intervention. Data were then recorded for 10 min again during the same time frame that data were going to be collected following the breaks in the intervention portion. Data were collected in this way to stay consistent with the rest of the study and allow for a fair comparison of data between the baseline phase and intervention phase of the study. Additionally, this helped to ensure that any differences in off-task behavior observed after baseline were not due to the time frame during which data were collected. Baseline data collection indicated variable rates of off-task behavior for most participants, aside from one participant who had 90-100% of intervals off-task in baseline besides one observation period. Due to this variability and lack of a decreasing trend in off-task behavior, the intervention phase began.

Academic Break

Before the first academic break was implemented the professor explained the instructions for the break. The class was made aware that the break is not a time to socialize freely with peers, as it is a time to discuss class topics based on that day’s prompt(s). During the academic break, the students were provided one or multiple prompts related to the focus of that day’s class
material. These discussion prompts were adapted from the professor’s syllabus and the readings required for class (i.e., research articles and the BCBA Task List (5th ed.). The students were provided 5 min to answer the prompts and discuss the concepts with nearby students. The prompts asked the individuals to discuss the class concepts in terms of real-world scenarios relating to their lives or hypothetical scenarios to encourage more conversation (See Appendix A).

**Social Break**

During the social break, the participants were provided 5 min to talk with a peer, use their phone, computer, or other mobile device. They were told that they could talk about any topic of their choosing with a peer or that they could use their mobile devices to engage in any legal activity of their choosing. The professor provided instructions before the first social break. For the remainder of the social breaks, the professor simply told the class that it was time for a social break.
CHAPTER 3: RESULTS

Figures 1, 3, 5, 7, 9, and 11 depict the percentages of off-task behavior observed during each of the two 10 min data collection periods that occurred each session in baseline, as well as the percentages of off-task behavior that were observed during intervention prior to and following each academic and social break. Figures 2, 4, 6, 8, 10, and 12 depict the post-break off-task behavior as a proportion of pre-break off-task behavior. This was calculated by dividing the post-break data by the pre-break data.

Participant 1

Participant 1’s data was highly variable during baseline as well as in intervention as displayed in Figure 1. They had slightly more off-task behavior on average following the academic breaks (76.25% off-task) than the social breaks (58.75% off-task). On average, Participant 1 was off-task for 92.5% of the intervals prior to the academic breaks and 44.71% of the intervals prior to the social breaks (Table 1).
Figure 1

Percent of Intervals with Off-Task Behavior Before and After the Social and Academic Breaks

Note. This figure displays the percentage of intervals where off-task behavior was observed before both of the breaks, as well as the percentage of intervals where off-task behavior was observed following the breaks for Participant 1. This figure also displays the percentage of intervals where off-task behavior was recorded during the two separate data collection periods in baseline.

Because the participants were unaware of which break they would be engaging in, any difference in pre-academic break off-task behavior and pre-social break off-task behavior was not influenced by the intervention. However, the pre-break off-task behavior data being separated by break type is relevant when looking at the change in off-task behavior from pre-break levels to post-break levels in Figures 2, 4, 6, 8, 10, and 12. When compared to pre-break levels mentioned above for Participant 1, off-task behavior actually decreased following the
academic breaks and increased following the social breaks, although post-academic break off-task behavior was on average higher than post-social break off-task behavior. This change in pre-break data to post-break data is depicted in Figure 2, with no strong difference between the two data paths, displaying that neither break decreased levels of off-task behavior reliably or adequately following the break.

**Figure 2**

*Post-Break Off-Task Behavior as a Proportion of Pre-Break Off-Task Behavior*

*Note.* This figure depicts the post-break responding as a proportion of pre-break responding for Participant 1. A record floor was used for the data from session 12 for this participant. Due to the post-break data for this day being 40% and the pre-break data being 0%, it was not possible to divide 40 by 0. Therefore, the next possible lowest percentage of off-task behavior would be 2% off-task. Therefore, 40 was divided by 2 to get 20 as depicted above.
Overall, Participant 1 was off-task for 65.79% of all intervals observed pre- and post-observation in baseline and intervention. Of that off-task behavior, 70.29% was computer usage, 15.43% was phone usage, and 18.29% was talking to a peer (Table 2).

As depicted in Table 3, 59.96% of all intervals during class aside from during the breaks contained technology use. In contrast to during the academic breaks themselves when Participant 1 engaged in off-task technology use for 32.5% of the intervals (Table 1). They were then talking with a peer for 75% of the intervals during the academic breaks. The percentages of talking during the break compared to the percentages of intervals with technology use do not equal 100% for any of the participants because during some intervals students engaged in off-task behavior using their phone or computer and talked to a peer during the same interval. Participant 1 engaged in off-task technology use the least during the academic break (32.5% off-task) when compared to their off-task technology use during class time as depicted in Table 3.

**Participant 2**

Participant 2 displayed very high rates of off-task behavior prior to and following both breaks regardless of the break in place. Figure 3 depicts the percentages of intervals with off-task behavior that were recorded for Participant 2. Baseline levels consistently displayed off-task behavior at very high rates aside from one outlier during session 6. This trend is observed throughout the intervention portion, regardless of the break implemented, depicting that neither break had an effect for Participant 2. This is further displayed in Figure 4 with little to no variation between the data paths. On average, Participant 2 was off-task for 97.5% of the intervals prior to the academic breaks and 100% of the intervals prior to the social breaks. They were then off-task for 100% of the intervals post-academic break and 98.75% of the intervals post-social break (Table 1). Participant 2 was the most off-task of all the participants during pre-
and post-observation periods in baseline and intervention with off-task behavior being observed in 95.33% of the data collection intervals. Phone usage comprised 71.37% of that off-task behavior, whereas 30% was computer usage and 14.9% was talking to a peer (Table 2).

![Graph showing percent of intervals with off-task behavior before and after social and academic breaks.](image)

**Figure 3**

*Percent of Intervals with Off-Task Behavior Before and After the Social and Academic Breaks*

*Note.* This figure displays the percentage of intervals where off-task behavior was observed before both of the breaks, as well as the percentage of intervals where off-task behavior was observed following the breaks for Participant 2. This figure also displays the percentage of intervals where off-task behavior was recorded during the two separate data collection periods in baseline.
Figure 4

*Post-Break Off-Task Behavior as a Proportion of Pre-Break Off-Task Behavior*

*Note.* This figure depicts the post-break responding as a proportion of pre-break responding for Participant 2.

Participant 2 had the most technology use during the academic break of all of the participants, using their phone or computer for an average of 60% of the intervals during the academic breaks (Table 1). However, they were also recorded as talking to peers during 75% of the intervals during the academic breaks. Therefore, although they were engaging with technology, they still interacted with peers at somewhat high rates. In contrast to 60% of the intervals during the academic breaks containing off-task technology use, 91.78% of intervals observed during class time contained off-task technology use (Table 3). Therefore, Participant 2
engaged in off-task technology use during class time at much higher levels than they did during the academic break itself.

**Participant 3**

Figure 5 displays Participant 3’s high variability in baseline and intervention. Participant 3 displayed less off-task behavior following the social break (79.17% off-task) than they did following the academic break (100% off-task) as displayed by lower levels of data and higher variability following the social break. Figure 6 and Table 1 display that Participant 3 consistently had more off-task behavior following the academic breaks (100% off-task) than they had prior to the breaks (80.83% off-task). Figure 6 and Table 1 also depict that Participant 3 had less off-task behavior following the social break (79.17% off-task) than they did prior to it (96.22%). Participant 3 not only had less off-task behavior following the social breaks than they did before the breaks, but they also had less off-task behavior following the social breaks than following the academic breaks. Participant 3 was also off-task for 82.02% of data collection intervals with 38.68% of off-task behavior being phone usage, 62.03% being computer usage, and 5.88% being talking to a peer (Table 2).
Figure 5

Percent of Intervals with Off-Task Behavior Before and After the Social and Academic Breaks

Note. This figure displays the percentage of intervals where off-task behavior was observed before both of the breaks, as well as the percentage of intervals where off-task behavior was observed following the breaks for Participant 3. This figure also displays the percentage of intervals where off-task behavior was recorded during the two separate data collection periods in baseline.
Participant 3 engaged with the academic breaks more than any of the other participants, as exemplified by low technology usage and high rates of talking with a peer during the academic breaks. They talked with a peer for 91.67% of the intervals and used their phone or computer during only 11.67% of the intervals during the academic break. In contrast to 79.09% of intervals observed during class time containing technology use. Participant 3 was another participant who had much less technology use during the academic break (11.67%) than at any other point in the study (79.09%).

Figure 6

Post-Break Off-Task Behavior as a Proportion of Pre-Break Off-Task Behavior

Note. This figure depicts the post-break responding as a proportion of pre-break responding for Participant 3.
**Participant 4**

The data depicted in Figure 7 displays Participant 4’s highly variable off-task behavior throughout the duration of the study. Following the academic breaks they had moderate to high levels of off-task behavior with an average of 79.17% of intervals having off-task behavior. Following the social breaks, Participant 4 had an average of 56.67% of intervals containing off-task behavior (Table 1). This average depicts moderate levels of off-task behavior following the social breaks, however off-task behavior was observed at rather high or low rates following the breaks, with 10-25% or 90-100% of intervals containing off-task behavior as displayed in Figure 7. Overall, considerably more off-task behavior was observed following the academic break than the social break.
Figure 7

Percent of Intervals with Off-Task Behavior Before and After the Social and Academic Breaks

Note. This figure displays the percentage of intervals where off-task behavior was observed before both of the breaks, as well as the percentage of intervals where off-task behavior was observed following the breaks for Participant 4. This figure also displays the percentage of intervals where off-task behavior was recorded during the two separate data collection periods in baseline.

Although off-task behavior was considerably lower following the social break than it was following the academic break, pre-break levels were relatively similar for both, with 59.17% of pre-academic break intervals having off-task behavior and 60.59% of pre-social break intervals having off-task behavior (Table 1). Therefore, on average, the social break only decreased off-task behavior slightly compared to pre-break levels for Participant 4, whereas the academic break increased off-task behavior following it considerably (Figure 8). Participant 4 was off-task for
61.3% of all data collection intervals, with 65.3% of those intervals containing computer usage, 34.7% containing phone usage, and 6.75% containing talking to a peer (Table 2).

![Figure 8](image)

**Figure 8**

*Post-Break Off-Task Behavior as a Proportion of Pre-Break Off-Task Behavior*

*Note.* This figure depicts the post-break responding as a proportion of pre-break responding for Participant 4.

Participant 4 talked to a peer during 60% of the intervals during the academic breaks and engaged with their phone or computer during 41.67% of the intervals during the academic breaks. Participant 4 also engaged in off-task technology use during 58.05% of intervals during class time (Table 3). Displaying another participant whose off-task technology use was lower during the academic break itself than it was during any of the other data collection periods.
Participant 5

Figures 9 and 10 display Participant 5’s high levels of off-task behavior before and after both breaks. They had an average of 91.25% of pre-academic break intervals containing off-task behavior and 76.25% of post-academic break intervals containing off-task behavior. Figure 9 and Table 1 also depict that 97.06% of intervals pre-social break had off-task behavior and 93.75% of intervals post-social break had off-task behavior. Participant 5 displayed a decrease in off-task behavior following both breaks. Following the social break, only a minor decrease was observed, whereas following the academic break a more considerable decrease was observed of 15% when compared to pre-break levels. When looking at post-break data for both breaks, there was considerably more off-task behavior following the social break than following the academic break. Participant 5 engaged in off-task behavior during 85.29% of the data collection intervals in baseline and intervention with 63.4% of those intervals being computer usage, 45.09% being phone usage, and 2.92% of intervals including talking to a peer (Table 2).
Figure 9

Percent of Intervals with Off-Task Behavior Before and After the Social and Academic Breaks

Note. This figure displays the percentage of intervals where off-task behavior was observed before both of the breaks, as well as the percentage of intervals where off-task behavior was observed following the breaks for Participant 5. This figure also displays the percentage of intervals where off-task behavior was recorded during the two separate data collection periods in baseline.
Figure 10

Post-Break Off-Task Behavior as a Proportion of Pre-Break Off-Task Behavior

Note. This figure depicts the post-break responding as a proportion of pre-break responding for Participant 5.

Participant 5 was talking to a peer for 85% of the intervals during the academic breaks and was only off-task and on their phone or computer for 17.5% of the intervals during the academic breaks (Table 1). Off-task technology use was much higher during class time with 84.62% of intervals observed having phone or computer use (Table 3). This being the fifth participant to have the least off-task technology use during the academic break itself, rather than during the data collection periods during class.
**Total**

Figure 11 displays the average of all five participants’ data throughout the study. The data has less variability in the earlier intervention sessions. At session 13 the data get much more variable and off-task behavior is higher following the academic breaks than the social breaks on average. This is depicted with an average of 86.33% of intervals being off-task following the academic breaks and 77.42% off-task following the social breaks across all participants (Table 1). Aside from Participant 5, all of the participants had less off-task behavior following the social breaks than following the academic breaks. However, there were still relatively high levels of off-task behavior following both for all participants.
Figure 11

Percent of Intervals with Off-Task Behavior Before and After the Social and Academic Breaks

Note. This figure displays the average percentage of intervals where off-task behavior was observed before both of the breaks, as well as the percentage of intervals where off-task behavior was observed following the breaks for all participants. This figure also displays the percentage of intervals where off-task behavior was recorded during the two separate data collection periods in baseline.
Figure 12

Post-Break Off-Task Behavior as a Proportion of Pre-Break Off-Task Behavior

Note. This figure depicts the average post-break responding as a proportion of pre-break responding for all participants.

After session 14, off-task behavior increased after the academic breaks compared to pre-academic break levels, as displayed in Figure 12. On average, the participants were off-task for 84.25% of the intervals prior to the academic breaks. Off-task behavior then increased by only 2.08% to 86.33% of intervals being off-task following the academic breaks for all participants on average (Table 1). Similar data are seen individually for Participant 2 with a 2.5% increase in off-task behavior following the break compared to prior levels. However, when looking at the rest of the participants more considerable differences are seen. Participants 3 and 4 displayed an
approximately 20% increase in off-task behavior following the academic breaks compared to before them. Whereas, both Participants 1 and 5 had an about 15% decrease in their off-task behavior as a result of the academic break.

Figure 12 displays a slight decrease in the amount of off-task behavior observed following the social breaks (77.42% off-task) compared to before the social breaks (79.72% off-task). This slight decrease in off-task behavior from pre- to post-social break off-task behavior levels is seen in Participants 2, 4, and 5. Participant 3 was the only participant who showed a considerable decrease following the social break whereas Participant 1 saw a considerable increase in off-task behavior compared to pre-social break off-task behavior.

Overall, the participants were off-task for 77.11% of all intervals observed with the highest category of off-task behavior being computer usage which was 57.7% of the off-task behavior recorded. Of the rest of the off-task behavior recorded, 42.88% was phone usage and just 9.58% was talking to a peer (Table 2).

The participants mostly engaged with the academic breaks as intended. Although there were some occurrences of engagement with phones or computers during the academic breaks the participants were talking with a peer an average of 77.33% of the time. The average percentage of intervals during the academic breaks that contained phone or computer usage for all of the participants was 32.67% whereas off-task technology use during class time was observed during 73.8% of intervals (Table 3). This displays that the least amount of technology usage on average was during the academic breaks themselves rather than during the data collection periods before and after the breaks.
**Social Validity**

At the end of the study the consenting students filled out a social validity questionnaire containing five questions. On a scale of 1 to 5, where 1 represented “strongly disagree” and 5 represented “strongly agree”, the statement “I enjoyed participating in this study” was rated 4.62 on average. The statement “I enjoyed the academic break” was given an average score of 3.9 by the students, while the social break received an average score of 4.67. The statement, “The academic break helped me focus” was rated 3.24 on average and the statement, “The social break helped me focus” was rated 3.86 on average (Table 4).

Although the averages depict that moderate to high scores were given to the statements on the social validity questionnaire, the range of answers is wide. Questions 1, 4, and 5 had a range of 1-5 whereas questions 2 and 3 had a range of 2-5. It is worth noting that 16 of the 21 students who filled out the questionnaire did not rate any of the items below a 3. Of the remaining five students, three of their lowest scores were 1 and two of the students’ lowest scores were 2. However, on average the social break was rated as more favorable and, in the students’ opinions, more helpful when it came to helping them focus when compared to the academic break.
Table 1

*Average Off-Task Behavior*

<table>
<thead>
<tr>
<th></th>
<th>Academic Breaks</th>
<th></th>
<th>Social Breaks</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>During</td>
<td>Pre</td>
</tr>
<tr>
<td>P1</td>
<td>92.5%</td>
<td>76.25%</td>
<td>32.5%</td>
<td>44.71%</td>
</tr>
<tr>
<td>P2</td>
<td>97.5%</td>
<td>100%</td>
<td>60%</td>
<td>100%</td>
</tr>
<tr>
<td>P3</td>
<td>80.83%</td>
<td>100%</td>
<td>11.67%</td>
<td>96.22%</td>
</tr>
<tr>
<td>P4</td>
<td>59.17%</td>
<td>79.17%</td>
<td>41.67%</td>
<td>60.59%</td>
</tr>
<tr>
<td>P5</td>
<td>91.25%</td>
<td>76.25%</td>
<td>17.5%</td>
<td>97.06%</td>
</tr>
<tr>
<td>Total</td>
<td>84.25%</td>
<td>86.33%</td>
<td>32.67%</td>
<td>79.72%</td>
</tr>
</tbody>
</table>

*Note.* This table depicts the average percentages of off-task behavior (talking, phone usage, and/or computer usage) for participants prior to and following each of the breaks. Off-task behavior during the academic break is depicted (phone usage and computer usage) whereas, no off-task behavior during the social break is depicted, as all three off-task behaviors were allowed to be engaged in during the break.
### Table 2

*Breakdown of Off-Task Behavior*

<table>
<thead>
<tr>
<th></th>
<th>Phone</th>
<th>Computer</th>
<th>Talking</th>
<th>Total % of Intervals Off-Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>15.43%</td>
<td>70.29%</td>
<td>18.29%</td>
<td>65.79%</td>
</tr>
<tr>
<td>P2</td>
<td>71.37%</td>
<td>30%</td>
<td>14.9%</td>
<td>95.33%</td>
</tr>
<tr>
<td>P3</td>
<td>38.68%</td>
<td>62.03%</td>
<td>5.88%</td>
<td>82.02%</td>
</tr>
<tr>
<td>P4</td>
<td>34.7%</td>
<td>65.3%</td>
<td>6.75%</td>
<td>61.3%</td>
</tr>
<tr>
<td>P5</td>
<td>45.09%</td>
<td>63.4%</td>
<td>2.92%</td>
<td>85.29%</td>
</tr>
<tr>
<td>Total</td>
<td>42.88%</td>
<td>57.7%</td>
<td>9.58%</td>
<td>77.11%</td>
</tr>
</tbody>
</table>

*Note.* This table depicts the average amount of each type of off-task behavior as a percentage of the total off-task behavior observed per participant in both pre- and post-break data collection periods in intervention as well as baseline. The “Total % of Intervals Off-Task” column depicts the average percentage of intervals during which off-task behavior was observed pre- and post-break in both baseline and intervention for each participant for the entire study. The row titled “Total” represents the average of each type of off-task behavior as a percentage of the total intervals during which off-task behavior was observed for all participants. The number in the bottom right corner where the column “Total % of Intervals Off-Task” and the row “Total” intersect displays the average percentage of intervals where any type off-task behavior was observed for all participants throughout the study.
Table 3

*Off-Task Technology Use During Class and the Academic Break*

<table>
<thead>
<tr>
<th></th>
<th>During Class</th>
<th>During the Academic Break</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>59.96%</td>
<td>32.5%</td>
</tr>
<tr>
<td>P2</td>
<td>91.78%</td>
<td>60%</td>
</tr>
<tr>
<td>P3</td>
<td>79.09%</td>
<td>11.67%</td>
</tr>
<tr>
<td>P4</td>
<td>58.05%</td>
<td>41.67%</td>
</tr>
<tr>
<td>P5</td>
<td>84.62%</td>
<td>17.5%</td>
</tr>
<tr>
<td>Total</td>
<td>73.8%</td>
<td>32.67%</td>
</tr>
</tbody>
</table>

*Note.* This table depicts the percentages during which off-task technology use was observed during class time, this includes data collection periods during baseline as well as prior to and following both breaks during intervention. This table also depicts the percentage of off-task technology use that was recorded during the academic breaks.
### Table 4

*Results of Social Validity Questionnaire*

<table>
<thead>
<tr>
<th>Statement</th>
<th>Average Score on Questionnaire</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>I enjoyed this study</td>
<td>4.62</td>
<td>1 - 5</td>
</tr>
<tr>
<td>I enjoyed the academic break</td>
<td>3.90</td>
<td>2 - 5</td>
</tr>
<tr>
<td>I enjoyed the social break</td>
<td>4.67</td>
<td>2 - 5</td>
</tr>
<tr>
<td>The academic break helped me focus</td>
<td>3.24</td>
<td>1 - 5</td>
</tr>
<tr>
<td>The social break helped me focus</td>
<td>3.86</td>
<td>1 - 5</td>
</tr>
</tbody>
</table>

*Note.* This table depicts the average scores and the range of scores provided for each statement by the students who both consented to be in the study and completed the social validity questionnaire (n = 21). Students had the option to rate each statement on a scale of 1 - 5 (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree).
CHAPTER 4: DISCUSSION

The purpose of this study was to evaluate the effects of implementing a social/mobile device break as well as an academic break to decrease off-task behavior in a college classroom. We set out to examine if one type of break would more effectively reduce post-break off-task behavior. We posited that the social break would allow for students to socialize and/or engage with a mobile device, potentially serving as an abolishing operation for such off-task behavior following the break. We also posited that the academic break might allow students to take a break from regular class activities (mainly listening, viewing slides, answering professor questions, and taking notes) while still remaining on-task (talking about the class material). We observed participants engaging in off-task behavior at high rates with most off-task behavior being related to technology usage rather than socializing with a peer. The exceedingly high off-task behavior levels observed could be related to a variety of factors, which are discussed individually below. However, it should also be noted that the professor ceased using other classroom management techniques during the study, because she did not know who was a participant and we did not want to introduce an additional independent variable. We used entirely antecedent strategies and did not incorporate any consequence-based approaches. Future researchers should consider consequence-strategies as well. Future research should also aim to include a baseline condition throughout the multi-element design rather than only prior to intervention to increase experimental control.

It is also important to note that it is difficult to determine if the off-task behavior recorded before, during, and after the breaks was always without question off-task behavior. If a student
used their phone, it was considered off-task, however they could have been pulling up a document related to the current class or following classes. The class in which this study took place in was the first class of the day, therefore, it is possible that students were studying for an upcoming quiz or exam. Although off-task by definition, these behaviors are related to the course sequence in their program, but because of the nature of this study were considered off-task behavior in the same way that texting a friend would be. Additionally, the research team was unable to verify if the talking observed during the academic breaks was related to class material. Future research should use technology that monitors behavior more accurately by downloading a server or application to the students’ phones and computers (Ravizza et al., 2017). Additionally, video recording that allows observers to “zoom in” on the students’ laptop screens could be used to more accurately capture the students’ on or off-task behavior. Future research should also study classes that are not the first class of the day to reduce potential off-task behavior related to upcoming classes. Although such behavior is off-task, it might still be related to the students’ academic goals.

Overall, most of the off-task behavior observed during pre- and post-break data collection periods was phone and computer usage, with slightly more computer usage and much less talking than any other type of off-task behavior. This displays that technology usage was the most common off-task behavior observed in this college classroom when compared to talking. Some studies depict off-task talking as being a large disrupter in classrooms (Attia et al., 2017). However, for older students, computer and phone use may be a more common type of off-task behavior. One reason being, that their friends may not be in the same program or course as them, necessitating a way to communicate with others outside of the classroom, such as texting and using their computer to socialize. Whereas in an elementary school, most of the students’ friends
could be in that classroom with them. Additionally, college students have more responsibilities than elementary age students, therefore they may have other things to work on during class time that are not related to class material, but are still important to them personally, such as paying a bill or responding to a family emergency. Overall, off-task behavior was observed at high rates, specifically technology use. Therefore, decreasing off-task technology use in college classrooms is an important area of research that should be expanded on in future studies.

The participants for this study were chosen because of their varying percentages of off-task behavior as well as them being seated in a location that made data collection easier, that being the back two rows of the classroom. The seating choices of the students may be a limitation of this study that impacted the overall high rates of off-task behavior throughout. It is possible that because the students selected had such high rates of off-task behavior they could have been less sensitive to the interventions overall than other students may have been. Research suggests that students with higher motivation and achievement select seats in the front third of their classroom (Rebeta et al., 1993). A study by Perkins and Wieman in 2005 assigned students their seats and then switched them halfway through the semester and found that students sitting in the back of the room were considerably more likely to receive an F than students in the front of the classroom (Perkins & Wieman, 2005).

Perkins and Wieman (2005) also found that the further the students’ original seating location was from the front of the class, the lower their attendance was. Low attendance was a limitation concerning some of the students selected for the current study as well. Participants 3 and 4 were present for all of the data collection periods. However, Participants 1, 2, and 5 were only able to have data collected for 8 of the 12 sessions due to being absent from the entire class or stepping out of class for one of or both of the 10 min data collection periods, or leaving the
classroom during the scheduled break. Because of the relationship between seat placement, grades, and attendance, future research should evaluate the behavior of students seated throughout the classroom who exhibit varying levels of off-task behavior.

As seen in the social break, it is possible that following an opportunity to talk with peers or engage with technology, motivation to engage in those behaviors may have been decreased. When looking at the effects of the social break, aside from Participant 5, all of the students had less off-task behavior following the social break compared to following the academic break. Of those participants, three participants had less off-task behavior following the social break compared to before it. One interpretation for these findings points to the social break acting as an abolishing operation for off-task behavior. Therefore, the participants may have had less motivation to use their technology and talk to a peer following the opportunity to do so.

The only portion of the study where all five participants’ off-task technology use reliably decreased was during the academic breaks. Although the academic break did not reliably decrease off-task behavior following the breaks for a majority of students, it did decrease off-task technology use considerably during the break itself. These results were surprising for the research team as the initial focus of the study was to evaluate the effects of the breaks on off-task behavior following the breaks rather than during them. This points to potential benefits related to focus and decreased technology use for students when engaging in class discussion with peers as occurred during the academic breaks.

Participant 5 is a participant who may have seen some of these mentioned benefits during the break. On both graphs depicting Participant 5’s data there is an outlier data point from session 14. This data shows that prior to the academic break the participant was off-task for 100% of intervals on that day. The data collector made a note that the participant had
headphones in for the entire 10 min data collection period prior to the break. However, once the academic break began, the participant took their headphones out and began talking with a nearby peer and left them out for the entirety of the break. During this academic break, no other technology use was recorded. Following the break, the participant was only off-task and on their phone for 15% of the intervals and did not put their headphones back into their ears. On this day, the academic break not only got Participant 5 to remove their headphones during the break, but they also kept them out following the break. All of the participants had much lower levels of off-task technology use during the academic break than at any other time in the study, but off-task behavior following those breaks did not decrease for all participants, as it did for Participant 5.

These differing impacts of the academic break on off-task behavior following the break depict that a deviation from regular class format may be beneficial for some students whereas it may not be for others. This points to the possibility that some students may need something more than a lecture to engage them, whereas some students may actually be disrupted by a deviation from the regular lecture format and a return to it. Participants 1 and 5 were the two participants who exhibited considerable decreases in off-task behavior following the academic break and also had very high levels of off-task behavior prior to the break. In contrast, Participants 3 and 4 had the lowest levels of off-task behavior prior to the academic breaks and displayed considerable increases in off-task behavior following the academic breaks. Potentially displaying that students who are relatively more on-task may be disrupted by transitioning from a break of this nature back to lecture, whereas students who are already off-task much of the time may need a break of this kind to help them better engage with the content and put away their technology. Because the academic break had clear benefits of decreasing off-task technology use during the break itself,
but more varied impacts on off-task behavior following the breaks more research in this area is needed to know how best to incorporate these findings into college classrooms.

The results from both breaks allow for some advantages and disadvantages to arise for each break type. One benefit of the academic break being that technology use was decreased during it, however a drawback being that off-task behavior was higher following this break for several participants. Whereas the social break more reliably decreased off-task behavior following the break for several participants. However, although decreased, levels were still relatively high.

Overall, the research team does not feel confident in recommending that one break or the other should be implemented in college classrooms. This is due to changes in off-task behavior following the breaks not being consistent across participants as well as the changes not being large enough to justify such a recommendation. However, benefits were seen during the academic break itself (decreased off-task technology use) and modifications to this break or elements of it could be beneficial in classrooms. The ways in which these elements could be incorporated into classrooms will vary based on the class content, class size, the age of the students as well as many other potential factors.

One way teachers could potentially get students to stop engaging with technology briefly while avoiding potential increases in off-task behavior after the break would be to implement an academic break at the end of class. Doing this would not necessarily be a break from class, but it would allow for a time for students to actively engage with class content without the possibility of increasing off-task behavior following the break. Future research could evaluate how the benefit of decreased technology use seen during the academic break could be incorporated into classrooms. Future research could evaluate interventions that facilitate a smoother transition
from class to the break and from the break back to the lecture to mitigate the potential increases in off-task behavior. Future research could also explore the relationship between an overall more interactive class style and off-task technology use. The participants in this study displayed less off-task technology use when provided a time to actively engage with class content. Therefore, a class that is more interactive overall may see higher rates of engagement and less technology use.

Regardless of whether the post-break data for one break type was higher or lower compared to its own pre-break data or to the post-break data of the other break type, off-task behavior levels were still relatively high on average prior to and following both breaks. It is important to note that some students may use technology-based academic supports that are designed to allow for students with disabilities to have access to higher-education settings (Adebisi et al., 2015). Therefore, we caution against completely eliminating technology use in the classroom, given that doing so would exclude some students. When looking at Tables 1 and 3, it is evident that off-task behavior only reliably decreased for all participants during the academic break, specifically technology use. The low rates of off-task technology use during the academic break could point to the potential benefits of including more active participation in college classrooms. Future research could also aim to improve learning outcomes of students rather than aiming to only decrease off-task behavior. Overall, due to the high levels of off-task behavior observed in this study, it is evident that more research to decrease technology use in college classrooms is necessary and that methods involving active participation and engagement with class material may play an important role in doing so.
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APPENDICES
Appendix A: Discussion Prompts for Academic Breaks

1. Consider Code 3.15 regarding Appropriately Discontinuing Services. Subcode 5 addresses situations in which stakeholders are not complying with the intervention despite appropriate efforts. What do you think they mean by “appropriate” efforts? Describe what appropriate efforts would look like if you were a BCBA. What would you do to help facilitate proper implementation of the behavior change interventions on the parents’ end when there does not seem to be a lot of “buy-in”? Have you ever seen this happen? If so, explain how it was handled and how you would have approached it differently.

2. Code 3.01 discusses responsibility to clients such as taking appropriate steps to support clients’ rights, maximizing benefits and doing no harm to clients. These are somewhat vague statements, how would you apply each of these in the field in a concrete way? Provide an example of how you could support a client’s rights when they are not being protected. Discuss an example of how you can better maximize a client’s benefits from services. Lastly, provide an example of how you would make sure to do no harm to clients. In your work how have you seen these play out? Provide examples.

3. What do you find most challenging about receiving feedback? Is there a format that you prefer or a format that you really do not enjoy? How can you take your own experience with receiving feedback and use that to guide the way you will deliver feedback in the future? Code 4.08 mentions the delivery of timely formal and informal feedback. When you hear formal and informal feedback what comes to mind? What would you delivering formal feedback look like vs. informal feedback? What kind have you experienced the most in your work?
4. A mom texts you a video of your client engaging in a skill that you have been targeting for months. Can this video be used for advertising purposes to display your clinic’s ability to make meaningful change? If so, what steps would need to be taken for this to be ethical? If you deem this inappropriate, why? See codes 5.06, 5.07, 5.08, and 5.09.
Consider a second example if time allows. Imagine a parent of one of your clients posts that same video directly to their personal social media page. They tag your company as well as your personal account and say thank you to you and the company in the caption for helping to get their child to where they are today. Do you ask her to remove the post entirely? Can you comment on it? Provide as much information as you can concerning how you would respond to this in the most ethical way possible.

5. “Reflect on this past week. See if you can bring to mind a moment where you “met your limits”. Perhaps it was with a client, parent, staff member, or your child, who is struggling. See if you can notice some kind of difficulty that brought about an emotional challenge for you. As you think about the situation, what is it that your client, parent, child, or colleague was doing? What are three things about that situation that posed a personal obstacle for you? Perhaps you can notice what you were experiencing in that moment, what you were thinking, and what you were feeling” (Fiebig et al., 2020).

6. Imagine you are a practicing BCBA and you want to conduct research with one of your clients. When you are doing this, will you prioritize the integrity of the research so that the intervention can be implemented with other children whose BCBA find your study? Or is it important to prioritize the current client’s services and welfare? Provide rationale for your answer. To ensure confidentiality for your clients in research, BCBA are to make efforts to prevent accidental sharing of confidential or identifying information
(Code 6.05). How do you remedy this with the need for a detailed description of your participant and the setting of your study in the manuscript? For example, instead of stating the name of the school and the city, you could say, “A small public school outside of a small town”. Can you think of anything else you could modify in an effort to provide details, but not breach confidentiality?

7. What is one contribution made by Israel Goldimond to the field of ABA? How can you apply it to your practice?
## Appendix B: Data Sheet

<table>
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Appendix C: Social Validity

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<td>I enjoyed participating in this study</td>
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<tr>
<td></td>
<td>Strongly disagree</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>I enjoyed the academic break</td>
<td>1 2 3 4 5</td>
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<tr>
<td></td>
<td>Strongly disagree</td>
<td>Strongly agree</td>
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<tr>
<td>I enjoyed the social break</td>
<td>1 2 3 4 5</td>
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<td></td>
<td>Strongly disagree</td>
<td>Strongly agree</td>
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<tr>
<td>The academic break helped me focus</td>
<td>1 2 3 4 5</td>
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<tr>
<td></td>
<td>Strongly disagree</td>
<td>Strongly agree</td>
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<tr>
<td>The social break helped me focus</td>
<td>1 2 3 4 5</td>
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<tr>
<td></td>
<td>Strongly disagree</td>
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## Appendix D: Treatment Integrity

### Implementation of Breaks Checklist

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<th>Expectation</th>
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<th>Social Break</th>
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<td>Professor stated the expectations for the students’ behavior during the break or asked if they needed a reminder of the expectations</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>Academic break - Professor told the class that they are to talk with a peer about the discussion questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social break - Professor told the class that they are to talk with a nearby peer or engage with a mobile device</td>
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<tr>
<td>Professor provided the proper materials for the break or told the class what materials are prohibited during the break</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Academic break - The class was provided the discussion questions</td>
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<td></td>
</tr>
<tr>
<td>Social break - The class was told that they are not to engage with class materials</td>
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<td></td>
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<tr>
<td>The break was 5 minutes long</td>
<td>Yes</td>
<td>No</td>
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Appendix E: IRB Approval

February 1, 2023

Dear Allison Fisher:

On 2/1/2023, the IRB reviewed and approved the following protocol:

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<td>Title:</td>
<td>Evaluating the Effects of Academic and Social Breaks on Off-Task Behavior in a College Classroom</td>
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The modifications, as described by the study team below, have been approved:

Study will now take place during a different class that will occur during the Spring 2023 semester. New Research Assistants were added (Mallory Platte and Elaine Kim).

Updated flyer with new class and location.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

Jennifer Walker
IRB Manager