Boundaries: A Serious Game on Personal Boundaries in Relationships

Media-Making Statement, CMPM Comprehensive Exam, Winter Quarter 2022
Samantha Conde - March 15, 2022

Summary:
Boundaries was a game design project that explored how to use games to learn about the tough concepts of physical boundaries within relationships for individuals with and without developmental disabilities. The game design was informed by (1) a literature review of sex education resources for people who are neurodivergent, (2) performing user centered design with two disability learning groups, and (3) prototyping the game iteratively over the course two months. **Specific media-making skills utilized included**: feature prioritization with stakeholders, game programming within the Unity Game Engine, user interface (UI) design, digital asset creation, and user experience testing. The work stemmed from a direct collaboration with *Sexuality for All Abilities*, with a resulting deliverable of a WebGL interactive game for exploring personal boundary-related scenarios.

Background:
With a literature review done, there is a lack of proper and easily accessible sexual education and resources for people with disabilities. Due to the lack of sex education and no sexual socialization, neurodivergent individuals do not have the intimacy they wish they had. The general public often perceives people with disabilities as asexual. Moreover, even though there might be some sex education resources for the neurodivergent population, it is unknown if they have been proven to be effective and helpful.

These finds are important as there is an unfortunately high number of sexual abuse against neurodivergent individuals. Research done viewed the why and how statistics, but not much focuses on what we can do to change this high number. One author, Muccigrosso, reviewed effective strategies to help create a reliable sex educational resource for people with disabilities [1].

An effective preventative strategy should include participation, situations relevant to daily life, topics on relationships and rules, topics on private body parts, questioning okay or not okay touching, and skills in relation to assertiveness and communication. I took all of these suggestions when developing a serious game, as serious games have been proven to be a great tool for art, therapy, and many other things.

The idea of making a serious game became concrete when the director, Katie Thune, from *Sexuality for All Abilities* - an organization that creates and distributes sexual health education

for people with intellectual disabilities - reached out to my advisor about a possible digital game inspired by their flipbook [Image 1].

The *Sexuality for All Abilities* flipbook had four flippable booklets of "Okay/Not Okay," "Who," "What," and "Where" that were used for creating sentences used for discussions on healthy/unhealthy touch and actions. The goal of the flipbook was to help people explore and understand their personal boundaries in a safe manner.

Image 1: *Sexuality for All Abilities* physical copy of the flipbook.

Media Design:

Thune did not express any design elements or considerations when we first met to discuss gamifying the flipbook. So, I took the initiative and began drawing designs on the Sketchbook Pro Software. With biweekly meetings, I gave updates to the director on the overall look of the game, color scheme, sounds, text font, and so on. Thune slowly began to make inputs and suggestions on the design and what they preferred or disliked, and after reviewing these new ideas, I changed things accordingly.

After multiple design iterations, Thune had a vision of the flipbook being turned into a slot machine game that created the digital game Boundaries [Image 2]. This slot machine game generates randomized scenarios and asks the player if the situation is “okay” or “not okay” with the same divisions of “Who,” “What,” and “Where.” To make Boundaries more accessible, I added images for those who cannot read well, a text to speech option for those who cannot see well, and video tutorials in English and Spanish.

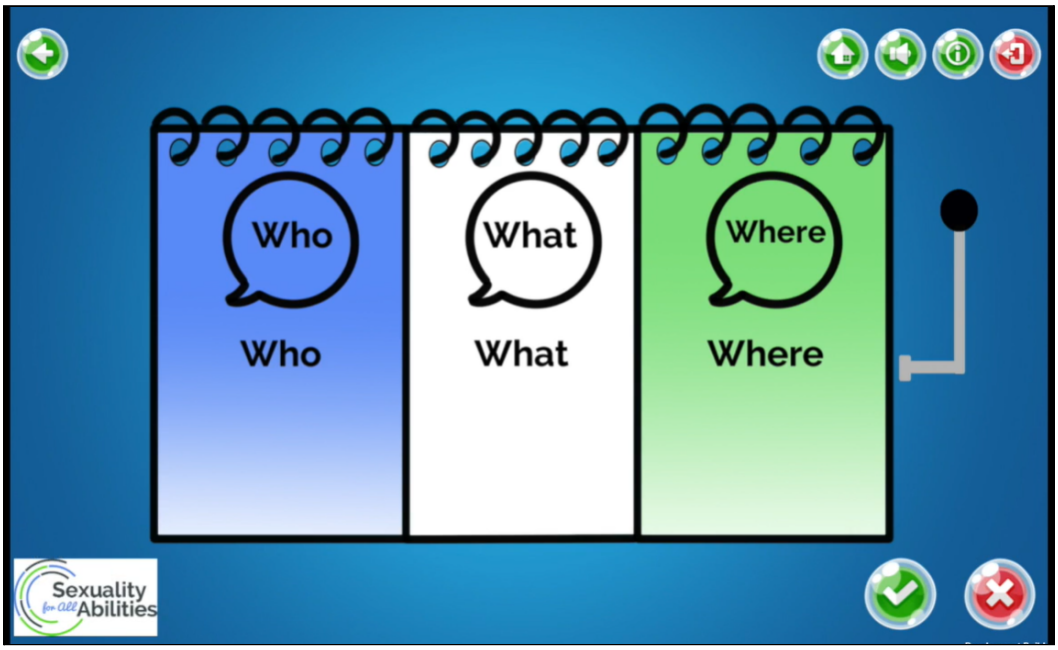

Image 2: Boundaries, digital game. Healthy/Unhealthy version.

After all the system design of the game itself, I focused on how to evaluate the scenarios generated during gameplay. I ended up constructing a calculation to find something I called the *Risk Score*. Let me explain that the *risk score* is not a score given to the user but to the scenarios in the game. It is supposed to provide straightforward awareness for people to start a conversation on behaviors and risk (e.g., between behavioral therapists, caretakers, etc. and their patients). I used a statistics table from “Crimes against persons with disabilities, 2009-2015. Bureau of Justice Statistics” [2] to assign marks to each “who” section [Image 3]. Physical actions from the “what” section were given 2 points if the act was sexual or 1 point if it was a plain physical action. The higher the score, the more riskier the situation. To get the final score, I created this equation: Statistic percentage of WHO divided by ten multiplied by the physicality of what – this was done to give an automated report to spark conversations between caretakers and people with disabilities inspired by the BOJ statistics

To demonstrate this calculation, let us take the sentence [Image 4] “Is it okay if a stranger tickles me at the park?” According to Table 8 of the Bureau of Justice Statistics, a stranger has a percentage of 30.3 of being the assailant. Take 30.3 divided by ten and multiple by 1 (tickles me)

which equals 3.03. I did not take the "where" from the scenarios into consideration as I did not find any statistics in relation to where crimes against people with disabilities would happen.

TABLE 8
Victim-offender relationship, by victim's disability status, 2011–2015

Victim-offender relationship	Persons with disabilities	Persons without disabilities*
Total	100%	100%
Intimate partner[a]	14.7	12.8
Other relatives[b]	10.0 †	6.4
Well known/casual acquaintances	40.0 †	32.5
Strangers	30.3 †	39.4
Unknown	5.0 †	8.8

Note: Based on the noninstitutionalized U.S. residential population age 12 or older. See appendix table 13 for standard errors.
*Comparison group.
[a]Includes spouses, ex-spouses, boyfriends, and girlfriends.
[b]Includes parents, children, and other relatives.
†Significant difference from comparison group at 95% confidence level.
Source: Bureau of Justice Statistics, National Crime Victimization Survey, 2011–2015.

Image 3: Table 8 from Crime against persons with disabilities, 2009-2015-Statistical tables.

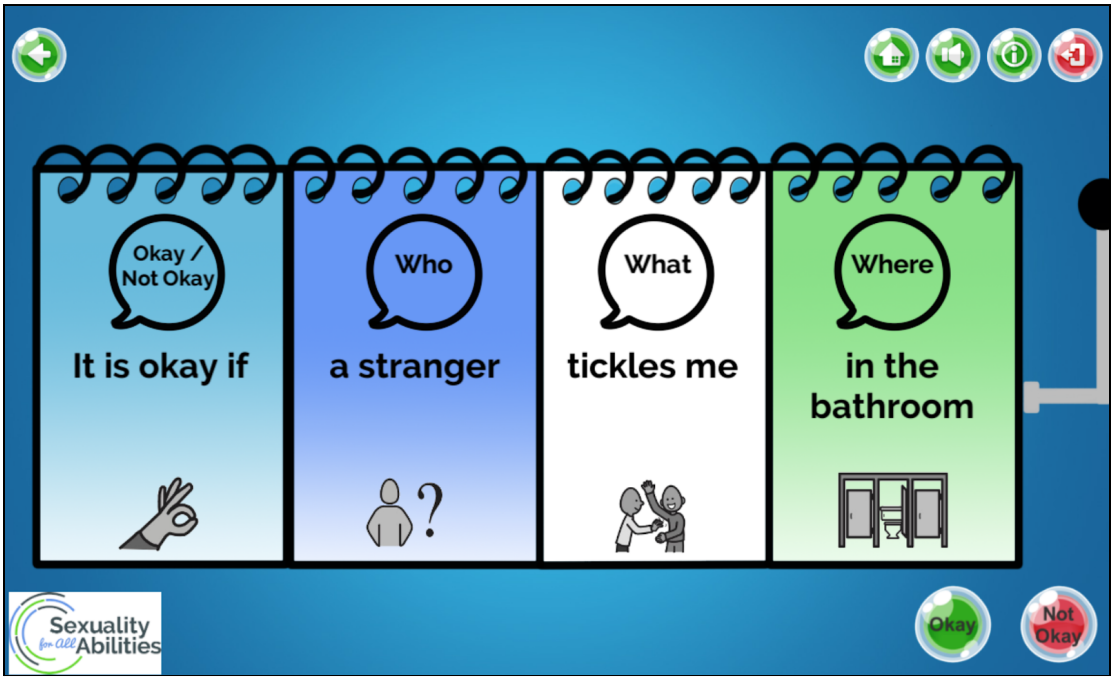

Image 4: An example of the Okay/Not Okay version of Boundaries.

Media Evaluation:
After designing and programming the game, I collaborated with *Hope Services* Day Center. ASSIST, Assistive Sociotechnical Solutions for Individuals with Special needs using Technology, Lab has an amazing partnership with *Hope Services* Day Center based in Santa Cruz. This organization offers care services and much more to neurodivergent individuals. Over 3 months, I worked with their caretakers, their managers, and their clients with disabilities to ensure the surveys used after playtesting were understandable and the game was engaging. In the end, I had 10 participants with developmental disabilities from *Hope Services*, 5 male & 5 female who tested the game Boundaries.

The study protocol was conducted in a private room to keep a safe and honest environment with a supervisor to monitor the playtesting. The preparation began with sanitizing all of the equipment and ensuring everything was clean. Then the supervisor invited the user to come in and verbally gave a tutorial of the game. After a verbal confirmation that the participant understands and is ready to continue, we move on to playing the game. Playtime itself took about 2 minutes. All the while, the game data was collecting the scenarios, answers, and time intervals in between answering each question. Lastly, the supervisor would ask if the user would like to participate in a survey of 15 questions that were modified from the Immersion survey by Jennet et al.

From the survey responses, I noted that almost all of the participants felt that they could relate to the game's scenarios, and the players who had a higher risk score found the game difficult to understand and challenging to play. Almost the majority of the players said that the game helped them understand their own personal boundaries a bit more. Looking back at the gameplay data, I noted that 4 users answered not okay to the majority of high risk scenarios, 2 users answered half okay/half not okay to scenarios of high risk, and 4 users answered okay to majority of high-risk scenarios.

The results from the study showed us that serious games can be an effective tool to help people learn about boundaries. Users in the lower risk group took more time to think about the questions before providing an answer, as shown from the game play data. From the survey data, users from the medium and high risk groups self-reported that the game was a bit more challenging. I believe this game can be a successful tool in identifying personal boundaries and starting conversations with caregivers. For future iterations, I will take recommendations from the participants who said they would like to see characters "anime characters, like manga characters. I will also play around with different background music as many participants did not like it. Overall, the participants liked the color scheme.

Full results can be found in [3 - 4].

Limitations and Impact:
Disclaimer on the limitations in this study: had a small sample size of users as our target population is a minority population. It did include many scenarios; however, it would be more engaging to add personal scenarios to have a wider diversity of situations.
As this was my first ever research project, I did not save the different iterations of Boundaries.

The final game was disseminated through *Sexuality for all Abilities* from an impact perspective. By virtualizing the flipbook and providing risk scores, the game was made more accessible and affordable as it could be played off of any device through a local application or web browser.

Related Links:

- Video Demos:
    - Okay / Not Okay Tutorial: https://youtu.be/B0Mq_QH2RcU
    - Healthy / Unhealthy Tutorial: https://youtu.be/l5Vp_7DJ_T4
- Stakeholder/Collaborator Group Links:
    - *Sexuality for all Abilities*: https://madhatterwellness.com/sexuality-all-abilities/
    - *Hope Services*: https://www.hopeservices.org/

Individual Contributions:
- Game development consisting of Unity Game Engine Programming, Scene Development, User-Interface Design, 2D Asset Integration, and Game Build Deployment.
- User experience research consisting of game feature prioritization with stakeholders (*Sexuality for all Abilities*), user testing through *Hope Service*s with adults with developmental disabilities.

Acknowledgements:
- Katie Thune: providing initial resources and framework for Boundaries.
- Aviv Elor: advising on Unity Game Engine programming.
- Professor Sri Kurniawan: advising on User Experience Testing.

References:

1. Muccigrosso, Lynne. "Sexual abuse prevention strategies and programs for persons with developmental disabilities." *Sexuality and Disability* 9.3 (1991): 261-271.
2. Harrell, Erika. "Crime against persons with disabilities, 2009-2015-Statistical tables." *Bureau of Justice Statistics. Retrieved July 13* (2017): 2017.
3. Conde, Samantha, Aviv Elor, and Sri Kurniawan. "Boundaries: A serious game on relationships for individuals with developmental disabilities." In *2020 IEEE 8th International Conference on Serious Games and Applications for Health (SeGAH)*, pp. 1-7. IEEE, 2020.

4. Conde, Samantha. "Establishing a serious game on relationship boundaries for people with developmental disabilities." In *The 22nd International ACM SIGACCESS Conference on Computers and Accessibility*, pp. 1-3. 2020.