

# Missing the Forest for the Trees: Balancing Personalization Costs and Benefits in Persuasive Games

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**Abstract.** Research has shown that personalization of persuasive games along certain dimensions (e.g. gender, player types) can increase the persuasive effect. However, when designing a personalized game the question arises, which player characteristics should be used as personalization factors? Considering too many factors quickly results in extensive or even unmanageable design efforts, whereas focusing on too few leads to the risk of stereotyping or addressing only a small part of the target group. In this position paper, we discuss issues of personalization in design practice and present the approach we choose in designing persuasive games for promoting an active lifestyle. We conclude with the need for empirical research in order to estimate costs and benefits of personalization.

**Keywords:** Persuasive games; personalization; cost-benefit considerations

## 1 Introduction

The aim of personalization is to increase the users' satisfaction by tailoring technologies to their needs, preferences and characteristics. In the context of persuasive technology (PT) and persuasive games (PGs), personalization is considered to foster the persuasive effect compared to one-size-fits-all approaches [1,4]. Although first promising steps in research regarding relevant personalization factors in persuasive games were taken (e.g. [2,7]), there is still a long way to go until suitable design practices are established. The first step of the research agenda is to identify which personal characteristics relate to the persuasive effectiveness of games and how this knowledge can be translated into meaningful design guidelines. For example, the preference for specific game elements or mechanics of a person could influence how she accepts a specific kind of persuasive game (cf. player types [6]). The ultimate goal of designers of personalized persuasive games is then to efficiently apply these design guidelines into games that successfully persuade the intended target group.

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However, the question is how many factors to consider when personalizing persuasive games? Providing personalized solutions using multiple distinguishing criteria leads to a multitude of combinations in order to provide a tailored experience for all kinds of users. This is time consuming and cost intensive, and may not even result in a significantly higher persuasive effect when compared to focusing only on a few number of personalization factors.

This paper is based on project activities related to persuasive games promoting physical activity and active mobility and the respective challenges we encountered. We raise issues in the practical application of personalization in persuasive game design. Furthermore, we propose an approach, which should avoid overcomplicating and oversimplifying personalization factors and make sure to address an adequate part of the target group.

## 2 Personalization Factors and Issues

When thinking of personalizing a game, first relevant player characteristics (i.e. personalization factors) need to be identified, which are assumed to influence the persuasive effect of a game and are therefore worthwhile to steer the design process.

Such player characteristics are diverse and include for example *demographic information* (e.g. gender, age), *target attitude or behavior* of the persuasive game (e.g. physical exercise), *game preferences and behavior* in general and *susceptibility to specific persuasive strategies*. Previous research gives first indications for the relevance of single personalization factors (e.g. [2,7,8]) in specific contexts. Taking the high number of potential personalization factors and their factor levels (e.g. male and female for the factor gender) into account, results in an even higher number of reasonable combinations of these factor levels. One example of such a combination is female (gender) players of massively multiplayer online role-playing games (game preference) between 20 and 30 years old (age), prone to the persuasive strategy cooperation (persuasability) and irregularly exercising (target behavior). Providing personalized solutions for every reasonable combination of these levels would require an extensive (and in practice unmanageable) effort in game design and implementation.

Focusing only on a small number of level combinations may introduce stereotyping into the design process. On the other hand, considering only single factors (e.g. preferred game genres) may in turn neglect important influencing factors and therefore fail to have the desired effect and to address a larger target group. Determining a simple but still effective personalization approach is therefore crucial.

## 3 A Practical Approach to Personalization

An approach is required which benefits from the increased persuasive effect of personalization, without the need for too many different game versions. In the following, we propose a practical procedure covering the process of user research, requirements analysis and early design stages of a persuasive game project. We use the context of activity promoting games to outline the approach.

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The first step towards personalized persuasive games is to *identify potentially relevant personalization factors*. That highly depends on the aims and context of the persuasive game. As we aim to promote a more active lifestyle, we considered the factors game preferences (e.g. preferred game genre, player type [6,8]), persuadability [4], activity behavior (e.g. motivation for as well as level and type of activity), and demographic information (e.g. age and gender [2,7]) to have a potential influence on which persuasive game would be most effective. These considerations are based on previous research (e.g. [2,7,8]) as well as content-wise considerations.

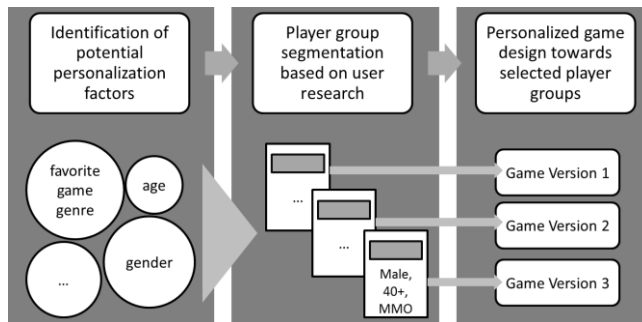
With the potential factors in mind, the next step is to do a *player group segmentation* based on *user research*. The characteristics of the target group (e.g. age distributions, player preferences) are assessable for example with a cost-efficient online survey. By performing statistical and qualitative cluster analysis, we can identify predominant and distinctive player groups to guide personalization approaches. Creating data-driven player groups prevents an involuntary focus on stereotypes and enables the creation of representative data driven Personas [9]. Personalization efforts are dedicated to the most prominent groups, by deciding on specific targeted player groups instead of personalizing for all kinds of individual players. Knowing target users is crucial in this scenario since it effectively helps lowering the effort of personalization.

The final step is the *personalized game design towards the targeted player groups* (e.g. player type driven game design [5]). In this creative process, game designs are developed tailored to the preferences of the selected player groups instead of individualized personalization (cf. [3]). Indications for tailoring (i.e. which players prefer which game elements) can be found in previous (comparative) research about gaming behavior (e.g. [6]). Depending on how diverse the preferences of the player groups are, a strategy to decrease the personalization efforts at this point is to work on games including the lowest common denominator preferences of several player groups (cf. the one size fits all approach in [8]). Applying this to all targeted player groups contradicts the aim of personalization to increase the persuasive effect by addressing specific user groups. However, pooling user clusters to larger groups in this way seems a reasonable approach to lower effort and still benefit from personalization. See Fig. 1 for an overview of the described process.

## 4 Conclusions and Future Work

Although personalizing a persuasive game to specific player groups is considered to improve the persuasive effect [1,4,7], there is still a lack of research on which personalization factors need to be considered and how this is applied in design practice. In this paper, we discussed issues related to personalization and propose an initial approach for personalized design, which we will use and evaluate in related projects.

Future work needs to investigate with empirical studies how much personalization is feasible in the design of persuasive games. This would enable a cost-benefit estimation of personalization, indicating how many factors need to be considered to sufficiently increase the persuasive effect in a specific context and at which point the efforts for personalization are no longer in proportion to the effect.



**Fig. 1.** Overview of the practical approach to personalization.

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