User-Centered Design for Gamified Voice and Communication App: Applying UCD to

Gender-Affirming Communication Services

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Extended Abstract

Introduction

Transgender individuals may experience stressors of violence, ostracization, discrimination (e.g., restricted restroom access), and "nonaffirmation" (i.e., others refusal to affirm an individual's gender identity) (Testa et al., 2015, p. 66). Resources to help mitigate these issues may include support from social circles, emotional support, pride in one's identity, shared identity experiences with others, and being part of a community (Testa et al., 2015). When resources are sufficient for coping with stressors, well-being is achieved. Derived from the term vocal situation (Azul, 2015), the term communication situation reflects how the converging factors of gender positioning, sociocultural positioning (used as an alternative to "social status" to reflect the dynamic nature of this factor), and vocal function (i.e., what a person can produce with their vocal tract given their present anatomy and physiology) influence an individual's overall communication (e.g., talking with voice, emailing, texting, communicative gestures, etc.) in their daily life. Voice and communication services support a person's well-being by developing resources and coping strategies related to how their positioning (e.g., gender, age, sexual orientation) is communicated in sociocultural settings.

In healthcare service provision, the use of culturally-responsive practices (e.g., tailoring an intervention plan to coordinate appropriately with an individual's sociocultural identities) is associated with improved access to care, with access defined as, "the opportunity to reach and obtain appropriate healthcare services in situations of perceived need for care" (Levesque et al., 2013, p. 4). Access to care is enhanced when service provision is appropriate (i.e., comprehensively address an individual's presented needs regarding health or well-being) and engaging (i.e., the individual takes an active role in their treatment plan formulation/completion).

The overlap between the principles of user-centered design (i.e., the process by which developers incorporate target user feedback into system design for optimum system usability outcomes; Abras, Maloney-Krichmar, & Preece, 2004) and the principles of person-centered care (i.e., services placing an individual in the central role of care management for maximum autonomy; DiLollo & Favreau, 2010) is quite extensive, particularly regarding the value of the person's/user's feedback about system design. UCD may be conceptualized as an agent of culturally-responsive, person-centered service provision that improves access to care through increased appropriateness and engagement, which in turn improves voice and communication behavior change. A gamified, UCD app for gender-affirming voice and communication would enable target users to practice skills learned outside of the therapeutic setting in an appropriate, engaging way.

Despite the limited research investigating UCD and gamification for voice and communication service provision (Kopf & Huh-Yoo, 2020; Van Stan, Park, Jarvis et al., 2017; King et al., 2012), both person-centered (Hancock & Siegfriedt, 2020; Adler, Hirsch, & Pickering, 2019; Korpaisarn & Safer, 2018; Bailey, 2017; Levesque et al., 2013; DiLollo & Favreau, 2010; Ryan & Deci, 2000) and gamified interventions (Baxter et al., 2021; Pramana et al., 2018) have been shown to increase user engagement, practice frequency, and skill learning. While there is currently no UCD/gamified app designed to facilitate gender-affirming voice and communication change for gender diverse people, an app designed to facilitate voice and communication behavior change has potential to be a valuable resource for a transgender person's communication and overall well-being.

Materials and Methods

This mixed-methods study aimed to investigate target user perceptions of potential voice

and communication app features and design components to inform future app design for optimum communication-related well-being. The methodology employed in this study corresponds to the first phase (i.e., the iterative concept design phase) of the user-centered usability testing protocol described by Abras, Maloney-Krichmar, & Preece (2004). In accordance with this protocol, this study gathered user feedback on initial, prospective concept designs for a gamified voice- and communication-related skill practice app. Participants first completed an electronic survey, which asked participants to rate preferred system features, identify system design preferences, indicate the likelihood that they will use the app for practice, and indicate the content areas they would like to see included in the app design (e.g., pitch, resonance). Participants then completed an initial, individual video conference meeting with investigators (30-60 minutes) to expand upon and clarify the preferences they indicated in the survey. Follow-up questions were posed to clarify and confirm conclusions summarized by the investigators. These meetings were video recorded and transcribed for data collection purposes. A follow-up email was sent to participants after all four interviews were completed to investigate perspectives on the dialogue support feature "reminders," to confirm accurate representation of each participant's perspectives.

Results and Conclusion

Overall, results indicated that all participants in this study were interested in using a gamified voice and communication app to practice skills learned in voice and communication sessions. While there was some variability in participants' responses, there was a general consensus that participants wanted an app that would

(1) Provide opportunities to practice communication skills,

(2) Provide feedback to show whether a production was on- or off-target,

(3) Feel fun and playful, and

(4) Be able to be customized to advance toward their personal

voice and communication goals rather than a uniform protocol for

all users.

Participants in this study indicated greater predicted practice frequency when using a gamified

app to practice voice- and communication-related skills compared with other practice options

(e.g., following written instructions). In general, participants preferred *primary task support

features* and *dialogue support features* (i.e., features to facilitate/improve performance of target

behaviors) over *system credibility* and *social support features* (i.e., features to verify provided

information and to engage/collaborate with other users). Participants in this study indicated a

collective desire for customization of accessibility features, and indicated individual-specific

variations in customizable feature preferences for color scheme, font, icon size, and player

profile.

Using UCD in gamified voice and communication practice app design offers a promising

path to person-centered, culturally-responsive services for communication-related well-being.

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