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## The SDT-based smoking cessation application in health care

### Introduction

Smokers receiving support from mobile smoking cessation (mCessation) applications (apps) are 1.7 times more likely to quit compared to those who did not receive the mCessation intervention.

Modern mobile applications (MA) can be used in smoking cessation (SC). Only some of them are based on scientific basis. The elements of the SDT theory namely autonomy, competence and relatedness should be used in MA to induce intrinsic motivation in SC.

Our aim was to develop a gamified MA for SC where the MA offers games to the players to attract their focus out of smoking. MA should be based on the Self-Determination Theory (SDT) which facilitates intrinsic motivation through autonomy, appropriate environments and quitter's sense of competence to have more effective SC results.

Consequently, we decided to develop an app based on SDT.

### Methods

MA (mCessation) based on SDT theory was developed to enhance autonomy, competence and relatedness (Figure 1). Test subjects assessed that the most important elements of

the games for SC were the information related to their own health, all rewards they achieved while playing and games which decreased their sense of craving.

Development process was carried out by a multidisciplinary team consisting scientists from different field of expertise: health, medical and social marketing (n=3), game designers and developers (n=7), occupational health professionals (n=3), workplace leader and human resource professional (n=2), employers (n=10), educational institutions teacher and supervisors (n=2) and students (n=12). The app developing process included continuous consultation with game designers and developers (Figure 2).

### Results

Personalization, challenges and narrative were used as gaming elements as enforcers of autonomy. The app also included gamified competence elements with realtime feedback/user progress. Additionally, the app informed the user how SC improved the users' health. The app also provides general information concerning the skills and knowledge for SC as well as support tools for helping the behaviour change.

The user was also able to feel relatedness via social connectivity, which could also drive user engagement. People in the same workplace

team were able to play in a team and encourage each other to quit smoking.

The app was assessed by using a targeted, two-stage systematic developing strategy. First, the usability of the app was tested.

The next part of the study was a consumer-driven co-design approach by collecting qualitative data about the app and planning future development to optimize user acceptability and engagement. The co-design method aimed to understand which application features pleased the target audience.

The participants ranked the mobile app features as followed: 1. Health data, 2. Gamified rewards and 3. Stop the craving – games. The participants assessed the following types of help to be most important for them in quitting smoking: medical therapy, professional support provided by healthcare professionals and an application either in smartphone or another technical device to help quitting smoking.

### Conclusions

Indeed - MA which is based on the SDT theory and gamification could be used as a low-cost and modern tool in SC among users and health care professionals.

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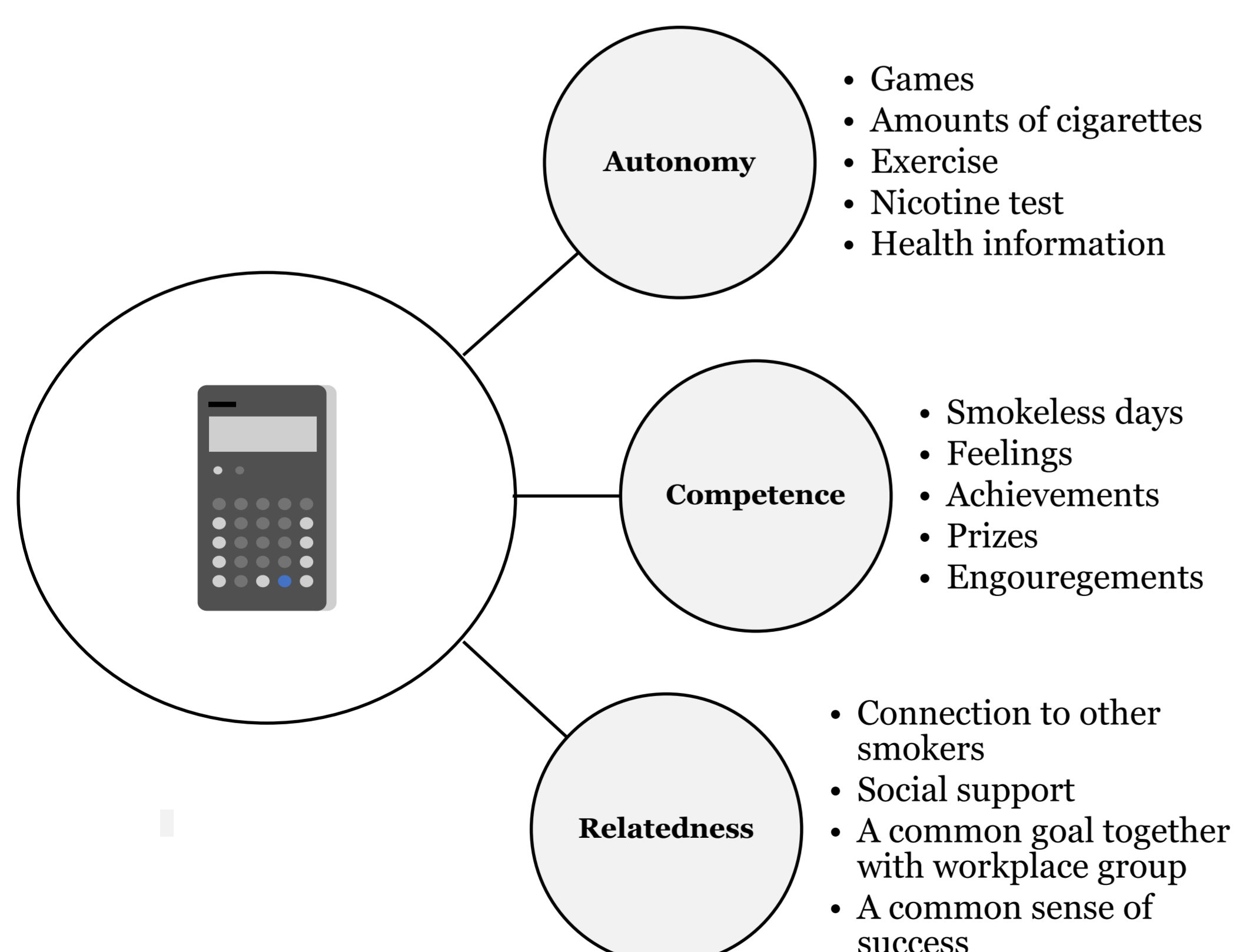


Figure 1. The SDT Theory came true with several features.

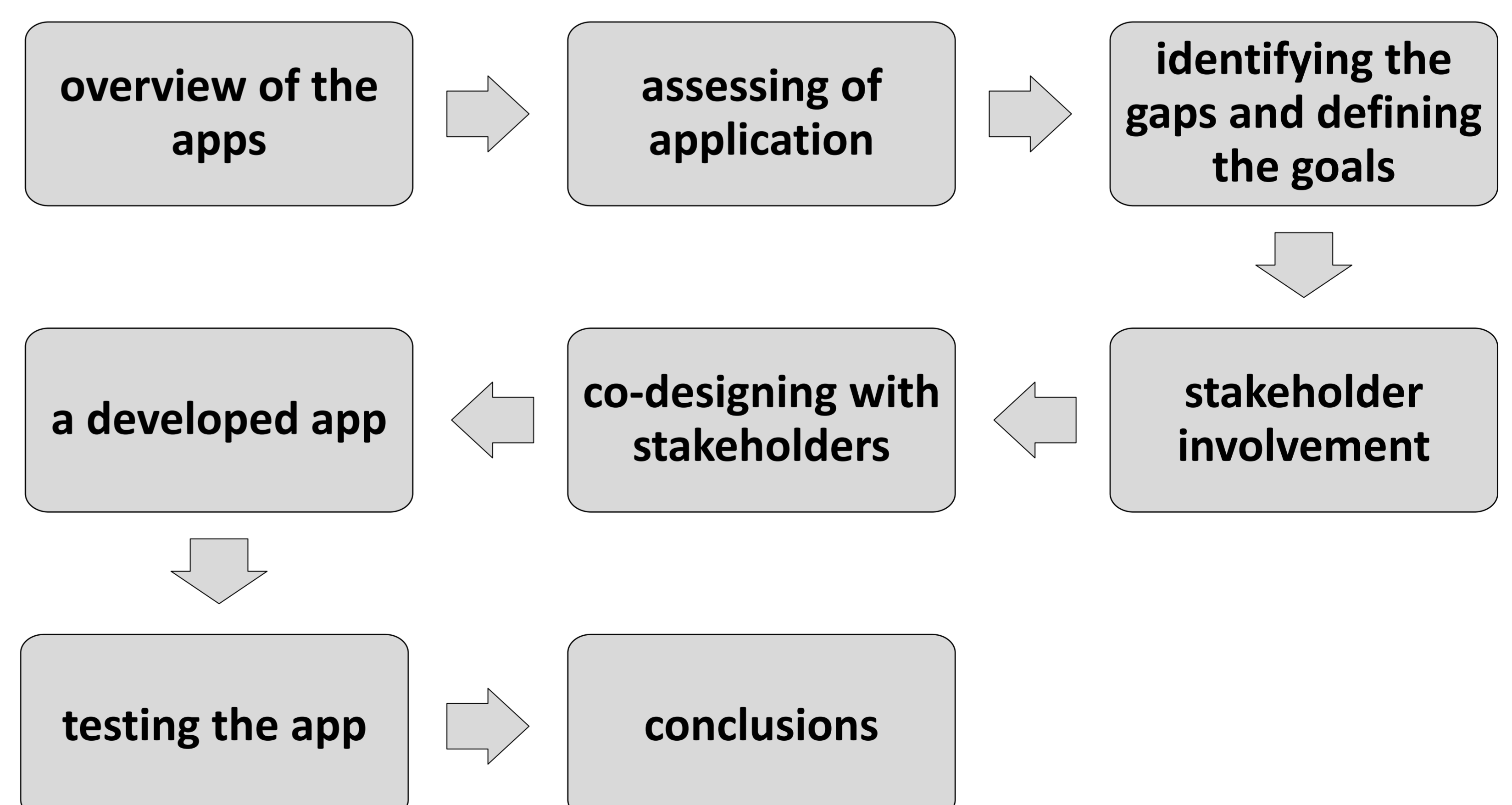


Figure 2. SDT based MA developing process