

**Listen Up: A quantitative study of the extent to which audio-based feedback affects high school students' perceptions of writing feedback**

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EDTL 6380: Seminar on Technology and Learning

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April 29, 2022

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### **Abstract**

This quantitative study examined to what extent high school students perceive audio-based writing feedback as useful. A sample of 41 high school students were sorted in two nonrandomized groups, a control and experimental group. Data analysis revealed audio-based feedback did not increase students' perceptions of writing feedback as useful. Thus, more research should be done to determine what specifically is and isn't useful to students about writing feedback delivered in audio format.

## Introduction

Perhaps the greatest human achievement in history is the proliferation of the printed word; major accomplishments in nearly every human discipline involve writing in some way or another. However, for thousands of years before the promulgation of books and webpages, education was fueled by oration. The exponential success and adoption of digital storytelling tools like podcasts and video conferencing suggests that the spectrum of human communication might be shifting back to spoken storytelling a central conductor of knowledge. The education sector has some of the greatest potential for innovation. Thus, educators must proactively examine the tools they use for communication in the classroom to give students skills for the future.

In 2017, Apple pioneered AirPods, wireless headphones that looked like a novelty at the time. Despite a mere 15 million AirPods sold that year, sales grew. Apple sold 110 million AirPods in 2020 alone (Curry, 2021, para 10). These iconic ear pieces indicate the exponential consumption of audio-based content in our culture. Edison Research estimates that 86% of Americans ages 12-34 have listened to online audio within the last month, and that 62% of Americans, roughly 176 million people, listen on a weekly basis (Edison Research and Triton Digital, 2021, pp. 35-36). Educators should note these trends and carefully consider their implications. The adoption of wearable audio devices, paired with the rising popularity of podcasts, sets the stage for a new frontier of education in the digital landscape. Do teachers have new avenues to get students' attention and have them actually *listen up*?

## Literature Review

### Student preparedness and overconfidence as writers

The introduction of this action research project focused on the fast-growing spread and consumption of audio-based content and the necessity for it to be studied as a writing feedback tool. According to the *Inside Higher Ed* article “Minimal Writing, No Problem,” by Emma Whitford, a survey of 1,140 college students in the United States revealed that, “...students didn't think they needed any spelling or grammar help -- a slight majority of students said they had no need for any additional instruction...” (Whitford, 2018, para 6). The findings indicate that age may be a coefficient of the subjects’ sentiments: “those 19 years of age or younger were much less likely to believe that they needed help than did older students... For example, less than 8 percent of those 19 years of age and younger felt they needed some or substantial instruction” (Whitford, 2018, para 7). The data suggests that American teens have a very high degree of confidence in their writing; despite this, the National Assessment of Educational Progress (NAEP) reports in *The Nation's Report Card* that less than one third of twelfth-graders met or exceeded the ‘proficient’ level for writing performance, where ‘proficient’ is defined as, “competency over challenging subject matter, including subject-matter knowledge, application of such knowledge” (National Assessment of Educational Progress, 2011). Clearly, there is a gap between the need secondary students have to improve their writing and the perceived lack of efficacy they see in writing instruction. Further, methods of writing instruction and feedback are understudied in the field, especially at the state and national levels. The NAEP’s eleven-year-old report is the most recent venture of the US government to evaluate students’ writing readiness. Something has to change.

### **How teachers give feedback matters**

Teachers struggle to provide effective feedback on student writing. Computers have replaced the editor's notorious red pen, but computers are not the pedagogical endpoint of effective feedback. Heron-Hruby, Chisholm, and Olinger studied pre-service undergraduate teachers acting as writing mentors. The subjects reported feeling that,

“typing into comment boxes merely scratched the surface of how they could best support student writers. Furthermore, the comment features challenged some WMs to reevaluate their beliefs that teaching writing is an act of transmission: because they could not easily lecture in the comment boxes, some WMs reexamined what feedback, beyond direct instruction for improvement, might be helpful to students...” (Heron-Hruby et al., 2020, . 85)

The service-teachers' sentiment in the study is one echoed many times in the literature about writing feedback. Written comments are often inadequate for writing critique. Few summarize this feeling better than Hunt, who wrote, “Written language is cumbersome, difficult, mechanically time-consuming and hopelessly limited. Given a choice between writing and dictating, I, a teacher of writing, choose to employ the resources of the spoken word as opposed to the written one” (Hunt, 1975, p. 585).

New technologies provide the dynamic flexibility writing instructors look for in their feedback tools; if Hunt (1975) and his predecessors prefer the spoken word for feedback, modern audio technology may foster positive systemic disruption. Audio-based content has many classroom uses: student-generated projects, enrichment, anchor texts, and as a tool for review and assessment. Audio also can be edited, a very advantageous characteristic for teachers

(Lasseter & Pedersen, 2018). Yet Makina (2020) found in a study of over 200 university faculty participants who produced 431 podcast transcripts, “Only 25% of the podcast scripts included important information that could contribute to productive learning.” Much of the content found in the podcasts was motivational or clerical (Makina, 2020, p. 38). Audio feedback has powerful potential that is not yet properly understood or used.

Gould and Day (2013) found a mixed reaction to audio-based feedback in their study of 51 health professionals. They report, “a clear majority of students (92%) expressed that audio feedback contributed to their learning... although 8% felt that it did not help at all” (Gould & Day, 2013, p. 558). Surprisingly, despite subjects clearly indicating that audio-based feedback was detailed, almost a third reported that they would prefer not to receive audio-based feedback (Gould & Day, 2013, p. 558). To contextualize how audio-based instruction contributes to learning, Mrkich and Sommers say, “...the personal nature of the comments that reduces perceived distance, detailed response that helps [students] revise..., encouraging and positive comments that build confidence and motivation, and tone of voice that translates...what is important and is perceived as indicative of teachers’ time and care” (2016, p. 2). Gould and Day’s 2013 study, along with Mrkick and Sommers’ findings are consistent with the rest of the literature on audio-based feedback: although educators are enthusiastic, students’ perceptions of audio as a feedback tool is still contested in the literature. The nature of these findings were the inspiration for me to establish the project and procedures outlined below.

## **Methodology**

The purpose of this quantitative action research study is to explore the extent to which audio-based feedback affects high school students' perceptions. The research questions are: 1) to what extent do high school students perceive feedback on writing as useful? And 2) does audio-based feedback increase how useful students perceive feedback to be? The independent variable in the study is audio-based feedback on a writing assignment; the dependent variable is students' perceptions of feedback. My hypothesis is that providing personalized audio-based feedback to students will increase their perceptions of writing feedback as useful.

### **Population and Sampling**

Perrysburg High School is a suburban high school in Perrysburg, Ohio, with a student population totaling 1,700 students, grades 9-12. In the district's population of 5,300 students, 10% qualify for free or reduced lunch.

This study used a convenience sample of honors-English students taught by the researcher ( $n=41$ ). All students submitted assent forms to participate in the study accompanied with signed consent forms from their parents. Participants were arranged into control or experimental groups by their class period: one class' participants acted as the control group ( $n=21$ ); the other class' participants, therefore, formed the experimental group ( $n=20$ ). Participants were excluded from the study if they failed to complete either the pre- or post-tests. Two participants were excluded from the control group and two more were removed from the experimental group for this reason.

### **Instrumentation**

This project uses subscales of the Intrinsic Motivation Inventory (IMI), specifically those of usefulness/value and effort. The usefulness subscale was of direct interest to this study as a



way to quantify how useful students deem writing feedback to be. The effort subscale was used to see if increased effort correlated with increased perceived usefulness. Responses were numbered on a Likert scale from 1 to 7, with 1 indicating the response being “not true at all” and 7 signifying a “very true” response. (See Appendix A for the pre-test and Appendix B for the post-test.) Very slight modifications were made to the wording of some questions as the inventory allows for the sake of clarity: e.g. “I think this activity is useful for [blank]” was changed to “I think that writing feedback is useful for my development as a writer.” These edits are permissible per the directions of the inventory while still maintaining validity.

McAuley, Duncan, and Tammen (1989) tested IMI’s reliability and validity; the results suggested that the value/usefulness and effort subscales were reliable and valid.

## **Procedures**

Prior to this study, all participants shared the experience of writing an essay for my class as part of their normal school experience. The essay was the largest summative assessment of the quarter and had the potential to greatly affect students' grades in the class. Participants completed the pre-test inventory to capture data about their perceptions of writing and the forthcoming feedback within a week after the essay’s deadline.

As the participants’ teacher, I read, scored, and gave individualized feedback for all students’ essays. Written comments were given using Turnitin.com’s quickmark feature along with narrative comments. For audio-based feedback, I used Screencastify to narrate each student's paper to them, using the assignment rubric as a guide to my response. I intentionally did not follow a script so that I could authentically respond to students’ work using the assignment rubric. I made a wholehearted attempt to sound affable, upbeat, and affirming, as König found that “participants who listened to the enthusiastic version of [a podcast] rated the instructional

quality as more positive...” (2019, p.3). However, I also attempted to offer each student useful, honest critiques. The length of each Screencast file ranged from 10-25 minutes.

Students received personalized feedback on their essays approximately four weeks after the assignment due date. The control group received feedback in the form of written comments; the experimental group received personal links to their narrated screencast videos. Participants individually reviewed their feedback for 20 minutes of class time, then each completed the post-test inventory. Four participants, two from the control group and two from the experimental group, who were absent from class on the days of the pre- or post- test were excluded from the study.

## Discussion of Results

The data were analyzed using inferential statistics for answers to the research questions.

Table 1 depicts the mean changes for each subcategory of the inventory.

**Table 1**

*Comparison of pre-test and post-test data between control and experimental groups*

Variable	Control Group			Experimental Group		
	Pretest Mean	Post-test Mean	Change	Pretest Mean	Post-test Mean	Change
I believe writing feedback could be of some value to me.	6.381	6.545	0.165	6.15	5.75	-0.40
I think that writing feedback is useful for my development as a writer	6.286	6.500	0.214	6.20	5.85	-0.35
I think this is important to do because it can help me become a better writer.	6.286	6.273	-0.013	5.90	6.05	0.15
I would be willing to receive feedback again because it has some value to me.	6.381	6.682	0.301	6.55	6.10	-0.45
I think that doing this activity could help me see how to become a better writer.	6.095	6.364	0.268	5.75	6.25	0.50
I believe reviewing feedback on my writing could be beneficial to me.	6.286	6.500	0.214	6.25	6.05	-0.20
I think getting writing feedback is an important activity	6.190	6.636	0.446	6.10	5.90	-0.20
I put a lot of effort into this.	5.762	5.818	0.056	5.55	5.70	0.15
I didn't try very hard on this activity. (R)	2.190	2.045	-0.145	2.00	1.95	-0.05
I tried very hard on this activity.	5.667	6.045	0.379	5.60	5.70	0.10
It was important to do well at this task.	6.524	6.455	-0.069	6.30	6.35	0.05
I didn't put much energy into this. (R)	2.476	1.762	-0.714	5.2	4.6	-0.6

Figure 1 suggests a small difference between the control and experimental groups. In every criterion except a willingness to receive feedback in the future, pre-test data shows that the control group inherently perceived feedback on writing as more valuable than the experimental group. This perhaps explains why, on average, the control group reported putting more effort into their assignment before submitting it.

**Figure 1**

Comparison of control and experimental groups

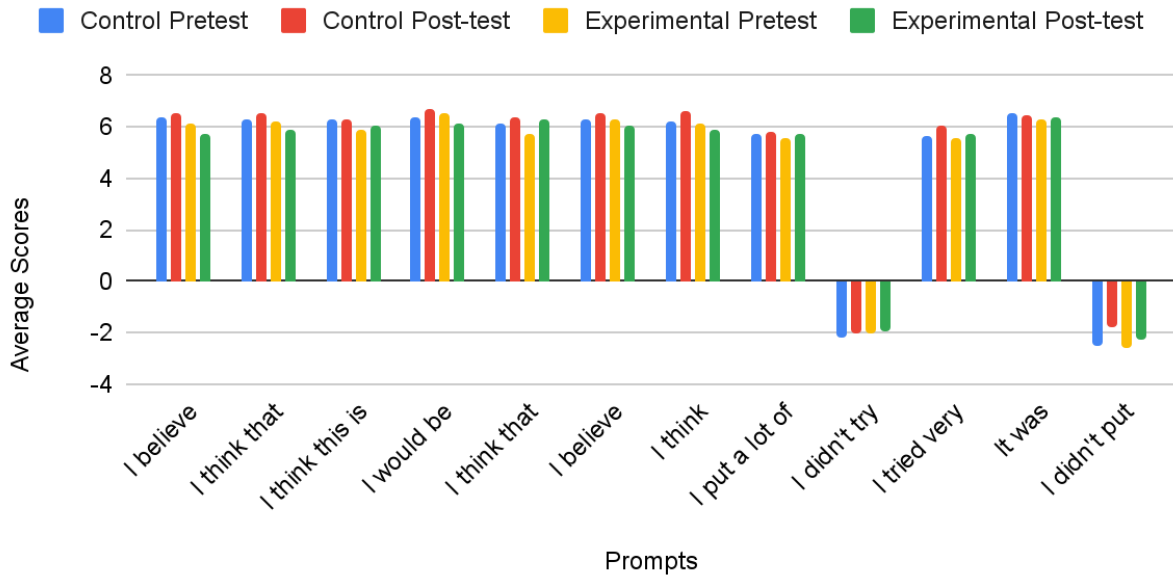


Figure 2 demonstrates that the control group maintained a higher level of perceived usefulness of feedback they received in every category except perceived effort after the treatment.

## Figure 2

Comparison of control and experimental group post-test results

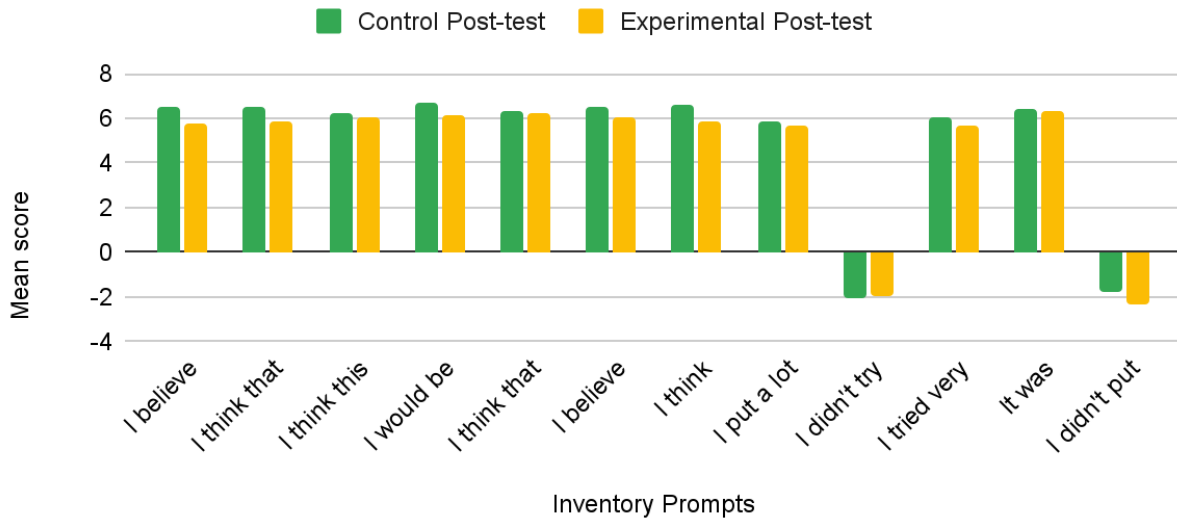
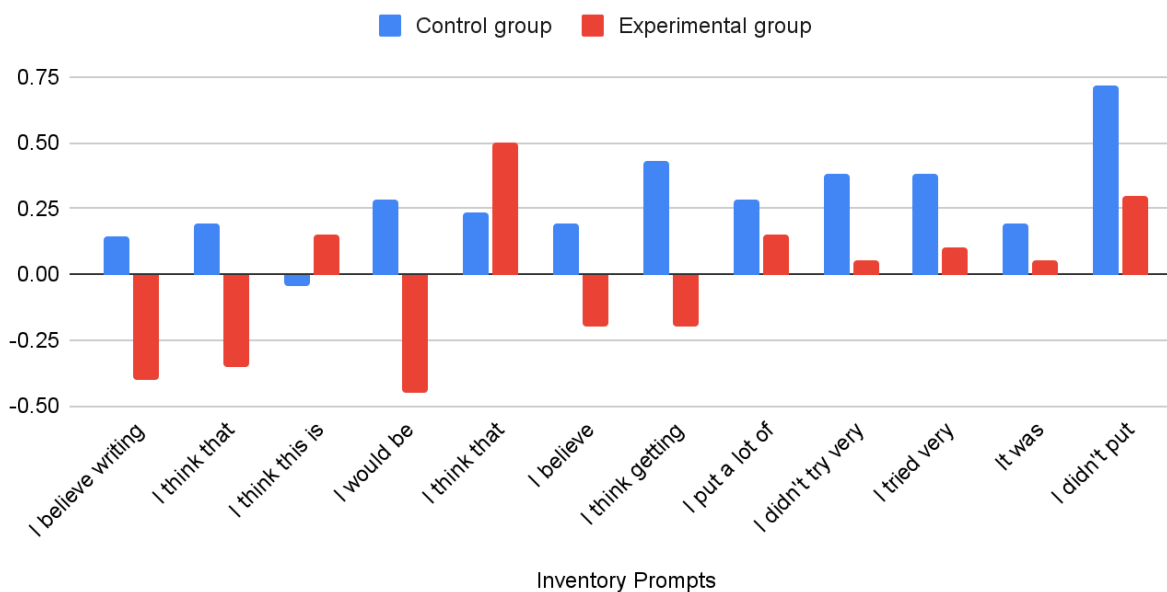


Figure 3 illustrates the means of difference for both groups; this reflects how the feedback students received affected their perceptions in each subcategory.

**Figure 3**

Means of difference per question



Several subcategory data points of the inventory are relevant to the research question.

The experimental group showed two significant increases in the perceived usefulness of writing feedback, both in the prompts “I think this is important to do because it can help me become a better writer” (+.149) and “I think that doing this activity could help me see how to become a better writer” (+.5). However, the experimental groups reported significant dips after receiving audio-based feedback subcategories like “I believe writing feedback could be of some value to me” (-.4), “I think that writing feedback is useful for my development as a writer” (-.35) and “I would be willing to receive feedback again because it has some value to me” (-.45). Holistically, it appears the experimental group grasps how writing feedback could be valuable, but they do not

see much personal value in writing feedback and would not seek out new feedback opportunities after listening to the treatment.

## Conclusions

A one-way t-test of independent samples was conducted using the difference of means in each subcategory. Audio-based feedback did not significantly increase students' perceptions of writing feedback as useful;  $t(11) = -3.435$ ,  $p = .99$ , one-tailed. The results fail to reject the null hypothesis. There are some consistencies to this finding to relevant studies in the literature. In Gould and Day (2013, p. 558), 84% of participants in a study on audio-based feedback reported positive impacts on their final summative work and attributed it feedback they received; however, the study named limiting factors in participants' enthusiasm. Student-subjects noted that lengthy critique could be emotionally draining, with one subject saying "it began to feel bad and destroy my confidence (at this point I felt like crying ...)" (Gould & Day, 2013, p. 561). The researchers arrive at the conclusion that, "It is evident that audio feedback does not suit all learners and in a similar way, this may also account for the mixed response..." (Gould & Day, 2013, p. 563). Individual responses to the Intrinsic Motivation Inventory some participants in this study had a similar experience; 5% of participants reported a decrease in perceived usefulness of feedback greater than 10 points.

This study could benefit from design revisions for future iterations. Most importantly, the quantitative nature of this study's instrumentation limited test subjects' ability to provide explanations or nuance to accompany their reported perceptions. Future research should consider a mixed methods approach and interview subjects for a richer understanding of their perceptions.

More should be done as well to reduce confounding variables in perception data by taking grades of student work into account. Examination of whether or not the grades students received on their essays affected their impressions of the writing feedback is warranted. A



limitation of this study is that the researcher cannot correlate students' perceived effort on the assignment with their essay scores, nor can the researcher correlate how students felt about their writing with how they performed on the assessment. Having that information would shed new light on the data, particularly the point that written feedback increased participants' perceived effort by .71.

Hindsight, too, suggests that the design of this study failed to consider a core characteristic of modern audio-based content: “[Podcasts] are collaborative... participatory in engaging with their audience, and they value dispersion over scarcity. They also require audience engagement for continuation, rather than top-down approval” (Bianchi-Pennington, 2018, p. 589). More should be done to determine best practices for two-way engagement of student audiences as the literature becomes more conclusive; put simply, students should make podcasts, too. Educators should disrupt the feeling of feedback's “top-down approval” for a more collaborative approach when audio is involved.

The tremendous growth and adoption of audio-based products and content suggests that teachers should do more to embrace audio in the classroom. More research should be done to determine best practices for its inclusion as a teaching tool.

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## Appendix A

### Student perceptions' value/usefulness of audio-based writing feedback

**1. I believe writing feedback could be of some value to me.**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**2. I think that writing feedback is useful for my development as a writer.**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**3. I think this is important to do because it can help me become a better writer.**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**4. I would be willing to receive feedback again because it has some value to me.**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**5. I think doing this activity could help me to see how to become a better writer.**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**6. I believe reviewing feedback on my writing could be beneficial to me.**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**7. I think getting writing feedback is an important activity.**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**Student perceptions of their effort, importance of the task****1. I put a lot of effort into this.**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**2. I didn't try very hard to do well at this activity. (R)**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**3. I tried very hard on this activity.**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**4. It was important to me to do well at this task.**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**5. I didn't put much energy into this. (R)**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

## Appendix B

### Student perceptions' value/usefulness of audio-based writing feedback

**1. I believe writing feedback could be of some value to me.**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**2. I think that writing feedback is useful for my development as a writer.**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**3. I think this is important to do because it can help me become a better writer.**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**4. I would be willing to receive feedback again because it has some value to me.**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**5. I think doing this activity could help me to see how to become a better writer.**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**6. I believe listening to feedback on my writing could be beneficial to me.**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**7. I think writing feedback is an important activity.**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**I have carefully reviewed the feedback I have been given regarding our recent class essay. Circle your response**

YES

NO

**Student perceptions of their effort, importance of the task**

**1. I put a lot of effort into this.**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**2. I didn't try very hard to do well at this activity. (R)**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**3. I tried very hard on this activity.**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**4. It was important to me to do well at this task.**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

**5. I didn't put much energy into this. (R)**

1	2	3	4	5	6	7
Not true at all			Somewhat True		Very True	

## Appendix C

**Table 1**

*Comparison of pre-test and post-test data between control and experimental groups*

Variable	Control Group			Experimental Group		
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