

Examining the Efficacy of Persuasive eHealth

Applications in Facilitating Smoking Cessation



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AN ANALYSIS OF COMPETENCY BASED ACTIVITIES

Introduction

- Smoking is currently a leading cause of preventable deaths with over 8 million a year [1].
- To attempt to assist those who wish to quit, eHealth applications have been introduced.
- Preexisting eHealth applications ([2], [3]) make use of a preparatory period to prepare users to quit smoking.
- To convince users of the utility of competencies (concepts useful to consider when quitting), persuasive activities could be employed.

Utilising a dataset from a study performed on more than 500 smokers with an example eHealth application [4] and focusing on 4 persuasive actions.

This study attempts to answer the following question:

How effective are these persuasive activities in persuading users of the usefulness of different competencies for quitting smoking?

Methodology

- A thematic analysis [5] was performed, garnering codes from the plain text responses to activities users provided.
- Pair coding was performed, with low agreement codes (<0.41 Cohens Kappa) discarded or merged
- From the codes, they were grouped into sets and then recurring themes were separated (Figure 1).

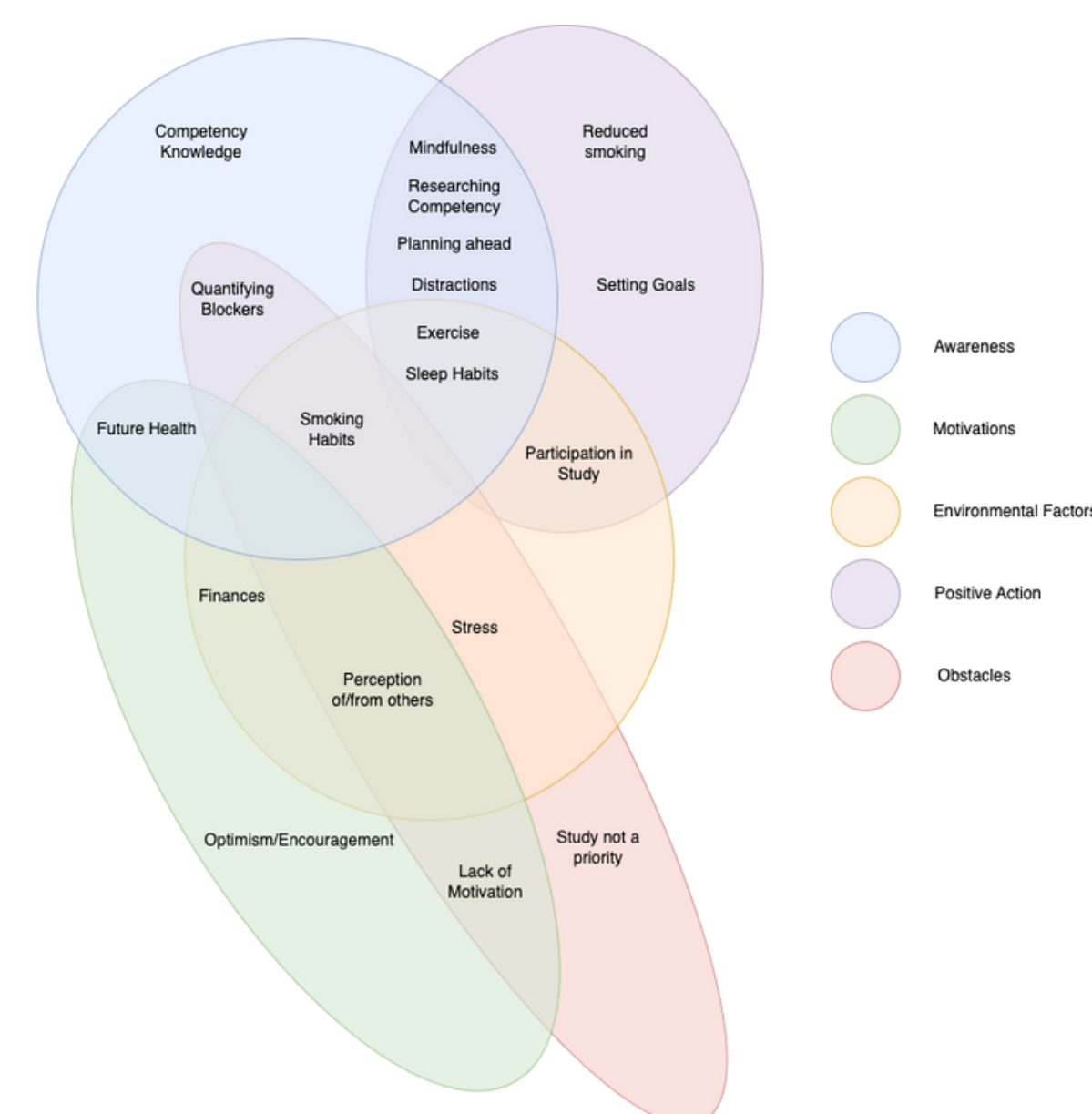


Figure 1

Example Coding and Theming:

"I tried going for a few days without smoking, I had trouble sleeping and staying focused throughout the day, so I spent sometime researching about the effects of nicotine withdrawal"

Codes:

Sleep Habits, Intentional Reduction, Inspired Research, Quantifying Blockers

Themes:

Awareness, Positive Action, Obstacles

Final Themes:

- Awareness
- Motivations
- Positive Action
- Environmental Factors
- Obstacles

Results

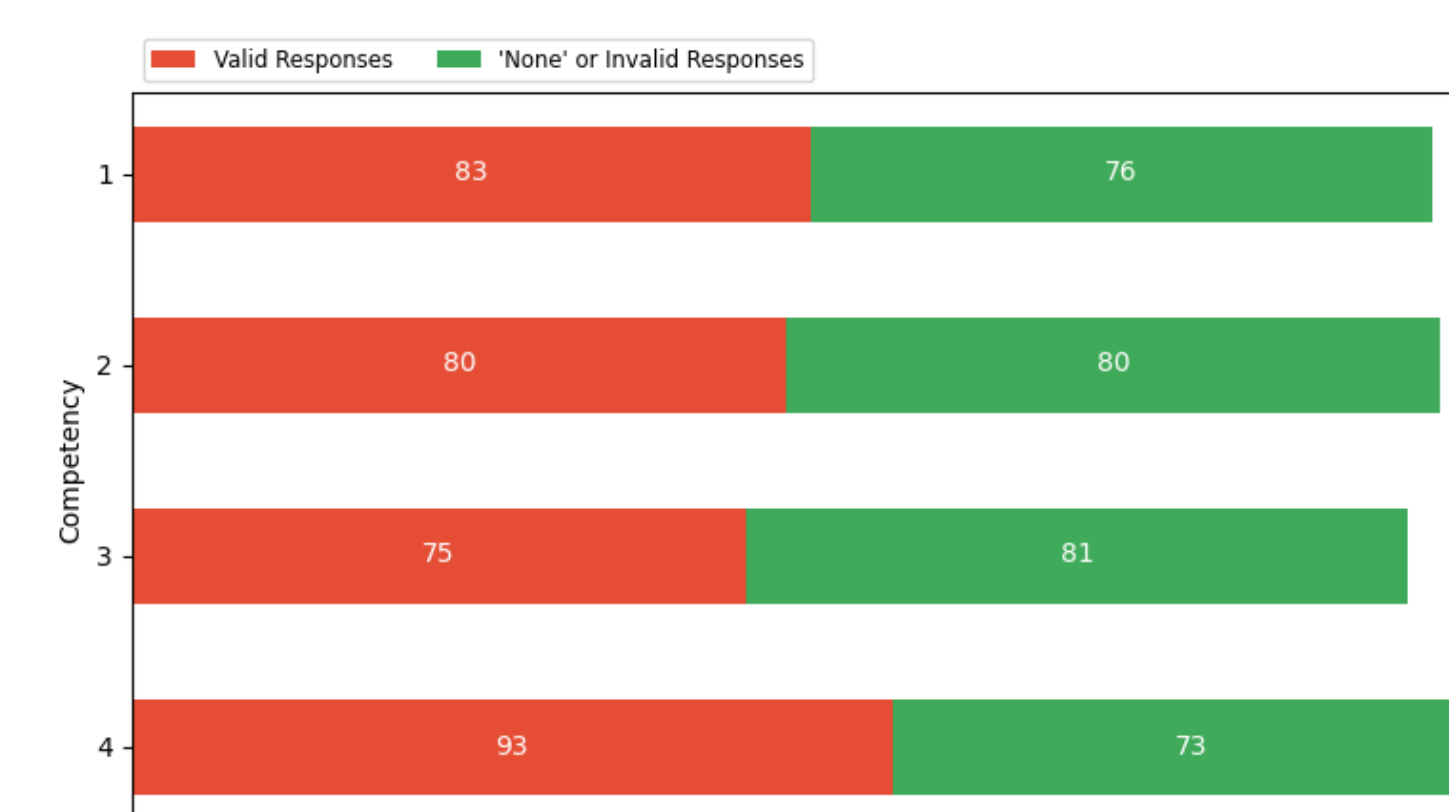


Figure 2

To determine if those who engaged with the optional free text responses (Figure 2) were valid representatives of those who did answer, they were compared by means of utility value, gender, age and educational level.

Activities all had a similar level of engagement scaled with how often they were assigned.

Once these valid participants were determined, no notable deviations in age (Figure 3), gender identity or educational level appeared.

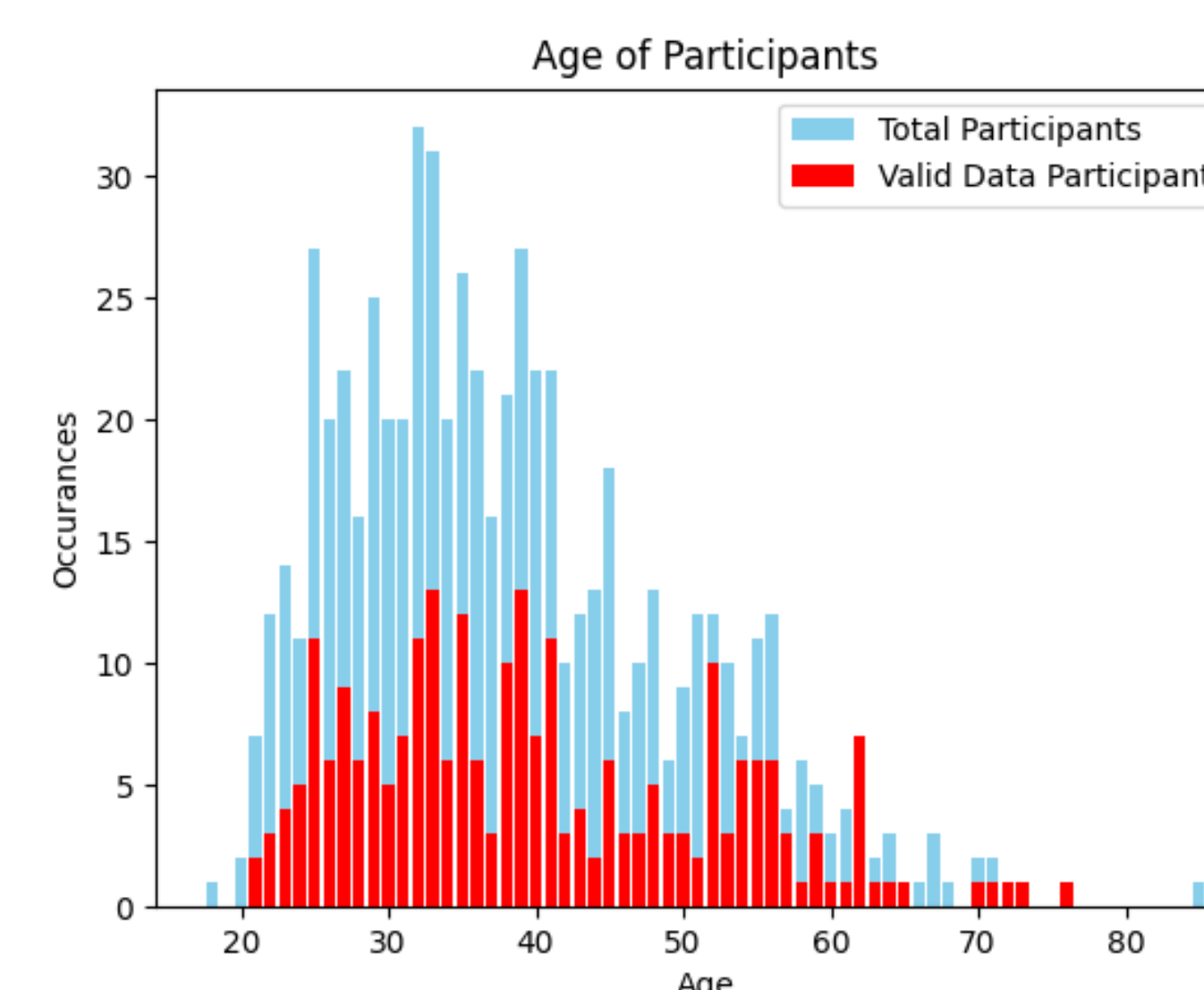


Figure 3

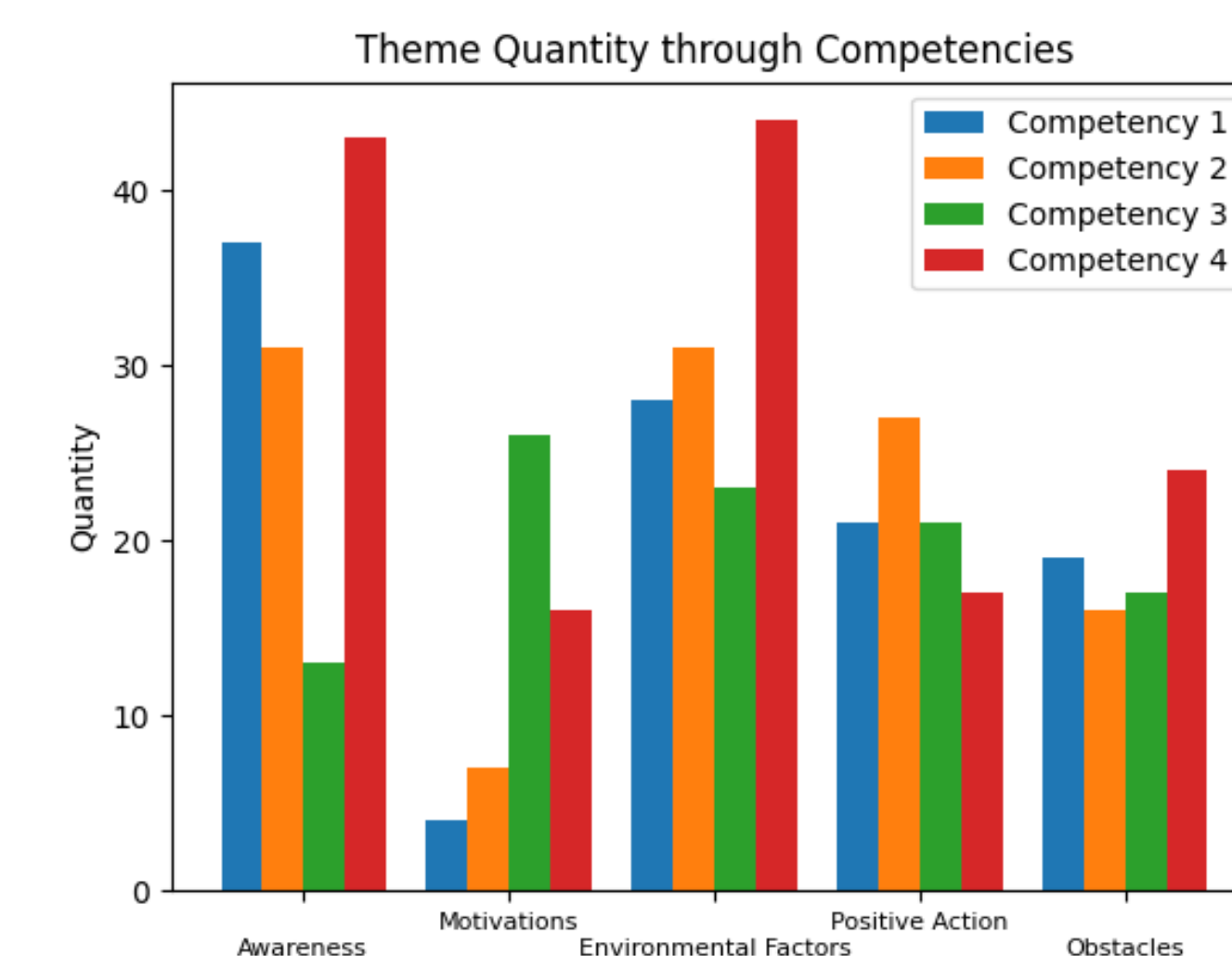


Figure 4

Quantities of themes in competencies (Figure 4) were also analysed. Notable facts were that 'confronting' competencies didn't have any more presence of obstacles than the more supportive focused examples. Larger spikes in competency 4 were notable, but not significant.

Average opinion of each competency improved from initial opinion (Figure 5), but not to a significant degree. When excluding dropouts (users who did not complete all sessions and post questionnaire), they improved by less.

Competency 4 opinion rose the sharpest, not to a significant degree but indicates it could be a useful activity due to the lowest initial opinion average.

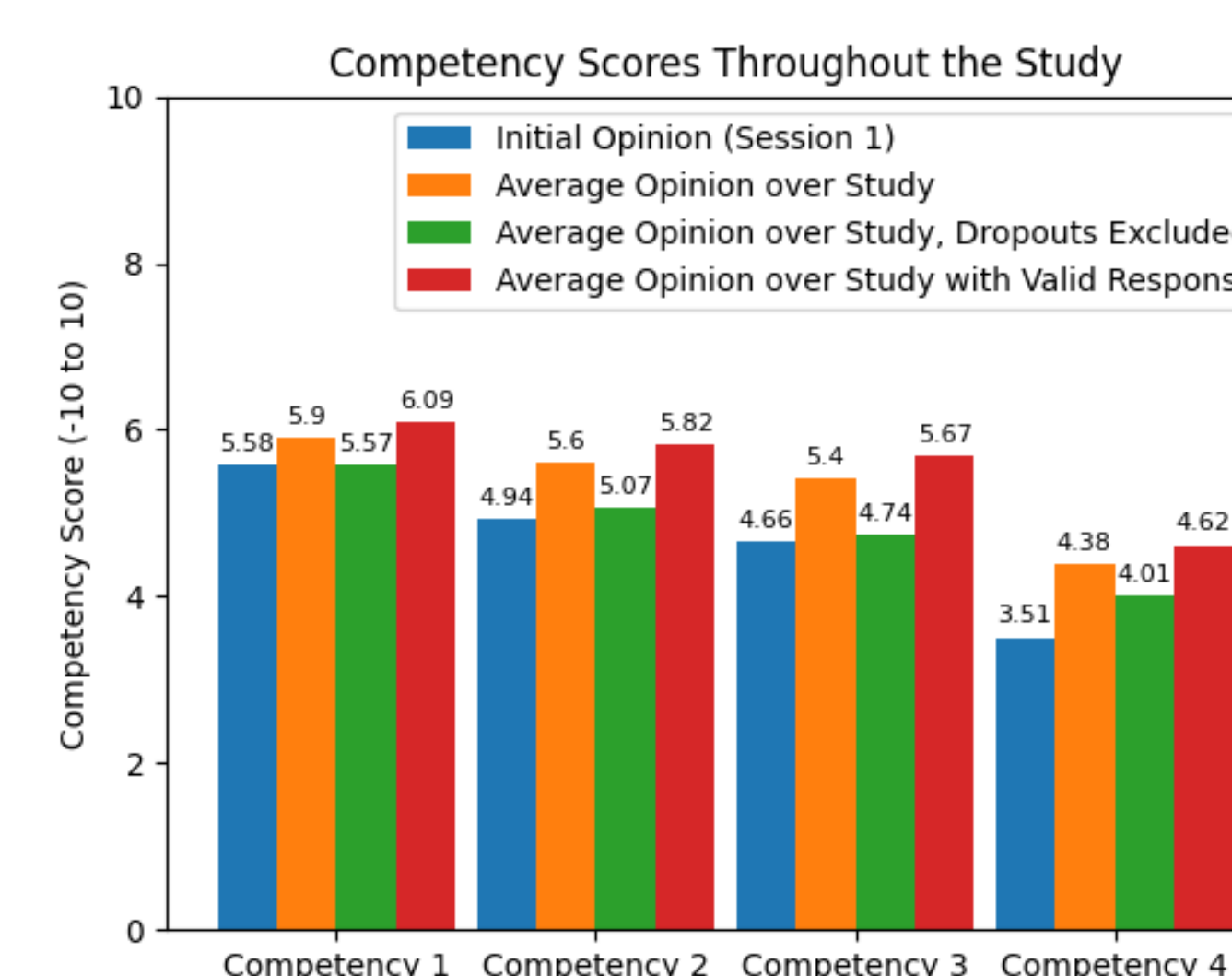


Figure 5

Conclusions

- On average, opinions increased throughout the study, slightly more if the user was 'engaged' and offered valid data to the thematic analysis.
- Those who didn't dropout didn't increase by as much as the average increase. This was a small sample but it is worth investigation if over a longer period if utility decreased with time [6].
- External characteristics with 'engaged' users was very similar to the distribution of users in the study. This is useful as we can then use thematic responses as insights.
- Thematic analysis indicated an average increase in Awareness/Positive action through performing the activities, Motivations/Positive Actions in the case of Competency 3.
- Obstacles theme was a generalisation but allowed insight into individual issues users had to potentially consider for future study.

Future Research

- Distribution of users matches the average quitter age. Future research may want to consider the effects of eHealth on outlier groups (older/younger users)
- 8.38% of 'engaged' participants sought external resources after finishing an activity. Future research could consider expanding the activities with optional resources and monitoring the utility value of competencies.
- Further research should consider tracking those who completed the entire course's opinion as an average compared to those who dropped out.

References

[1]: World Health Organization, "Who report on the global tobacco epidemic, 2021 addressing new and emerging products fresh and alive." [Online]. Available: <https://www.who.int/publications/i/item/9789240032095>

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[4]: N. Albers and W.-P. Brinkman, "Perfect fit – learning to propose useful preparatory activities for quitting smoking and becoming more physically active," Oct 2023. [Online]. Available: www.osf.io/nuy4w

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[6]: H. Oinas-Kukkonen and M. Harjumaa, "Persuasive systems design: Key issues, process model, and system features," *Communications of the Association for Information Systems*, vol. 24, pp. 485–500, 2009.