

# Gender Differences in the Perception of Gamification Elements for Fitness Systems

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**Abstract.** In this paper, we present results from a storyboards-based study (N=178) to assess gender differences in the perception of gamification elements for persuasive fitness systems. We found that females prefer personalized goals and collecting points, while males perceived the persuasiveness of competition and cheating as significantly higher. Our results could be used to tailor gamified, persuasive fitness systems.

**Keywords:** Personalization · Gamification · Physical Activity

## 1 Introduction, Related Work and Method

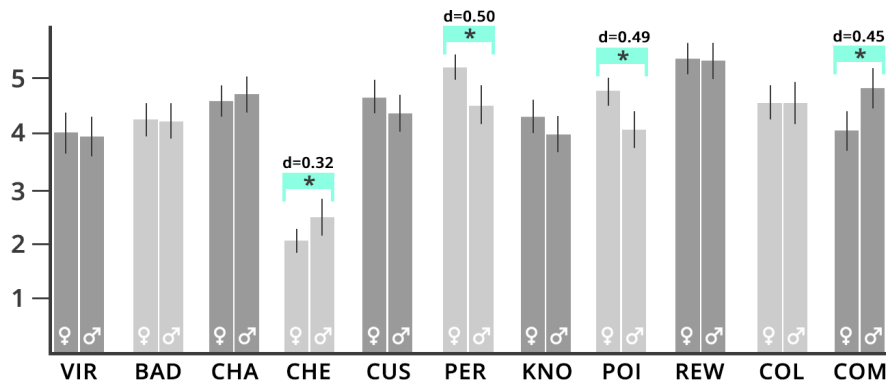
Persuasive systems have been developed using gamification to motivate people being more active in daily life [2]. While such systems often incorporate a "one-size-fits-all" approach, research has shown that tailoring gamification elements is important [7] and appreciated [4]. More specifically, factors like personality, age, player types and also gender have been shown to have an influence on the perception of persuasive strategies [1]. For gender, Orji [5] has found that the perception of persuasive strategies indeed differs between male and female participants in the domain of healthy eating. Also, Koivisto et al. [3] found that women report greater social benefits from the use of gamification within Fitocracy (an exercise gamification application). Furthermore, Tondello et al. [6] report gender differences in the perception of gamification elements in a general context, e.g. that social elements are preferred by men. However, in this paper, we focus on the physical activity domain (instead of a general context) and consider individual gamification elements (as defined by Tondello et al. [7]), instead of persuasive strategies. We set-up an online questionnaire to assess the perceived persuasiveness (7-point Likert scales) of 12 gamification elements (**V**irtual Character, **B**adge, **C**hallenge, **C**heating, **C**ustom Goals, **P**ersonalized Goals, **K**nowledge Sharing, **P**oints, **R**ewards, **C**ollaboration and **C**ompetition), illustrated by a validated storyboard each [1].

## 2 Results

We received 178 valid responses (44.4% male, 55.6% female). Using an independent t-test, we found significant differences for the gamification elements "Cheating", "Personalized Goals", "Points" and "Social Competition" with medium to

large effect sizes. While male participants like the gamification elements "Cheating" and "Competition" significantly more than women, females show a clear preference for "Personalized Goals" and collecting "Points". Figure 1 illustrates the mean scores for each gamification element and both genders as well as effect sizes, in case a significant difference was found. Our results could be used to personalize gamified, persuasive fitness systems, when information about the gender of a user is available. As far as we know, we provide the first investigation of gender differences for gamification elements in the fitness domain.

**Limitations** We used storyboards instead of implementing gamification elements and considered only male and female genders. Future work should account for the increasing gender diversity as well as consider real implementations.



**Fig. 1.** Mean perceived persuasiveness (7-point scale), error bars, significance and effect sizes (d) for each gamification element and both genders. \*  $p < 0.05$

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