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Towards Effective Smoking Cessation

Understanding the Needs of Daily Smokers from eHealth Chatbot Interactions

Background

Smoking has been correlated with multiple negative health effects, including lung cancer. **eHealth applications** have been previously developed to help with smoking cessation. However, these applications usually rely on **persuasive messages** to achieve their purpose. To improve the effectiveness of these persuasive techniques, **users behaviors** need to be better understood. The **Perfect Fit** study gathered data from more than 500 daily smokers' interactions with a chatbot called Mel, which was designed to help them quit smoking.

Research Question

What are users' needs for doing their preparatory activities?

Methodology

Thematic analysis: a type of qualitative analysis performed by assigning codes to data so as to uncover any underlying themes.

Correlation of the needs with:
- Gender
- Age
- Highest completed education level

Double coding: verify integrity of thematic analysis results.

Determine a set of **8 user needs**

Thematic analysis

- The coding scheme was developed in an **inductive matter:** creating our own codes, to which we added codes inspired by previous thematic analysis studies;
- **71 codes** grouped into **11 categories**;
- By later analysing pairs of highly co-occurring codes, we identified a set of **8 themes** within users' responses.

Double coding

- **Train another person** (second coder) to redo the thematic analysis using your own coding scheme;
- Double coding results were verified using **Cohen's Kappa** measure of inter-rater reliability;
- The results of the Kappa analysis showed that the coding scheme was indeed reliable.

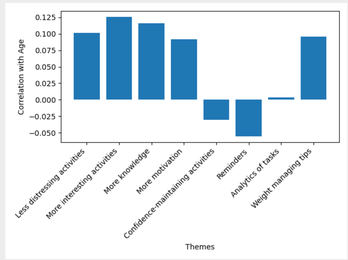
The needs

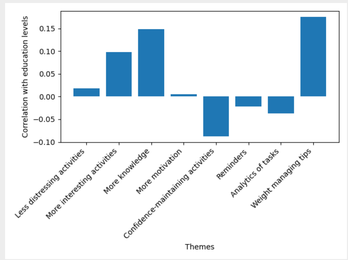
Each of the 8 themes directly referred to a user need:
1. Less distressing activities
2. More interesting activities
3. More knowledge
4. More motivation
5. Confidence-maintaining activities
6. Reminders
7. Analytics of tasks
8. Weight-managing tips

Correlations and Results

- The 8 needs were correlated with users' **genders, ages, and educational levels.**
- **Chi-squared** test for genders, **Pearson** correlation for ages, **Spearman rank** correlation for educational levels.

	Gender chi-square P-value	Age Pearson P-value	Education Spearman P-value
Less distressing activities	-	0.26	0.84
More interesting activities	0.58	0.16	0.28
More knowledge	1	0.2	0.1
More motivation	-	0.31	0.95
Confidence-maintaining activities	-	0.74	0.34
Reminders	1	0.54	0.81
Analytics of tasks	-	0.96	0.68
Weight management tips	-	0.29	0.05





- In general, the needs **are not significantly correlated with the user characteristics.**
- Correlation between need 8 and education levels needs to be studied further. Not enough data to perform gender correlations for most themes.

Conclusions

- This study aims to provide **insights** into the needs of smokers during their interactions with eHealth chatbot applications.
- These findings can prove useful for future research in the domain of healthy behavior changes, as the results suggest that **user needs are fairly evenly distributed in terms of personal characteristics.**
- Looking forward, this study encourages performing the thematic analysis process with more coders so as to **reduce bias**, as well as **further investigation** into certain correlations.