Designing for Gender-Role Differences Through the Lens of Self-Determination Theory

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ABSTRACT

Persuasive apps aim to contribute to the behavior change process of individuals. Some of these apps include personalization strategies that contribute to more effective changes in their behavior. Gender-role differences are an aspect that can be further explored to improve app tailoring. The Self-Determination Theory serves as a theoretical guide to design personalized persuasive apps that support gender-role differences. This position paper sparkles the discussion around design ideas that might support these gender-role differences.

CCS CONCEPTS

• **Human-centered computing** → **HCI design and evaluation methods**.

KEYWORDS

gender-inclusive software; gender biases; personalization; behavior-change; persuasive technology

1 INTRODUCTION

Persuasive apps (mobile applications created with the intention to serve as tools for positive behavior change in individuals), have a high presence in the main app markets. Example of these apps include: MyFitnessPal [19] and Endonomdo [3]. Many of these persuasive apps adopt strategies of customization of their app functions (e.g., rewards and comparison). Taking into account the specific characteristics of their target users contributes to a better acceptance of the app from the users and to more effective behavior change results on the users [7, 13]. Many of these personalizations occur in the spaces of personality [6, 10], culture [12], and social factors [15]. Furthermore, exploring the space of gender-role differences has potential to bring improvement to the current persuasive technologies by creating technology that considers these

differences. Therefore in this position paper I propose to study and understand how to leverage on these gender-role differences to create designs that consider this variations and consequently produce *inclusive* and effective persuasive technology. A theoretical framework that can support this technology design is the Self-Determination Theory (SDT) [2]. In the following sections, I introduce the concepts of technology personalization and gender-role differences and provide illustrative examples of the suggested design.

2 TECHNOLOGY PERSONALIZATION

Human beings are naturally diverse: Individuals belong to different cultures, develop in different societies, and have diverse personalities. This diversity should be considered when designing technological solutions, especially when these are intended to modify the individual's behavior. Research has shown that the "one-size-fits-all" approach is less effective than personalizing persuasive technologies [7, 13]. This is because different types of individuals find motivation due to different strategies [14]. Therefore, it is imperative to deeply study this human diversity to have solid information to create personalized strategies. Some commonly used persuasive strategies include: customization, simulation, self-monitoring and feedback, suggestion, personalization, simulation, praise, reward, comparison, competition, and cooperation [4, 11]. An area where this offering of tailored content can be explored is gender-role differences.

3 GENDER-ROLE DIFFERENCES

Gender-role differences have been studied in various domains, for instance Lauderdale et al. [9], researched on how gender differences affected motivation towards physical activity among college students. They found significant gender differences with males responding more positively to intrinsic motivation. Oyibo et al. [17] studied persuasive features that foster adoption of fitness apps. They found that for males, rewards have a positive relationship with the intention to use an app; while for females cooperation and competition are the features that produce this positive relationship. In another study, Oyibo et al. [16] analyzed gender preferences and differences in behavior modeling in fitness applications; finding differences in exercise-type preferences, perceived self-efficacy and projected exercise performance level. In the job domain, particularly in the health sector, Gómez-Baya et al. [5] noted gender differences with respect to the levels of psychological well-being, health problems, and basic psychological needs satisfactions. In another study focused on technology, Klenk and colleagues [8], noticed significant differences between female and male participants where females found the gratification of achieving goals and enjoyment more

important for their motivation than males. They also noticed that males appreciate more sharing their activity results than females.

4 SELF-DETERMINATION THEORY

The Self-Determination Theory (SDT) is a theory of human motivation that can guide understanding and tailoring persuasive technology for gender-role differences. SDT states that people have different levels of motivation that go from *extrinsic* to *intrinsic* motivation [2]. Additionally, the theory describes three Basic Psychological Needs (or BPN), that when satisfied by the context in which the individual develops, leads to a self-determined action. The BPNs are defined as follows:

(1) *Autonomy* "refers to feeling willingness and volition with respect to one's behavior. The need for autonomy describes the need of individuals to experience self-endorsement and ownership of their actions." [18, p. 86]

(2) *Competence* "refers to feeling effective in one's interactions with the social environment–that is, experiencing opportunities and support for the exercise, expansion, and expression of an individual's capacities and talents." [18, p. 86]

(3) *Relatedness* "refers to both experiencing others as responsive and sensitive and being able to be responsive and sensitive to them–that is, feeling connected and involved with others and having a sense of belonging." [18, p. 86]

5 INCLUSIVE PERSUASIVE DESIGN

Inclusion is "the act of allowing many different types of people to do something and treating them fairly and equally" [1]. In persuasive technology, designing for *gender inclusiveness* is of great significance because achieving changes in behavior with technology that does not adapt to their users' preferences results useless. To approach to this gender personalization, Oyibo and colleagues [16] conducted a study on exercise type preferences. They concluded that 80% of their study females population preferred a small group of exercises. Oyibo et al. suggest to designers creating female fitness apps to prioritize these exercises over the ones that were not categorized with high priority by the female participants. Incorporating this suggestion into the software design will satisfy the fitness preference of a majority but, unfortunately, will ignore the fitness preference of a minority of female users.

Another consideration for *gender inclusiveness* is that during data collection processes, participants have the option to select the *non-binary* choice whenever they do not feel identified with *male* or *female*. This practice will yield more representative samples, which can be used to create more robust inclusive designs.

In this position paper, I argue that to produce *effective* persuasive technology is not only necessary to design for *gender inclusion*, but also to consider psychological theories of human motivation. The Self-Determination Theory fits well in persuasive design because of its focus on self-determined action.

5.1 Designing to Support the SDT Basic Psychological Needs

In the following paragraphs, I will provide illustrative examples of incorporating SDT into the app design process to yield inclusive, effective persuasive designs.

Autonomy: Consider the design of a female inclusive fitness app. Seeing the previously mentioned findings from Oyibo's and colleagues' work [16], we know that 80% of the female's study population prefers a particular type of exercise. Therefore, we proceed to design a *goal setting* feature, which we know from previous literature supports the need of *autonomy* [20] (See Figure 1a). This feature includes a list of exercises to choose and considers 80% of the female population, however, what about the other 20%? Because we do not have data about the exercise preferences of this minority (See Figure 1b), I suggest two paths: 1: Follow a data collection process which provides data about the exercise type tastes and preferences of the minority of females. 2: Include the full set of exercise apps and allow the individual to choose the ones that match their preferences (See Figure 1c).

Figure 1: (a) Goal setting feature with exercise options for 80% of female population. (b) Goal setting feature representing missing features for 20% of female population. (c) Goal setting feature with an inclusive design.

Competence: Consider the design of male and female inclusive fitness app. Taking the findings from Oyibo et al. [17] about persuasive features with a positive intention to use, we know that *rewards* contribute to *males* using an app but not *females*. From this same research findings we know that *females* prefer *self-monitoring*, therefore we include this feature as a *competence* support [20]. As a result we have an inclusive design that includes rewards and goal setting (See Figure 2).

Relatedness: Consider the design of a male and female inclusive fitness app. We know from Klenk et al. [8] results that 89.4% of the population of males in their study used the sharing results feature on Runtastic. With this information we might include the *performance-sharing*[20] feature as a *relatedness* supportive feature. However, we will end up in a similar situation to the *autonomy* example mentioned above: we ignore the preferences of about 11% of the male population. Therefore to reach full support, I suggest following the same approach as in the *autonomy* example. Next, to support *relatedness* for females, the designer might want to consider the *leaderboard* feature as defined in previous literature [20] (See Figure 3).
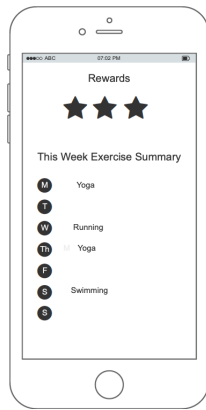
Figure 2: Rewards on the top represented by stars and Self-Monitoring on the bottom represented by a list of exercises performed during the week.
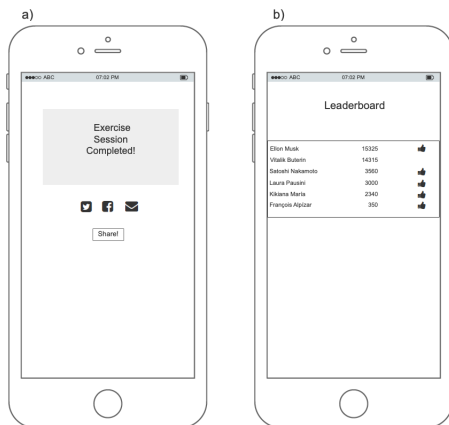

Figure 3: (a) Performance-sharing displaying options to share on social media. (b) Leaderboard showing a list of users in ranked order.

In summary, the goal of the proposed design strategy is two-fold: (1) Design trying to eliminate barriers and enhancing features so that all genders (including their diversity) can make profound use of technology [21]. This is, avoiding the design by segmentation, creating one software version for males and another for females. (2) By supporting the basic psychological needs through features that are well received by each gender, we will have persuasive apps which are more effective because individuals are driven by self-determined behavior. These two approaches have the potential to produce inclusive, effective persuasive technology.

6 CONTRIBUTION AND GOALS IN PARTICIPATING IN THE WORKSHOP

In this position paper, I want to discuss the importance of tailoring persuasive interventions for gender-role differences, as mentioned earlier. Given that these differences exist, I argue that persuasive apps can benefit from higher effectiveness if these are studied, understood, and included. Consequently, researchers learn how to incorporate this diversity into technological solutions. For this workshop's purpose, I want to brainstorm on design ideas in which technology can be more inclusive to this gender-role differences using as a framework the Self-Determination Theory.

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