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.

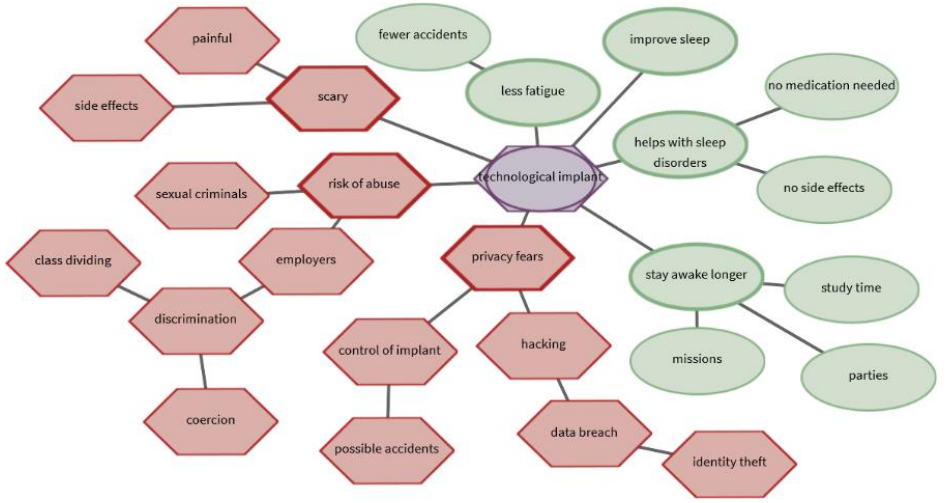

Figure 1. CAM drawn by a participant concerning the acceptance of a fictional nanoimplant.

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).

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Pilot study

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 about the fictional nanoimplant.

Preliminary data analyses

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 on the intention to use the nanoimplant.

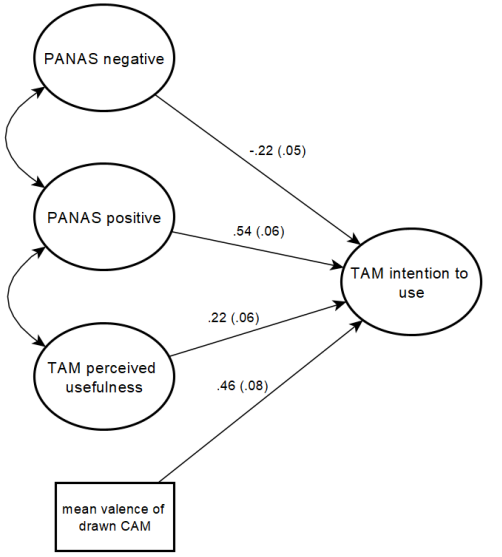

Figure 2. Predicting intention to use the nanoimplant.

Future Research Plans

- Replicate the pilot study with sample size determined by a Monte Carlo study.
- Systematically analyze CAM and questionnaire data for at least three studies (one dataset already collected) using different outcome variables and including additional structural network indicators.
- Identifying clusters of similar CAMs using similarity algorithms and compare these cluster results with cluster results of questionnaire data.

Exploring cognitive affective maps as a new mode of data collection

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