“I Don’t See Color”: Characterizing Players’ Racial Attitudes and Experiences via an Anti-Bias Simulation Videogame

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ABSTRACT

Videogames and learning/training applications that address racial discrimination have risen in popularity recently, coinciding with the rapid development of the field of serious (or impact) games [1, 2]. While there has been much focus on understanding the efficacy of these systems as interventions to reduce racial bias, there has been less attention paid to how individuals’ prior physical-world racial attitudes influence their experiences of such games about racial issues. Toward addressing this gap, the study presented here examines the relationships between PreK-12 educators’ colorblind racial attitudes and their game experience and narrative interpretations in narrative videogame modeling racial and ethnic socialization called *Passage Home*. *Passage Home* embeds a novel computational model and simulation informed by the *Racial Encounter Coping Appraisal and Socialization Theory* (RECAST) [3] to simulate a discriminatory racial encounter in a classroom setting. The system serves as a tool for assessing players’ racial and ethnic socialization (RES) experiences to support interventions for learning about racial bias. This paper presents the results of a user study deploying *Passage Home* with PreK-12 educators. Analysis revealed that players’ colorblind racial attitudes and ethnic identity were related to their in-game racial appraisal and feelings of *competence*, *negative affect*, and *empathy* in the game. Given the prevalence of colorblind racial ideology across racial and ethnic groups in the United States [4, 5], we propose an initial typology of players’ colorblind racial attitudes emerging from this analysis to aid in the future development of serious game interventions addressing racial discrimination.

CCS CONCEPTS

• **Applied computing** → Computers in other domains; Personal computers and PC applications; Computer games; • **Human-centered computing** → Human computer interaction (HCI); HCI design and evaluation methods; User studies.

KEYWORDS

Avatars, educational game, game design, human-computer interaction, identity, impact games, interactive narrative, racial discrimination, reflection, serious games, serious play, social identity, transformative education

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1 INTRODUCTION AND MOTIVATION

Imagine the following scenario involving videogame being used to support anti-bias training for K-12 educators: a negative racial encounter is taking place between a teacher who accuses a student from an underrepresented racial group of plagiarizing an essay simply because the teacher non-player character (NPC) does not believe students from the student’s racial group are capable of producing high-quality work. Now, imagine an educator who has played the game responding that “this situation could have happened to any student of any race, but the way [the student] was raised, she took it as being treated unfairly.” The game makes it clear that the student did not cheat and the student player character never complains of unfairness. In this case, the educator’s prior racial attitude results in not only misreading the situation, but actually imputing an attitude to the player character that was never there. The scenario above is from our novel videogame and assessment tool *Passage Home* and the is quote is an actual excerpt from a participant of the user study detailed in this paper that highlights a key aspect of the motivation for this research. When educators make statements such as these in the face of clear discrimination to students, learning, and society all suffer. To develop serious games which are effective learning tools for anti-bias training, it is important to understand how aspects of racial and ethnic identity and attitudes from the physical are selectively projected into game experiences. The research reported on here addresses this need by characterizing the relationships between players’ racial attitudes and how they perceive in-game experiences. The results can aid developers in creating systems which couple with evidence-based anti-bias learning interventions to better combat unfair racial discrimination.

1.1 Race and Ethnicity in Videogames and Interactive Experiences

Videogames and interactive experiences focused on combating racial discrimination are becoming more common. However, the effectiveness of these systems is contingent upon their audiences’ ability to accurately appraise the discriminatory racial encounters depicted within them. Without a correct appraisal or understanding of racialized themes or events, the potential for the system to be effective as an intervention is markedly diminished. Prominent research in the domain of serious games addressing racial

discrimination within the last decade has focused on improving users' understanding of racism by putting them into the first-person perspective of a player-character in a racialized encounter [1, 2]. Although these systems hold promise to support learning and training, there is a lack of research characterizing the ways in which individuals' physical world racial attitudes may exist as barriers to transformative learning within serious games addressing racial issues.

1.2 Racial and Ethnic Socialization and Identity

Racial and ethnic socialization (RES) describes the process through which children learn about race and ethnicity, both directly and indirectly [4]. The most prominent strategies emerging from research about RES across ethnic groups in the U.S. include *cultural socialization* (teaching children about racial heritage, history, and traditions), *preparation for bias* (promoting awareness of and preparing for coping with discrimination), *promotion of mistrust* (emphasizing need for wariness in interracial interactions), and *egalitarianism and colorblindness* (encouraging children to value individual qualities over racial group membership and/or avoiding mentioning race in discussions). RES scholars have found egalitarianism and colorblindness to be a mainstream and prominent socialization strategy across multiple ethnic groups [4, 5]. Furthermore, much discourse regarding racial matters in the U.S. reflects what Bonilla-Silva refers to as “seemingly nonracial mechanisms” within “the structure of racism in color-blind, post-racial America” [6]. “I don’t see color” is a common expression amongst those who espouse colorblind racial ideology, idealizing the idea that race should not matter and that individuals should be treated fairly based on their merit. However, given the reality is that there is still racial inequality and bias within society today, well-meaning individuals who are colorblind can be perpetrators, bystanders, and even targets of racial bias without even recognizing it. Furthermore, the ways in which individuals conceptualize their racial or ethnic identity varies widely, even within the same racial or ethnic group. These self-concepts can result in vastly different understandings and feelings about what it means to be a member of an ethnic group in the world. RES and the development of one’s racial and ethnic identity result in different ways of appraising racial events and thinking about racial issues. Hence, it is important for developers of serious games seeking to address racial issues to better understand how these physical-world phenomena influence virtual world experiences to develop more targeted interventions.

2 METHODS

2.1 Passage Home

Passage Home is an interactive narrative game depicting a discriminatory racial encounter in which a Black student named Tiffany is falsely accused of plagiarism by her white female teacher, Mrs. Smith. The player is put into the first-person perspective of Tiffany, the player character (PC), and informed that they are academically high-achieving and worked hard on an original essay (i.e., they did not commit plagiarism). Mrs. Smith, the non-player character (NPC), states her belief that Black students are incapable of producing high-quality work as the basis of her accusation. The player is prompted to make a series of choices to capture their thoughts,

feelings, and desired actions in response to the accusation. The narrative (i.e., story structure and content, characters, etc.), game system (i.e., environment, mechanics, visual design, animations, etc.), and computational model embedded within *Passage Home* [7] were developed through a multi-year interdisciplinary design-based research effort conducted in collaboration with clinicians and researchers from an RES clinical intervention called the *Engaging, Managing, and Bonding through Race* (EMBRace) program [8]. The *Racial Encounter Coping Appraisal and Socialization Theory* (RECAST) [3] provides a model for understanding the effects of racial socialization on racial coping and self-efficacy for addressing racialized stress. RECAST was used to guide the design of the discriminatory racial encounter simulated in *Passage Home* to ground the experience in social science research and reflect the nuance of physical-world racialized interactions. *Passage Home* was initially developed and evaluated through user research as an interactive virtual reality (VR) narrative system [7]. However, as a result of the restrictions on user research put in place due to COVID-19, the game system was adapted into a web browser-based experience to enable user studies to be conducted online. To better understand how system constraints and visual information impacted player experience, two formats of the web browser-based game were developed: (a) a 3D graphics-based interactive narrative and (b) a text-based interactive narrative. Both the 3D graphics- and text-based versions of the game contain the exact same narrative content; the experiences differ in their visual representations and game mechanics based on the affordances of each implementation, as shown in Figure 1. In both versions of the game, the racial identities of the characters were explicitly stated to avoid ambiguity.

2.2 User Study

2.2.1 Participants and Conditions. Given the significant amount of time children spend in school, it has been shown that educational practices in schools significantly influence students’ racial and ethnic identity development and consciousness [9]. With the potential benefits of applying *Passage Home* to anti-bias training in schools in mind, U.S. K-12 educators were the target population for this pilot study. 37 participants were recruited. 30 were female, 6 were male, and 1 was non-binary. 24 of the participants were white, 2 Asian (and up to one other category), 5 Black or African American (and up to one other category), 2 Hispanic, Latinx, or Spanish origin (and up to one other category), 1 Native Hawaiian or Other Pacific Islander (and up to one other category), 1 Native American or Alaska Native (and up to one other category) and the remaining participants identified with three or more out of eight group categories. Participants were between the ages of 20-57 ($M = 30.3$). Each was randomly assigned to the graphics- or text-based condition and compensated with a \$10 eGift card for their participation. According to the Institute of Education Sciences (IES), about 76% of K-12 U.S. public school teachers were female and 79% were white in 2017-18 which reflected the majority demographics of our study population.

2.2.2 Study Protocol and Assessments. Participants received an online link (directing to a website for either the 3D graphics-based or text-based condition) where they completed the following tasks: watch an instructional video explaining the study steps, play

Figure 1: Selected screenshots from the 3D graphics- and text-based implementations of *Passage Home*.

through the game, complete the online survey. The survey contained questions assessing their in-game choices, narrative content interpretation, gameplay strategies, post-game affect, the in-game and social presence modules of the Game Experience Questionnaire (GEQ) [10], Multi-Ethnic Identity Measure (MEIM) [11], Colorblind Racial Attitudes Scale (CoBRAS) [12], and demographic information. The survey contains Likert scale questions that were specific to the game to assess perceptions and interpretations of the scenario and characters. These items were used to assess players' feelings regarding the competence of the PC and NPC and their perceived fairness of the scenario. The GEQ in-game module produces scores across seven components: *competence, sensory and imaginative immersion, flow, tension, challenge, negative affect, and positive affect*. The GEQ social presence module produces scores across three components: *psychological involvement – empathy, psychological involvement – negative feelings, and behavioral involvement*. The CoBRAS produces scores across three factors: *unawareness of racial privilege* (i.e., social, political, and economic advantages that benefit white people over non-white people), *unawareness of institutional discrimination* (i.e., the implications of institutional forms of racial discrimination and exclusion), and *unawareness of blatant racial issues* (i.e., general, pervasive racial discrimination). As indicated in [12], higher scores across these factors are related to greater racial and gender intolerance and racial prejudice. The MEIM produces scores across two factors (which comprise the overall score): *ethnic identity search* (a developmental and cognitive component), and *affirmation, belonging, and commitment* (an affective component). This tool has been used in dozens of studies producing reliable results across ages and ethnic groups.

2.2.3 Analysis. Data collected via the study survey was extracted and imported into the Statistical Package for the Social Sciences (SPSS) Statistics Subscription (Build 1.0.0.1347) for data analysis. Bivariate Pearson Correlation was used to measure the strength and direction of linear relationships between pairs of continuous variables collected via the GEQ, MEIM, CoBRAS, and Likert scale questions about the narrative. The correlations presented in this paper were considered significant at $p \leq 0.05$ (two-tailed).

3 RESULTS

3.1 Characterizing Players' Game Experiences

The following dimensions of the GEQ had significant correlations to measures of players' colorblind racial attitudes and ethnic identity: *competence, negative affect, and empathy*.

Competence (players' feelings of skillfulness and success in the game) was positively associated with unawareness of racial privilege ($R = 0.387, p = 0.018$).

Negative affect (players' feelings of boredom and monotony in the game) was positively associated with unawareness of blatant racial issues ($R = 0.349, p = 0.034$).

Empathy (players' feelings of empathy towards Mrs. Smith, the NPC who is racially biased towards Tiffany, the PC in the game) was negatively associated with ethnic identity search ($R = -0.373, p = 0.023$) **and positively associated with all three CoBRAS factors:** unawareness of racial privilege ($R = 0.348, p = 0.035$), unawareness of institutional discrimination ($R = 0.399, p = 0.014$), and unawareness of blatant racial issues ($R = 0.384, p = 0.019$).

3.2 Characterizing Players' Narrative Interpretations

The following aspects of players' interpretations of the *Passage Home* narrative had significant correlations to measures of players' colorblind racial attitudes and ethnic identity: *perceived competence of the PC* ("Tiffany handled the situation well throughout the experience") and *perceived unfairness of the NPC* ("Mrs. Smith treated Tiffany unfairly").

Perceived competence of the PC was negatively associated with unawareness of institutional discrimination ($R = -0.431, p = 0.008$), **and negatively associated with unawareness of blatant racial issues** ($R = -0.353, p = 0.032$).

Perceived unfairness of the NPC was negatively associated with all three CoBRAS factors: unawareness of racial privilege ($R = -0.424, p = 0.009$), unawareness of institutional discrimination ($R = -0.423, p = 0.009$), and unawareness of blatant racial issues ($R = -0.414, p = 0.011$).

4 DISCUSSION AND FUTURE WORK

This paper has presented the results of an initial user study examining the relationship between players' physical-world racial attitudes and identities and their in-game experiences, social presence, and narrative interpretations. Players' racial colorblindness and ethnic identity were found to be significantly related to their narrative interpretations and multiple dimensions of game experience. Although this early study has not yet aimed to revealed causal relationships, we have several initial hypotheses based on prior research. Players who are unaware of racial privilege may fail to recognize the teacher's accusation as racist and come to erroneous, and even damaging, conclusions about the player-character. Second, if players are unaware that racial issues are still widespread in society, including public education, they may find the game experience tiresome and not recognize the importance of the issue it addresses. Third, the less an individual understands how social realities are influenced by racial and ethnic identity, the less aware they will be about racial issues in society, and the more they will empathize with the racially-biased teacher and not recognize the injustice of her actions. Lastly, the less an individual understands how racism is embedded into institutions such as public schools, the more likely they are to view the student as incompetent, rather than acknowledging the overwhelming challenge of dealing with institutional discrimination as a young student. These preliminary study results will be followed up with more comprehensive investigation in future work. In addition to increasing the participant sample size and demographic diversity in future studies, we are also investigating the impact of *Passage Home* with students between the ages of 10-18 across the U.S. Further qualitative analysis will yield a better understanding of the explanations for the relationships revealed by the results. Future serious games could be personalized to attend to differences in players' racial attitudes and identities, rather than assuming players will interpret racialized content in a similar way. By improving players' in-game experiences, the hope is that serious game develops can increase the possibility for transformative learning with educators and aid in the pursuit of racial equity for students.

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