Predicting technology acceptance using CAMs

Use of a technology can be predicted according to the technology acceptance model (Venkatesh & Bala 2008). Thereby, questionnaires assess previously known influencing variables. To identify further influential factors on technology acceptance so called "Cognitive Affective Maps" (CAMs) can be applied (e.g. Livanec et al. 2020). CAMs are a quantitative and qualitative research tool to identify, visually represent and analyze existing belief structures or attitudes.
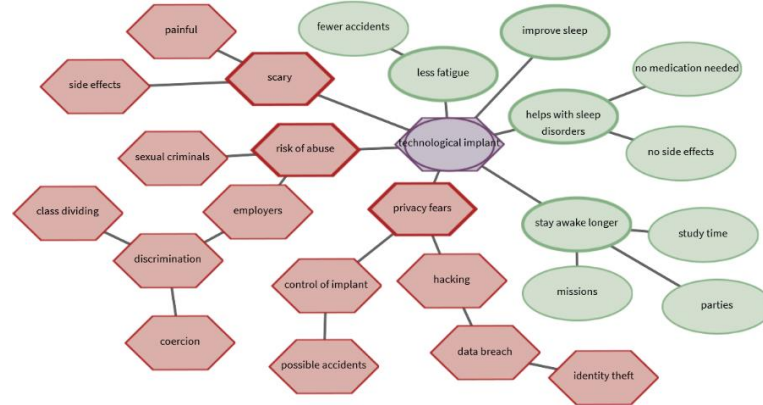

Figure 1. CAM drawn by a participant concerning the acceptance of a fictional nanoimplant.

Only recently have CAMs been increasingly researched quantitatively (e.g. Reuter et al. 2021), and currently I am working on an R package to quantitatively analyze these kinds of networks (e.g. aggregating CAMs, computing complex network indicators, splitting CAMs in components).

Pilot study

central hypothesis (which will result in a publication after replication with a larger sample size):

Can CAM data provide additional information to questionnaires and thus have an additional predictive value?

- Participants (N=90) answered questionnaire scales and drew a CAM regarding a scenario text
- Treatment: participants were presented a CAM with the opposite affective connotation to their previously CAM; Control group without treatment

Preliminary data analyses

Hypothesis 1. Using structural equation models it is possible to structurally analyze the acceptance process of a fictional technology. To account for the non-normal distribution of the questionnaire items and the small sample, the DWLS estimator was used and the X^2 statistic adjusted (e.g. Hancock & Mueller 2013). As a preliminary result, there is a highly significant influence of the mean valence of the drawn CAM.
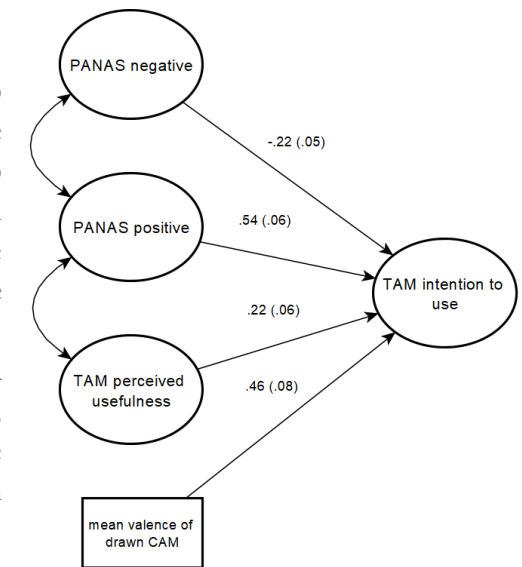

Figure 2. Predicting intention to use the nanoimplant

Future Research Plans

- Run a Monte Carlo study to decide on sample size and determine power
- Systematically analyze CAM and questionnaire data for at least three studies (one already collected) using different outcome variables and including additional structural network indicators
- Identifying clusters of similar CAMs using similarity algorithms and compare this clusters with latent classes within questionnaire identified by Latent Class Analysis

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Exploring cognitive affective maps as a new mode of data collection
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