Involving Young Adults in the Design of Health Interventions

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Abstract
Adolescence extends beyond the teenage years. Beginning to live independently is a defining stage in many people's lives. Involving adolescents in design can be challenging as they are hard to reach and the information found in the literature is skewed towards young adults with chronic conditions and special health care needs. This study is developing and testing a design process that can engage healthy young adults in the design of health interventions. A youth centric perspective will guide the selection of the different design methods to incorporate young adults in this design process. This study will test the relationship between the level of engagement and the design outcomes of young adults.

Author Keywords
Young adults; participatory design; health interventions

ACM Classification Keywords
D.2.1 Requirements/Specifications: Elicitation methods (e.g. low-fidelity prototyping) D.2.10 Design: Methodologies

Introduction
Adolescence is a time of multiple changes in people's lives, especially after beginning to live independently. Commonly, the management of their own health is not

their primary focus. Nevertheless, young adults make health decisions on their own, they are likely to be receptive to change in their health practices, and they have gained autonomy to make those decisions [5]. During this period of time, people define their identity and make life choices that are likely to determine health outcomes later in life [4]. This an ideal stage in people's lives to intervene for modifying adolescent's health routines. Healthy young adults are commonly not involved in the design of interventions that can help them manage these changes [2].

This study will engage healthy young adults in the design of health interventions that can help them identify important features for managing their own health once they move away from their childhood home and start living independently. This study will involve a group of college students in a design process to develop a health intervention that target food behaviors among this age group. There is evidence that changes in their food routines has an effect on their weight gain during their college years [3]. The setting for this intervention will be a virtual kitchen that can be tailored to engage young adults with their health choices.

The design process for this study was determined using a youth centric perspective. Positive youth development (PYD) guided the selection of the design methods chosen for the proposed design process [7]. PYD has been conceptualized by using five components: *confidence, competence, caring, character*, and *connection* [1]. These five components were used to select and modify the design methods used for this study. Engaging young adults in hands-on training can increase *confidence*. Providing simple and clear examples during the training is likely to increase *competence* of participants. Selecting activities that participants can relate to is likely to increase their sense of *caring* for the outcomes of the design process. Interacting with other participants and the researcher is likely to increase the *connections* and exchange of ideas during the design process. *Character* can be reached by the interactions between participants and how they monitor each other. The PYD perspective recognizes that when high levels of these components are present there will be contributions by youth. In the proposed study, the *contributions* of participants will be directed to redesigning a virtual kitchen. The number of options and criteria participants add will used to evaluate the design outcomes. The MacLean's et al. [8] question, options, and criteria (QOC) method will be used to evaluate each design.

This paper will describe the design process proposed for this study. Focusing on the reasons for selecting the different methods to engage young adults in the design of a health intervention for this age group.

Methods

The proposed design process for this study has four main components (see figure 1). Participants will be exposed to a predetermined stimulus. After experiencing the stimulus, the researcher will give a 10-minute presentation about paper prototyping and provide them with scrap paper and office supplies so they can experience paper prototyping. The presentation has components of PYD incorporated into the slides in order to increase participant's *confidence*. This presentation also provides young adults with the skills needed to work on the paper prototypes. These skills are likely to increase their *competence* to collaborate in the design activity.

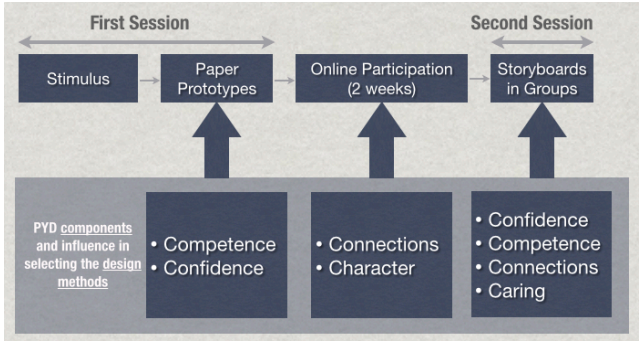

Figure 1. Design process proposed for this study and the components of the PYD perspective that each method targets.

After the presentation, participants will have thirty minutes to work on a paper prototype. Paper prototypes have been used in other settings for involving children [11] and adults [12], allowing participants to provide ideas to design teams. In this study, paper prototypes will be used because of their simplicity and ease of learning. Participants will be asked to add food items to printed copies of a virtual kitchen. The researcher will be available at all times to answer questions about the environment or the prototyping activity.

At the end of this first session participants will be asked to sign-up to a secure online collaboration system in order to take part in an online conversation with other participants of the study. They will have up to one week to comment about the food items that were added during the first part of the study. This activity was designed to help participants develop *connections* with the researcher and other participants in the study. Building *connections* is an important component of the PYD perspective and design activities are commonly done in groups [9]. At the end of the two-week period, the researcher will ask participants to choose a partner for the second design session, which will be done in groups of two.

During the group design activity, participants will learn about storyboarding as a design method for ten minutes by looking at simple examples found in the literature. The presentation will focus on developing *connections* between participants, while increasing their *competence* and *confidence* to provide ideas for designing a health intervention in the virtual kitchen.

Participants will be asked to define at least two activities young adults can perform in the virtual kitchen. Groups will have forty-five minutes to work creating the storyboards of the activities they came up with as group. The researcher will be available at all times and will answer any questions participants might have. The interactions between each team will be recorded for future analysis.

The two main design methods that form part of the design process are paper prototyping and storyboards. These two methods were selected because of their simplicity and ease of training to non-expert designers. These methods are likely to increase the level of engagement in the design process and reduce the barriers for young adults to collaborate in design. This study will measure the level of engagement of the participant at the end of the design process. Engagement will be measured using a Kappelman's questionnaire of engagement [6].

Analysis Plan

The recordings from each of the design sessions will be transcribed to apply MacLean's QOC method. Following the analysis used by Sluis-Thiescheffer [10], only Options and Criterion will added in order to evaluate the paper prototypes and storyboards designed by participants.

The analysis of the transcription will be done first by identifying and enumerate all substantive assertions. Then these have to be divided into broad categories (i.e. options, issues, and justification). The categorization will be done by maintaining and interpreting the context of each discussion with the participant's conversation. Young adults are not likely to ask questions regarding the proposed design; this is a skill that expert designers develop over time.

Conclusions

This design process is likely to engage young adults in the design of a health intervention that can help prevent the development of unhealthy habits an it is likely to be accepted by other adolescents regardless of their health condition.

References

[1] Bowers, E.P., Li, Y., Kiely, M.K., Brittian, A., Lerner, J.V., and Lerner, R.M. The Five Cs Model of Positive Youth Development: A Longitudinal Analysis of Confirmatory Factor Structure and Measurement Invariance. Journal of Youth and Adolescence 39, 7 (2010), 720–735.

[2] Callahan, S., Feinstein, R., and Keenan, P. Transition from pediatric to adult-oriented health care: a challenge for patients with chronic disease. Current Opinion In Pediatrics 13, 4 (2001), 310–316.

[3] Dennis, E.A., Potter, K.L., Estabrooks, P.A., and Davy, B.M. Weight Gain Prevention for College Freshmen: Comparing Two Social Cognitive Theory-Based Interventions with and without Explicit Self-Regulation Training. Journal of Obesity 2012, 6 (2012), 1–10.

[4] Ferreira, I., Twisk, J.W.R., van Mechelen, W., Kemper, H.C.G., and Stehouwer, C.D.A. Development of Fatness, Fitness, and Lifestyle From Adolescence to the Age of 36 YearsDeterminants of the Metabolic Syndrome in Young Adults: The Amsterdam Growth and Health Longitudinal Study. Archives Of Internal Medicine 165, 1 (2005), 42–48.

[5] Hanna, K.M. A framework for the youth with type 1 diabetes during the emerging adulthood transition. Nursing outlook 60, 6 (2012), 401–410.

[6] Kappelman, L.A. Measuring user involvement: a diffusion of innovation perspective. SIGMIS Database 26, 2-3 (1995).

[7] Lerner, R.M. Promoting positive youth development: Theoretical and empirical bases. National Academies of Science, Washington, DC, 2005.

[8] MacLean, A., Young, R.M., Bellotti, V.M.E., and Moran, T.P. Chapter 3. In Design Rationale: Concepts, Techniques, and Use. L. Erlbaum Associates, Mahwah, NJ, 1996.

[9] Maguire, M. Methods to support human-centred design. International Journal of Human-Computer Studies 55, 4 (2001), 587–634.

[10] Sluis-Thiescheffer, R., Bekker, M., Eggen, J., Vermeeren, A., and Ridder, H. Development and application of a framework for comparing early design methods for young children. Interacting with Computers 23, 1 (2011).

[11] Sluis-Thiescheffer, W., Bekker, T., and Eggen, B. Comparing early design methods for children. ACM (2007).

[12] Traynor, B. Rapid paper prototyping: 100 Design sketches in 10 minutes, 18 designs presented, 6 prototypes tested, student engagement - Priceless! IEEE (2012), 1–5.