**Lineage: Co-Creation of a Game-Based Educational Intervention with Young People Through the Lens of Reproductive Justice**

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**BACKGROUND AND THEORY**

Game-based interventions for youth STEM/health education have ample precedent and apparent promise [1-5]. A large body of work has shown that games are feasible, acceptable and enjoyable ways to explore health and social issues including bystander interventions and sexual health [1,2]. There are a number of unique affordances of games as learning tools, including the ability to create an exploratory experience, that make them particularly suited for learning new skills [6, 7]. Games of all types offer players interactive contexts for thinking through and experimenting with complex problems in a hands-on fashion. Both game design and play have been shown to activate a wide range of thought styles, facilitate interdisciplinary learning [8], promote prosocial behavior[9], foster cognitive and emotional empathy[10], model alternate modes of action, and enable players to frame problems differently through procedural interaction [11].

The Social-Cognitive Career Theory is a key framework for research on women and racial/ethnic minorities and pursuit of STEM/health careers[12,13]. The Social Cognitive Career Theory posits that in middle and high school, successful learning experiences help promote the development of self-efficacy and positive outcome expectations for college success and careers in STEM among populations that are currently underrepresented in those fields.

In human-centered design, the designer and end user are brought together early in the development process, so that products are tailored to the intended audience [14-16]. This design approach seeks to respond to the existing needs, wants and limitations of intended users rather than making the user adapt once a solution or tool is already developed.

**OBJECTIVE**

To use the Social Cognitive Career Theory and human-centered design to create a game-based intervention that uses a Reproductive Justice lens to illustrate historic instances of injustice within the medical and scientific communities, increase students’ self-efficacy around STEM/health, improve outcome expectations around STEM/health careers, and advance systemic change.

**CO-DESIGNING WITH YOUNG PEOPLE**

**Session 1: Conducting Research**
Young people conducted research and presented on reproductive justice principles in historic and medical contexts.

**Session 2: Storytelling**
Young people connected tenets of reproductive justice to their lived experiences using storytelling and digital journaling.

**Session 3: Prototyping**
Young people learned basics of game design and developed game prototypes in breakout groups.

**Session 4: Iterating**
Young people iterated on specific game mechanisms and desired points of affect

**DESIRED GAME AFFECTS**

The opposite of isolation: sense of connectedness to history, movements

I could be them: ability to visualize oneself as a STEM professional

I could do that: improved outcome expectations around ability to advance systemic change

**TARGETED AFFECTS, DESIGN ELEMENTS, AND THEORETICAL FRAMEWORK COMPONENTS OF LINEAGE**

<table>
<thead>
<tr>
<th>Targeted Affect</th>
<th>Design Element</th>
<th>Social Cognitive Career Theory</th>
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<tbody>
<tr>
<td>&quot;I could be them&quot;</td>
<td>Lineage web comprises a variety of “STEM/health justice ancestors.” Lineage ancestors are STEM/health professionals from underrepresented minority groups who served(d) as change agents for justice within their field</td>
<td>Self-efficacy / perceived behavioral control</td>
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<tr>
<td>&quot;I could do that&quot;</td>
<td>Unlocking new ancestors within the Lineage web illustrates the accumulated effects of individual action toward systemic change</td>
<td>Outcome expectations</td>
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<tr>
<td>&quot;The opposite of isolation&quot;</td>
<td>The Lineage web situates players as part of a larger reproductive justice movement as they move through (and eventually place themselves within) the ancestor web.</td>
<td>Contextual factors</td>
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**REFERENCES**


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**Figure 1: Initial prototype of a digital ancestor web for Lineage**

Image 1. Anarcha
Image 2. Bill Jenkins PhD, MPH
Image 3. Henrietta Lacks
Image 4. Dawn Wooten, LPN