

Attention Contagion in Online Courses: Examining Student Attention During Recorded Lectures

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Introduction

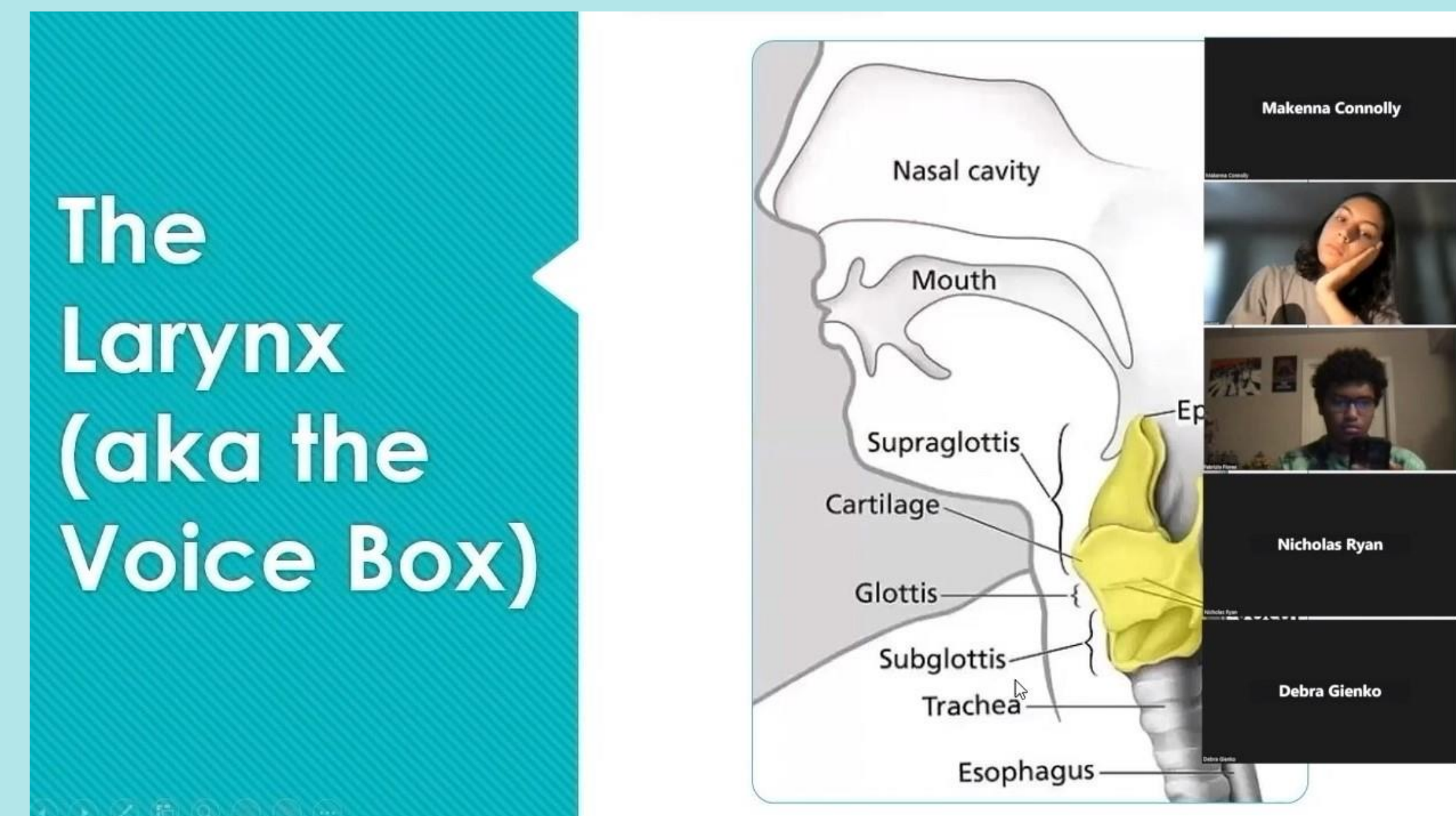
- Attention contagion is when individuals can influence the attention or inattention of the rest of the group.
- This phenomenon is relevant to education as students' behavior may affect their peers' attention during lectures.
- The current literature shows that during an in-person lecture with attentive peers, students self-report having more attention, display more attentive behaviors, and have better memory of the lecture.¹ Similar results have been found during live-streamed lectures when other students with their cameras on paid attention to the lecture.²
- The present study investigated attention contagion among students watching the recordings of previously live-streamed lectures where other students' cameras were on.
- While watching recorded lectures, students can control the flow of information. So, students may not feel as overwhelmed and use social cues, like their peers' attention, to determine whether they should pay attention to the lecture.
- As such, it was hypothesized that attention contagion would not be as prevalent among students watching recorded lectures.
- The present study also aimed to assess potential influences on attention contagion that have been discussed in previous studies, including cognitive overload and social appraisals.
- Cognitive overload is when an individual's working memory is overwhelmed by information³, such as when a lecturer presents a large amount of information at once. Social appraisals are when an individual evaluates someone else's behavior to help determine their own beliefs and behaviors⁴, such as whether they think a lecture is important and if they should pay attention.

Methods

- Participants:** This study's results are based on 120 participants, with 60 in each condition. All participants were UCF undergraduate students aged 18 years old or older.
- Procedure:** Participants either watched a 4.5-minute recorded lecture with confederates pretending to be attentive students or the same recorded lecture with confederates pretending to be inattentive students.
 - Both lectures were edited so that the delivery of the lecture was the same in both conditions. The lecture was recorded once, and the confederates watched the lecture twice, once for each condition. The confederates' recordings were then spliced on top of the original lecture video. This ensured that the only difference between the two lectures was the confederates' behavior. Figure 1 shows a screenshot from the manipulated lecture in the inattentive condition.
- After watching the lecture, participants completed the same post-lecture quiz, self-report survey, and demographic questionnaire.
- Measures:** The lecture quiz provided an objective attention measure to compare with the results of previous studies. The survey consisted of Likert scale questions to assess participants' attention and the existence of potential influences on attention contagion. The questionnaire collected demographic information, such as the participant's gender, employment status, and part-time or full-time student status.

Figure 1

Screenshot of the Edited Recorded Lecture with Inattentive Confederates



Results

- On a six-question quiz, the average quiz score in the attentive condition was 65%. In the inattentive condition, the average quiz score was 62%.
- Figure 2 shows how participants in each condition responded to Question 10 of the 12-question survey, with the results of the t-test being $t(118) = -5.407, p < .001$.
- Figure 3 shows how participants in each condition responded to Question 6 of the survey, with the results of the t-test being $t(118) = -2.527, p = .013$.
- Figure 4 shows three positive correlations in the inattentive condition, including for the responses to Question 10 and Question 6. The two other correlations involve questions that asked how often the participant looked at other students, how overwhelmed the participant felt, and how often the participant thought about things not related to the lecture.

Figure 2

Responses to Survey Question 10 for Each Condition

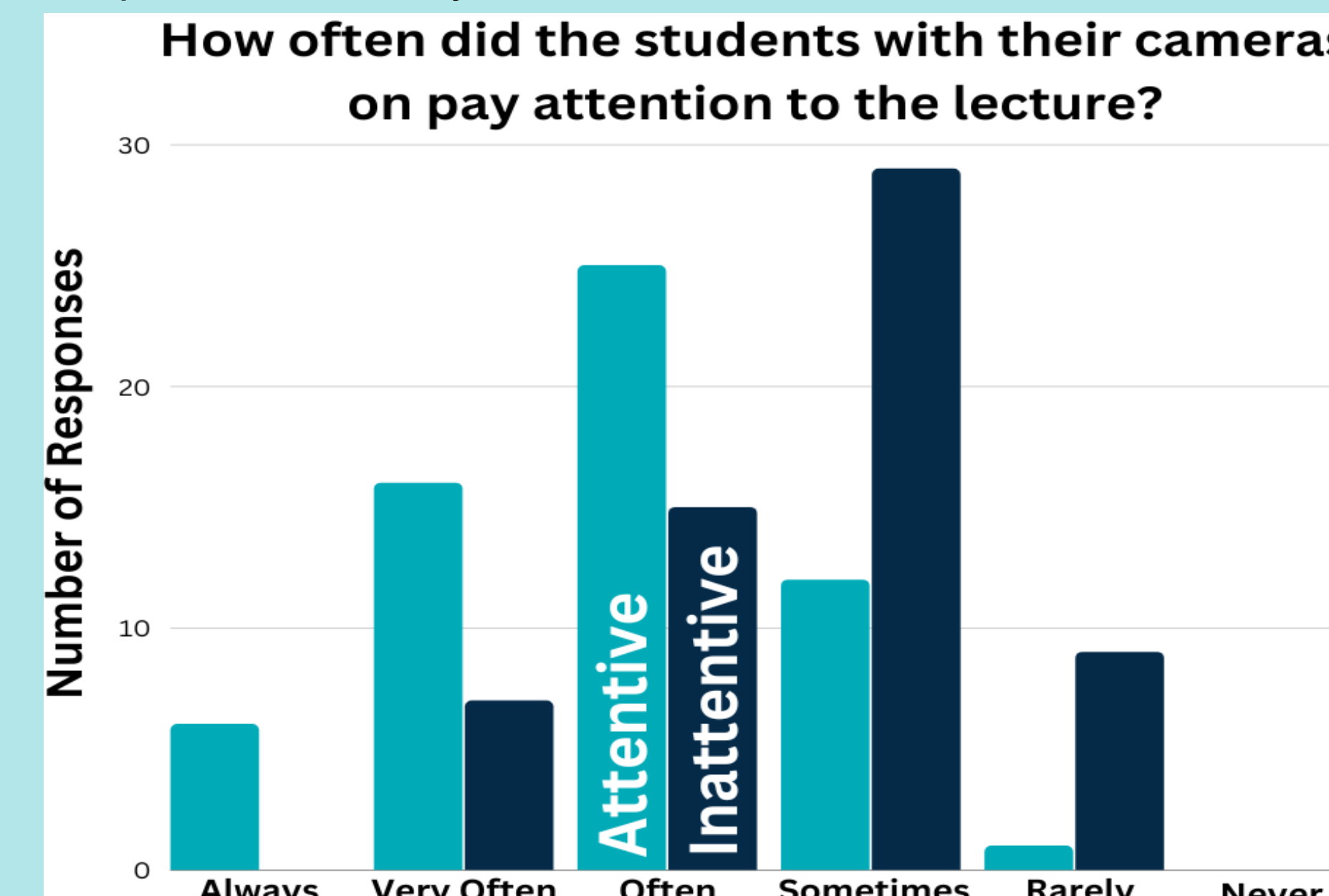


Figure 3

Responses to Survey Question 6 for Each Condition

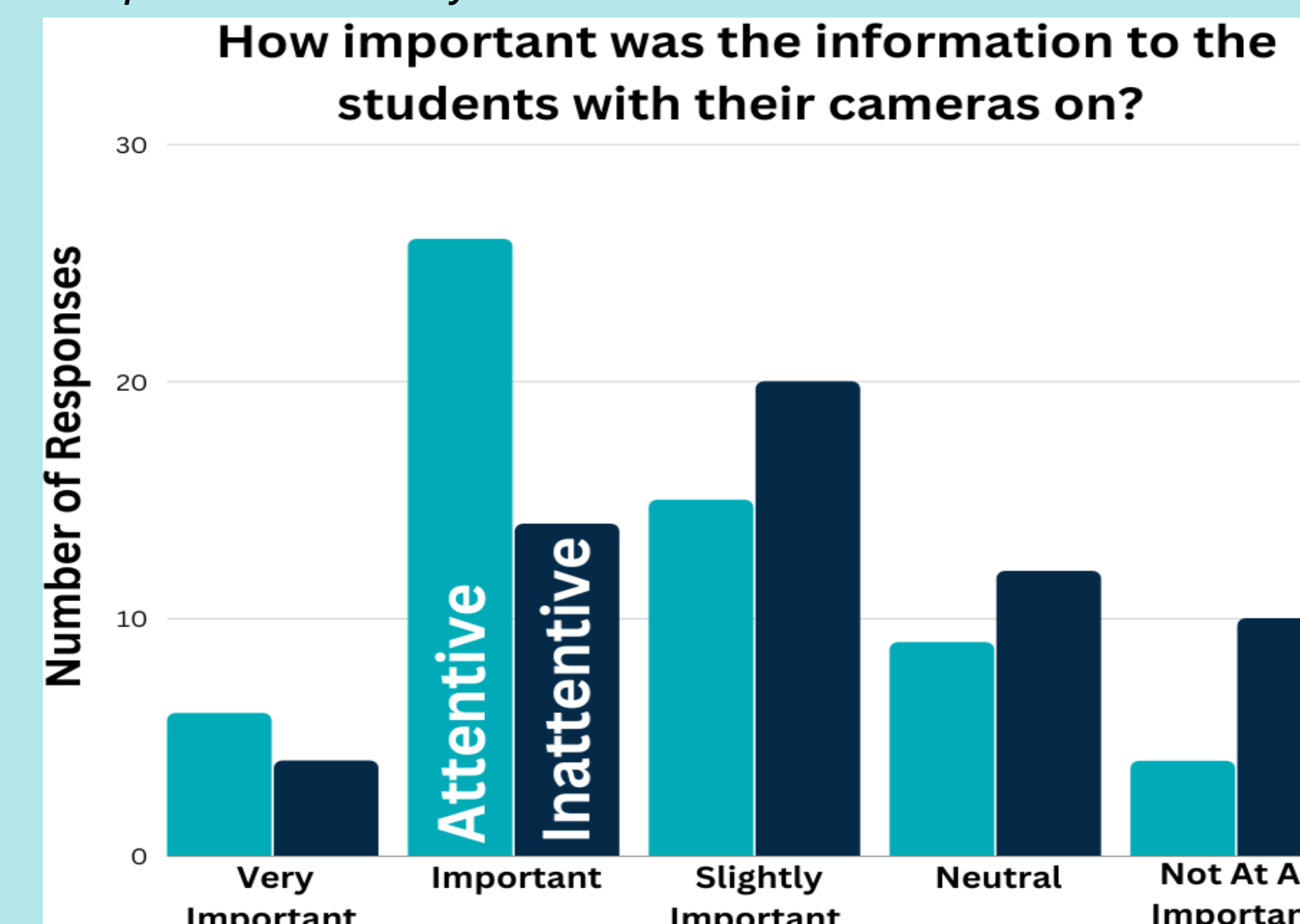


Figure 4

Pearson's Correlations in the Inattentive Condition

Survey Questions	Feeling Overwhelmed	Not Thinking About The Lecture	Important To Other Students
Looking At Other Students	.427**	.494**	-.136
Perceiving Students As Attentive	-.021	-.045	.354**

** = $p < .01$

Discussion

- Similar to previous studies^{1,2}, participants in the attentive condition performed better on the post-lecture quiz.
- However, there was not a significant difference in participants' self-reported attention between each condition. This contrasts with previous studies where participants in the attentive condition reported higher levels of attention.
- What did differ across the conditions, though, was participants' responses to the two survey questions asking participants to evaluate the confederates' behaviors and beliefs. The results in Figure 2 and Figure 3 demonstrate that participants in the attentive condition more often reported that confederates both paid more attention and found the information more important. The opposite results were found for the inattentive condition.
- Additionally, these two questions were positively correlated in the inattentive condition. This relationship resembles the first step of social appraisal, as participants potentially evaluated and attributed meaning to the confederates' inattentive behavior.
- Two more relevant correlations within the inattentive condition are shown in Figure 4. The first is that the more overwhelmed participants felt by the lecture, the more often they looked at students with their cameras on. The second is that the more often participants looked at students with their cameras on, the more often they thought about things not related to the lecture.
- These findings suggest that the spread of inattention may be unconscious when watching recorded lectures. Even though there were not significant findings for participants' self-reported attention, participants in the inattentive condition still displayed a relationship between looking at inattentive confederates and not paying attention to the lecture through having unrelated thoughts.
- Notably, previous research has also investigated unconscious attention contagion, one that spreads through unknowingly assessing an individual's pupil dilation as a physiological means of determining their attention.⁵
- Future research, then, can continue to assess when attention contagion is a conscious or unconscious phenomenon, along with the potential influences on this contagion. For example, the present study demonstrates a potential role of cognitive overload through being associated with participants looking at the inattentive confederates.
- Also, while the role of social appraisals and attributions remains unclear during recorded lectures, this may be related to recorded lectures being asynchronous. Clearer results may be found in more social, synchronous lectures, either in-person or live-streamed.

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