Assignment 3: Transformational Framework

This document has two purposes. It has material that you will need to complete the assignment, including links and references. However, it also has sections where you are expected to contribute. You can edit your answers right into this document.

High Level Purpose

What is the big-picture goal for this game?

Children develop beliefs about themselves and others based on *social categories*, such as race, ethnicity, gender, religion, or language. However, there is a lack of validated, scalable tools to assess these beliefs in preschool-age children. In this project, you will develop a game-based assessment for preschoolers that allows researchers to study these questions of social categorization at scale.

While this game is intended to support the study of many different social categories, for this assignment we will be working on race and ethnicity. This is a particularly difficult set of social categories to engage for both practical and ethical reasons. However, if we can design effective assessment games for these categories, we should be able to apply the same principles to simpler categories in the future.

Note that you are not expected to validate your game as part of the class; see the Assessment Plan section for more.

Audience & Context

Who plays the game, who are the other stakeholders, and what's the context of play?

For this game, you are targeting two different stakeholder groups: preschool children and researchers. Preschool children play the game and produce data. However, the data must be high quality and useful for research purposes.

Students: identify at least two other stakeholder groups. For each group, discuss possible ethical and practical concerns related to using games for data collection. You may assume that researchers have sought and obtained ethics approval from their institution.

For the context of play, you may either design for a preschool classroom or for the home. In either case, you may assume that one or more caregivers is present to help set up the game, but adults should **not** participate in play. Additionally, to make data collection scalable, your game must not require researchers to be present.

Students: which setting did you choose, and why? What issues might it raise in terms of data quality and/or ethics?

For this assignment, you may design an analog, digital, or hybrid game. You can assume that the caregiver(s) have access to an tablet and an internet connection.

Students: what type of game did you create, and why? What benefits drove you to choose that format, and what tradeoffs does it introduce?

Player Transformations

How should your players be different after they play?

In this assignment, you will be exploring how games might fit into a larger-scale transformation.

We specifically do *not* want individual child players to be different before and after they play. This is true both for ethical reasons (we do not want to introduce stereotypes) and for data quality reasons (the goal is assessment of their current state).

Students: explain how your game design minimizes the risk of changing the child's perspective on race and ethnicity. Address both the issue of stereotyping and the issue of data quality.

For the larger-scale transformation, researchers can use this data for understanding the current state of children's ideas about social categories, which is important for developmental psychology research. They can also use this data as part of studies that test the effectiveness of specific interventions. These interventions might be targeted at a specific social category (e.g. anti-racist interventions), or they might be targeted at more general learning skills (e.g. appreciating others across perceived differences).

Either way, researchers will need to be able to analyze the data produced by your game *at scale*. In practice, this often means turning to quantitative data - but quantitative data can lack nuance and excludes things that you don't know to look for. Qualitative data is typically rich and nuanced, but scales poorly. For this assignment, your challenge is to capture *both* qualitative *and* quantitative data.

Students: describe how you will capture your qualitative and quantitative data. If your game is analog, you may assume the adult(s) can use the various device inputs such as the microphone and camera, and that they can install apps on the device.

Students: describe how researchers might analyze your qualitative data at scale, without having to watch and code hundreds of hours of video. If this plan involves an AI tool, explain what risks this introduces and how the researchers might address them.

Most assessments in this space focus on how children *feel* about people from other racial groups. However, some assessments also include measures of *action*, which could be captured either in a story or through observation. Your game must include at least one of each.

Students: feeling and action can be related, for example if we take action based on what we feel. How does your game keep measures of feeling and measures of action separate?

Barriers

Why aren't your players already transformed?

For this assignment, we are engaging this question from the point of view of "What are the barriers to collecting data on how preschool students understand social categories?"

Your game should address one or more of the following barriers:

- Access (to research sites)
- Cost (of the intervention deployment)
- Consent (from caregivers and/or teachers)
- Equity (making sure all kids can be included)
- Political pressure (at a time when engaging with race is increasingly fraught)
- Training (on how to deploy the study materials)

Students: what barrier(s) did you choose, and how does your design address them?

Domain Concepts

What elements of the domain are you trying to capture?

RACE IN THE AMERICAN CONTEXT

Race in America is both a complex and fraught topic, particularly in the current political environment. The good news is that your game does not need to teach concepts of race; it simply needs to evoke any pre-existing categories that the player has. However, in your team conversations, you will need a certain level of background knowledge in order to contribute. These papers are chosen to help get you up to speed, particularly if you do not experience racialization in America.

- **Required:** The Fluidity of Racial Classification: https://www.annualreviews.org/content/journals/10.1146/annurev-polisci-060418-042801
- **Required:** Critical Race Theory for HCI: https://doi.org/10.1145/3313831.3376392
- **Recommended:** Why, when, and from whom: https://dl.acm.org/doi/full/10.1145/3544548.3581122

Students: you are specifically tasked with including American racial and ethnic groups that are neither Black nor White. Which groups did you include in your prototype, and why? How are you

addressing the complexities of racial classification described in the first paper in this section, such as multi-racial identities?

Students: the paper on critical race theory describes how race can be an issue in everyday interactions. What is one thing your team did to address these problems in your team discussions and creative process? How was it inspired by something you learned from the paper?

DEVELOPMENTAL PSYCHOLOGY
You will need an understanding of the developmental stage of your players. This paper gives an overview. You are not required to read this entire paper; however, you should make sure that you understand how children in your age group are different from adults. This will help you with the Assessment section of this framework.

- **(Partly) required**: The Development of Social Categories: https://www.annualreviews.org/content/journals/10.1146/annurev-devpsych-121318-084824

RESEARCH ETHICS
A big piece of this project is for you to ensure that you are designing an *ethical* experience, not just an effective one. As noted above, you may assume that researchers have received permission from their local ethics review board to conduct their study (see the second link if you are not familiar with what that implies). However, your work should go beyond the minimum of what is required, and fully engage with children's rights as per the first link.

- **Required:** Designing for Children's Rights: https://childrensdesignguide.org/
- **Recommended:** The Belmont Report: https://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/index.html

Students: pick a principle of Children's Rights that you think your game engages effectively, and explain how. Then pick a principle that you are *not yet* engaging effectively. Explain one thing you might do in the future to address this issue.

Expert Resources

Who is an expert that might be able to help?

You may contact our client, Dr. Catarina Vales (cvales@andrew.cmu.edu) with any questions about how researchers might use data from this game. Dr. Vales is also available to answer questions about the literature review linked below

Prior Work

What have people already done in this space, and what can you learn from it?

Dr. Vales' team has prepared a literature review for you! This literature review summarizes over 100 papers on prior efforts to capture young children's ideas about social categories, particularly race. You should read this literature review, and then explore some of the summary papers they have called out for you.

Link to literature review:
https://drive.google.com/file/d/1MW0vnjq-AZskXfRj7CQaEKaiAJue2egX/view?usp=sharing

Students: you should not be inventing your own categorization activity from scratch. Choose a measure that has been used by other researchers. What did you learn from it? How did you adapt or change it to make it part of your game?

In terms of how games represent race, we recommend you look at the *game modding* community. Specifically, you should look at how people from racialized groups create mods to represent *themselves* in games, rather than how they are represented by others.

Assessment Plan

How will you know whether your game is having the desired effect?

Your biggest design challenge for this assignment is that we cannot provide you with preschool playtesters the way we could with older children. We also do not encourage you to seek out preschoolers unless you already know them well. You will therefore most likely have to reason about preschooler play based on other sources. We provided some material for Assignment 1 that may be useful; you should also consider watching videos of preschoolers playing online.

Students: describe 2-3 important things you learned about preschool children and their developmental stage, including from the paper linked in Domain Concepts. For each one, explain how preschool children are different from adults, and how it changed your interpretation of adult playtest data.

Some of the games created in this class may be further developed and tested for *validity*, which means whether your game accurately measures what you think it will measure. To do this, Dr. Vales and her team will have children play your game, and have the same children take a different assessment that is already validated. Then she can see whether the two line up.

Students: while games will only progress to validation with your consent, you may or may not want to be part of the validation process. Imagine that no one from your team chooses to stay involved. What advice would you give to Dr. Vales and her team about your game? This could include ways to expand it, things she should feel free to change during the validation process, or anything else you think is relevant.

FAQ

What AI tools can I use for this assignment?
You may use any of the protected AI tools available at this link:
https://www.cmu.edu/computing/services/ai/meet-ai/tools/index.html

If you choose to use AI, you should follow the guidance provided in Fath's guest lecture. Describe the techniques you used to accomplish this in your process document, and note which parts of your game design process incorporated AI.

If you generate any images with AI, they must bear a visible watermark or other sign that they are AI-generated. This is ethically important for playtesting any games in the space of social difference.

What if I want to make a digital game?
Before you make a digital prototype, you must create an analog prototype that tests your core loop. You must playtest this core loop outside your team, either in class or independently, before you begin any digital prototyping.