Virtual Coaching for Smoking Cessation: What are Users Preference in Ethical Principles for Human Feedback Allocation

Supervisors:
Willem-Paul Brinkman
Nele Albers

Author:
Glebs Labunskis
g.labunskis@student.tudelft.nl

1 Introduction

- Smoking is a harmful addiction affecting over 22% of the world's population. [1].
- Smoking cessation is a tough process that needs to be prepared for. Virtual coach is a useful tool for preparing for that [2].
- When human feedback is limited, effective allocation of human feedback is crucial.
- The research was done on the dataset acquired during the study performed by Perfect Fit [3].

> Which (ethical) principles do users think should be used by the virtual coach to decide when a human coach should give feedback to people who are preparing to quit smoking/vaping?

Researchers

> I actually think it should be random.

Data (responses)

Sub-questions:
- Which ethical principles do users who are preparing to quit smoking/vaping find the most valuable?
- What could be the underlying reasons for principles preferences of people who are preparing to quit smoking/vaping by virtual assistants?

2 Methodology

Equal treatment

For this research thematic analysis was used [4]:
Stage 1: Familiarizing with the Data and Generating Initial Codes
- Read data and note initial ideas
- Used AI-generated responses for initial coding [5].

Stage 2: Coding of answers.
- Systematically code interesting features.

Stage 3: Code reliability verification
- Train second coder.
- Calculating Cohen Kappa (0.68) and Brennan-Prediger (0.69) coefficients [6].
- Achieved substantial agreement.

Stage 4: Searching and Deriving the Themes
- Collate codes into themes
- Discuss with second coder
- Refine themes

Last step of the experiment - researcher and method triangulation of data [7]:
- 3 different points of view: literature, thematic analysis and closed question results.
- Finding correlations

3 Results

Those who struggle the most 63.75%

Participant showing the most difficulty based on direct indicators

Participant showing the most difficulty based on indirect indicators

Equal treatment 11.25%

Those who would appreaciate the most 11.25%

Increasing chances the most 13.75%

Overview of the themes with corresponding usage percentages (themes in blue and subthemes in gray).

Correlation between themes and allocation to ethical principles from a closed question in post-questionnaire.

Theme	Point-Biserial Coef.	P-value
Struggling the most	.282	p < .001
Equal treatment	.321	p < .001
Appreciating the most	.352	p < .001
Increasing chances of success the most	.146	0.009

Theme	Point-Biserial Coef.	P-value
Struggling the most	.003	0.964
Equal treatment	.052	0.356
Appreciating the most	-.020	0.717
Increasing chances of success the most	-.032	0.571

Correlation between themes and willingness to dropout.

Correlation between themes and willingness to receive human feedback.

Theme	Point-Biserial Coef.	P-value
Struggling the most	-.023	.687
Equal treatment	.136	.015
Appreciating the most	-.164	.003
Increasing chances of success the most	.059	.297

- Strong correlation with user preferences in closed question data.
- Negative correlation between "Appreciating the Most" theme and willingness to receive human feedback.
- Positive correlation between "Equal Treatment" theme and willingness to receive human feedback.
- No significant correlation with willingness to dropout.

4 Responsible research

- Informed Consent, Confidentiality and Anonymity
  - HREC approval
  - Data stored securely
  - No data alterations
- Thematic Analysis and Triangulation
  - Inductive approach
  - Researcher and Method triangulation
  - Reliability verification
- Synthetic Data Generation
  - Only used to enrich and broaden thematic analysis
- Contribution to Smoking Cessation Strategies
  - More effective smoking cessation strategies
  - Strategies become more tightly tailored to the users needs
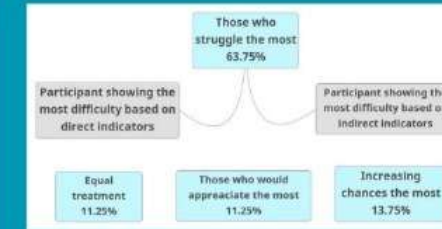 - The results help designing virtual coaches

5 Recommendations

- Prioritize struggling users.
- Use motivation and progress indicators.
- Incorporate user feedback.
- Ensure fairness in feedback distribution.

6 Future work

- Consider other principles.
- Expand on ethical principles.
- Test real-world application.
- Analyze complex interactions.

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