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Effects of difficulties experienced on self-efficacy and attributions in a study task with tablet

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Introduction

Research questions: How the facilities and difficulties experienced by learners in a task on tablet can have an effect on the change of learners' self-efficacy about tablet use and what type of causes learners attribute to their facilities or difficulties to perform the task?

Self-efficacy changes:

- The type of task performed with a tablet appears as good predictor of acceptance (Amadiou et al., 2015), it might also impact the student's self-efficacy.
- Perceived self-efficacy is usually assessed for a general level of use in studies addressing learning with technologies (Celik & Yesilyurt, 2013). However, Wang and Wang (2008) developed a multidimensional instrument of mobile computing self-efficacy distinguishing items about using basic mobile computer operations, items about general use of the Internet, or even items about using e-mail.
- Task-Specific self-efficacy can be more sensitive than general technology self-efficacy (Ding and Er, 2018)

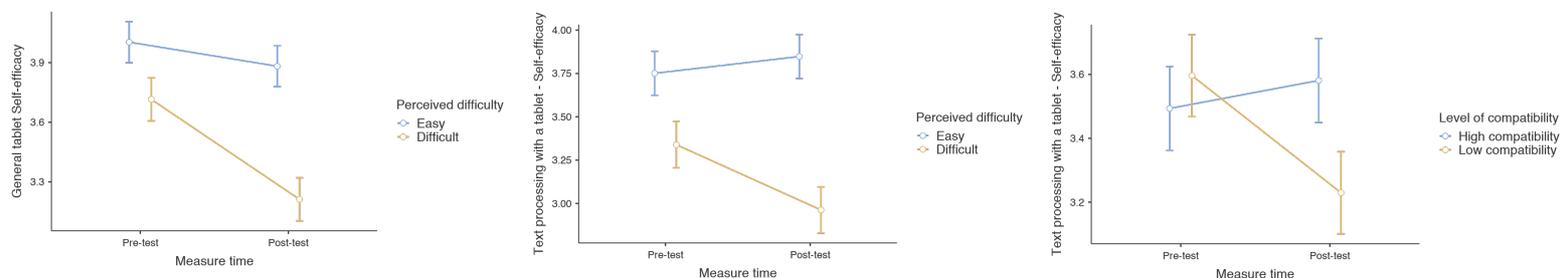
Attributions:

- The individuals' causal attribution of their success or failure with information systems can predict effort and future computer-related performance (Rozell & Gardner, 2000).
- Successful learners ascribed their success to internal and personal factors more than unsuccessful learners (Hsieh et Kang, 2010).
- In the present study, the type of attribution was distinguished by considering internal and external attributions linked to the specific situation with a tablet.

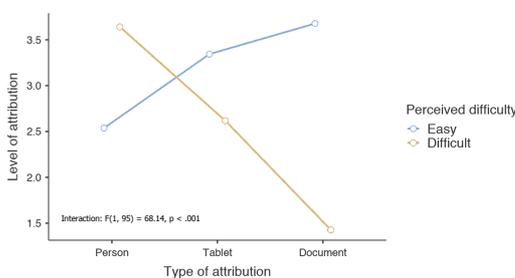
Results

In the low-compatibility condition almost half of participants judged the task easy (23 among 50 participants) while other participants judged it difficult in the compatible condition (15 among 49 participants) => 2 X 2 ANOVAs (compatibility and perceived difficult as between-subjects factors)

Self-efficacy changes (H2)



Causal attributions (H3)



Hypotheses

- H1:** A low-compatibility between the task and the tablet functions should decrease search task performance compared to a high-compatibility task.
- H2:** A low-compatibility task should engender a negative user experience with the tablet. Therefore, it should decrease users' self-efficacy to perform the specific task with a tablet, but not self-efficacy to use of tablet in general.
- H3:** The successful learners were expected to attribute their facilities to perform the task to internal factors (i.e. their own competencies), while the unsuccessful learners were expected to attribute their difficulties and failure to external factors (i.e. not-adapted functions of the tablet and features of the document).

Method

99 undergraduate student had to search information in a document and writing their answers on a tablet.



- **high-compatibility condition** (i.e. tablet's functions allowed to reach and answer more easily)
- **low-compatibility condition** (i.e. document implied more difficulties and some functions were missing).

| PRETEST | POST-TEST |
|--|---|
| self-efficacy to use tablets in general | self-efficacy to use tablets in general |
| self-efficacy to process text material with a tablet | self-efficacy to process text material with a tablet |
| | Causal attribution : |
| | • external: the tablet was easy (difficult) to use; the document was adapted (or not) |
| | • Internal: Mastery (or not) of the tablet |

Performance (H1)

High-compatibility group outperformed low-compatibility group, $F(1,95) = 14.69, p < .001$. No other significant effects.

Discussion

- Both self-efficacy for a specific task as well as for the general use with tablet can be affected by negative experience during the task
- Specific self-efficacy was affected by the task-compatibility
- Learners produced dysfunctional attributions by attributing facilities to external causes (i.e. quality of the document and of the tablet) and by attributing difficulties to their lack of competencies to use tablet
- More investigations of self-efficacy and causal attributions in learning with technologies are needed to understand how technologies and their perceptions can impact the socio-affective variables implied in learning