Understanding how the presence of an instructor in online videos can influence learning under high cognitive load

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Background

➢ The COVID-19 pandemic has resulted in a significant change to modern teaching practice.

➢ Given the increase in the use of online videos, we ask whether the presence or absence of the lecturer embedded in these videos influences the learning experience under different levels of cognitive load.

➢ Evidence to date is mixed regarding whether the presence of the lecturer enhances or diminishes learning under different conditions.

Based on Cognitive Load theory, we predict that the presence of the lecturer will divert attention away from cognitively demanding material thereby reducing performance on a MCQ test.

We also ask whether the presence/absence of the lecturer affects student learning experience as measured via situational interest, enjoyment, and perceived competence for learning.

Method

40 undergraduate students watched two 10min statistics lectures on the chi-square and between-subjects t-test. Students were randomly assigned to the lecturer present condition (n=20) or lecturer absent condition (n = 20).

Dependent Measures:
➢ Perceived Cognitive Load (Klepsch, Schmitz & Seufer, 2017)
➢ Multiple Choice Performance (Experimenter generated)
➢ Competence for Learning (Williams & Deci, 1996)
➢ Situational Interest (Knogler et al., 2015))
➢ Enjoyment (Hoogerheide, et al., 2014)



Presence Condition / Absence Condition
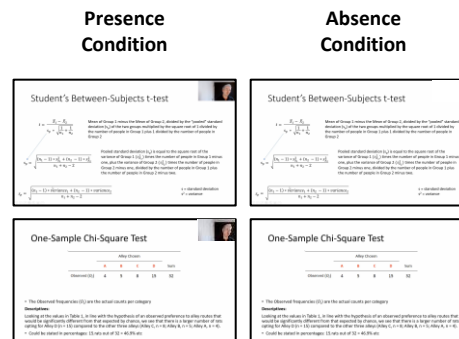
Results

Analysis of Cognitive Load responses revealed that participants perceived the t-test video as being more intrinsically demanding than the chi-square but only when the lecturer was present. No such differences in cognitive load are observed when the lecturer is absent.
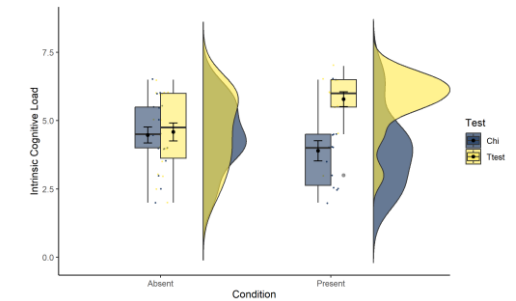
Critically, MCQ performance is reduced under high cognitive load compared to low cognitive load when the lecturer is present but an opposite pattern is observed when the lecturer is absent. Data also shows that when the lecturer is present, students perceived competence in their learning is significantly reduced under high cognitive load. No differences were observed in relation to situational interest or enjoyment.

MCQ* Competence* Interest Enjoyment
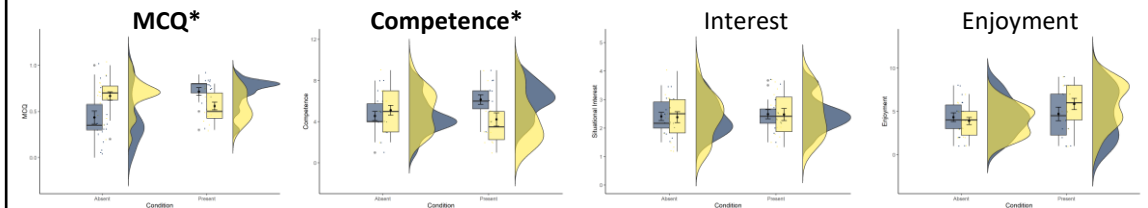
Conclusions

➢ The presence of the lecturer in online videos can reduce learning performance under high cognitive load – lecturer presence has no effect on student interest nor enjoyment.

➢ The presence of the lecturer can also reduce students confidence in their learning when the lecturer is present under high cognitive load.

➢ Preliminary data suggests that lecturers should carefully consider how to present online videos, particularly when the material is considered cognitively demanding.