An About Face: Diverse Self-Representation in Games

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ABSTRACT

A lack of racial-ethnic diversity in game characters and limited customization options render in-game self-representation by players of colour fraught. We present a mixed-methods study of what players from different race-ethnicities require to feel digitally represented by in-game characters. Although skin tone emerged as a predominant feature among players from all racial-ethnic groupings, there were significant group differences for more nuanced aspects of representation, including hair texture, style, and colour, facial physiognomy, body shape, personality, and eye colour and dimension. Situated within theories of how race is conveyed, we discuss how developers can support players of colour to feel represented by in-game characters while avoiding stereotyping, tokenism, prototypicality, and high-tech blackface. Our results reinforce player needs for self-representation and suggest that customization options must be more than skin deep.

CCS CONCEPTS

• **Human Centered Computing → HCI**

Author Keywords

Race; ethnicity; representation; digital characters; games.

INTRODUCTION

Digital games are emerging as a primary leisure activity of choice among people of all ages [15], genders [32], and cultural backgrounds [118]. People of colour purchase games and identify as gamers in a larger proportion than White players [89–91]; however, characters of colour are grossly underrepresented in both mainstream games produced by AAA studios [12,39,106,108,118] and in games produced by independent studios [98].

Although some reports have suggested that more diverse representation is not desired by people of colour [32], recent research suggests otherwise (see Passmore et. al 2017 [98] for details). By cueing responses from a racial-ethnic schema, Passmore et al. [97] demonstrated that the desire for

representation was underreported in previous studies due to research methods failing to overcome a learned neutrality (what Shaw terms "acceptance") of people of colour coping under White norms [24,38,70,107]. Both recent reports by IGDA [33] and Passmore et al. [97] show that greater diversity in character representation is desired by developers and by players of all race-ethnicities.

Because previous research on game character diversity has focused on characters that are specifically designed (e.g., Lara Croft), and less on characters that are customizable by players, it could be suggested that underrepresentation might be solved in part by character customization interfaces that provide a diverse range of options. However, research on digital representations of race-ethnicity suggest that customizable characters may not be the panacea to the persistent whiteness of game characters [66,81,118].

First, in conducting a census of the race and gender of game characters, Gardner and Tanenbaum [39] found that it was more difficult to reach consensus on the race-ethnicity of non-White characters than ones that read as White, suggesting that conveying race-ethnicity is more difficult for characters of colour. Second, Passmore et al. [97] suggest that when diversity is attempted by superimposing non-white skin tones on white physical features, it creates uncanny representations that are incongruent with reality. This 'high-tech blackface' [65,74,92] approach to representation ignores important subtleties such as skin pigment undertone [18,30,53,84,92], voice affectation [28], culturally-appropriate attire or culturally-rooted behaviours [30,74,88,101,120], and suggests to players of colour that diversity is simply an afterthought rather than an integral part of character design. Third, there remain technical challenges to creating digital characters that accurately represent race-ethnicity such as effectively rendering African-American hair [50,88] or working with culturally-accurate gait and movement models. Although developers can innovate solutions to address these technical challenges, there is little guidance on where to invest their efforts.

Whether developers want to design game characters that truly represent different race-ethnicities or whether they wish to support players of colour to accurately represent themselves through customization, the problem is the same: there is not sufficient guidance on how to design characters such that players of colour feel accurately represented in digital games, and therefore able to effectively identify with characters of their own race-ethnicity. Players of color have long expressed their wants and needs, yet as current rates of

representation continue, these expressions remain largely unheard or unaddressed.

While previous studies have taken account of representation issues through top-down or research-driven methods, we present a mixed-methods analysis of an online survey (n=277), asking what players of different race-ethnicities would need from their digital avatars to feel digitally represented by the appearance of in-game characters and from character customization interfaces. Specifically, we explore the role of skin-tones, facial features, and whether limited character customization options affect player experiences. We also inquired about what players felt was necessary to accurately represent their race-ethnicity.

To increase character diversity and accurately represent game characters of varying races and ethnicities, it is imperative that we turn to players themselves; without guidance from players of colour, and due to inherent cognitive biases, we risk falling into typecasting (inclusion for the sole reason of appearing to include diversity), tokenism (inclusion for sole purpose of diversity), and stereotyping (inclusion that reaffirms negative or non-nuanced generalizations about people). It would be a step backwards if developers attempted to represent diversity by relying on stereotypes that produce caricatures rather than characters. For example, in 2016 Snapchat released an 'anime-inspired' filter imposing slanted eyes and buckteeth [86]—two visual hallmarks of 'yellowface'. This use of caricature to represent race came only months after Snapchat had released a Bob Marley filter in which dreadlocks and black skin tones were superimposed on users in a high-tech version of blackface [9].

Our work's goal is to support diversity in digital game character representation without resorting to stereotyping. We do not aim to offer direction on how to make digital characters look 'racialized', but instead provide preliminary guidance on what options people of colour report needing to feel digitally represented in a game.

Effects of the Face-to-Face
We look to players to determine what they need to feel represented; however, literature provides foundations on how race and ethnicity is conveyed and interpreted visually.

People leverage multiple features to identify racial-ethnic categories in others; facial structures, body types, voice timbre, gestures, contextual reactivity, roles, values, and behaviors have all been shown to convey race-ethnicity [14,36,37,63,112]. Interpretation of these features is always situated within a cultural context and transmits cultural differences perceived even by infants [55].

Skin tone is clearly a primary feature used to identify and classify race [45,110,111,126] and has particular primacy in first impressions and at-a-glance racial identification. However, when attention is sustained beyond these initial impressions, aspects of the face become more significant for racial categorization. Specifically, facial features—referred to as facial physiognomy—become prominent for identifying race [111,123].

Faces and Races
Degrees of common traits (ethnic prototypicalities), such as shared skin tones and common feature dimensions, exist [69,102]. Demonstrated in genomic [85,87,96], psychophysiological [54,110,119], and cosmetic surgical studies [36,83,125], ethnic similarities in jawline, ears, nose, and eye dimensions are somewhat predictive (as normalizations); however, these proto-typicalities guarantee nothing of actual ancestry.

Humans share approximately 90% of their total similarities in physical facial features (including skin tone), varying by only 10% across ethnicities [69,102]. Though small, this 10% has uniquely powerful experiential value, affecting memory and recognition [71,103,109,111], attraction and affect [17,47,67,82,121], cognitive arousal and attention [2,4,8,14,46,62,113], as well as empathy and sympathy [23,42,44,61]. Developed since childhood [46,52,64], facial awareness and expertise is fundamental to bonding, parental identification, and affiliation. Data like this shows that faces—both real and represented—are uniquely privileged stimuli, perceived and processed preconsciously, with an acumen developed since childhood.

People are particularly attuned and attracted the faces who share their race/ethnicity [1,46,51,52,56,110,122], showing biases in attention, awareness, and cognitive processing preferences for same-race faces [29,56,60,103,110]. There is greater speed of and accuracy in recognition of similar races as well as stronger memory formation and recall when same-race faces are involved [71,72,103,109,111]. Further, perception of facial physiognomy and same-race features affect emotional experience [1,34,48,58,75,103].

Emotional Interpretation
The perception and measurement of emotion in facial judgments may not only be stronger in the face than the body or environment [41], emotions are tied to the perceiver's own race-ethnicity [78–80]. Same-race recognition can affect which facial features convey which emotions [35,49,56,79], emotional intensity [34,49,79], and emotional labelling [59,79]. Studies show that we have greater memory recall for emotionally-loaded same race faces [71,103,109,111].

Similarly, culture and race/ethnicity plays a determining role in how faces are read, how they communicate emotion, elicit bias, and sometimes mitigate biases [17,45–47,52,64,67,68,82,121]. As a maturing medium, gaming continually pushes for deeper player experiences and stronger emotional engagement. Ethnic representations, the faces of others and the contexts that frame them, are key to memorable, captivating, transporting, and transformative—deep, affective—gaming experiences.

The Present Study
Players of colour desire greater diversity in game characters and wish to self-represent in games [97], making visual representation of their racial and ethnic identities key to in-

game experiences. In this paper, we explore what players need in terms of features to feel represented by in-game characters, and how these needs differ by race-ethnicity.

METHODS
Data were collected from a survey designed to elicit responses from players' racialized experiences of gaming.

Survey Design
Norms (such as those discussed above) require methods for eliciting non-normative experiences [16,40,99,124]. Critical Race Theory [19,27,92] and extensive iterative feedback from players of colour were used to inform the content and phrasing of questions. Identity-Based Motivation Theory (IBM) [63,93–95,114,115] informed question order, phrasing, and techniques for priming player reflections from a racialized perspective. These techniques were supplemented with standard guidelines for experiential-focusing techniques [16,40,99,124]; e.g., answers for some sections asked participants to recall memories of times and places when they felt particularly understood and could relate to those around them. Survey design was iterative, beginning with discussions with players of colour close to the lead researcher, which led to 10 semi-structured interviews with players of colour familiar to the lead researcher [40,99]. The survey was pilot-tested by five people with varied demographic factors for wording, time and effort demands, and the validity in their responses to questions. This was done to measure the instruments' sensitivity to racialized experiences and accuracy in priming racial-ethnic identities. Questions were organized into six ordered themes:

(i) *Personal Identity Measures*: demographic information, open fields for self-identification, questions about ancestry, self-assigned ethnic categories, etc.; (ii) *Identity Centrality*: questions about the personal value of participants' ethnicity, if racial identity affects how they experience games, etc.; (iii) *Gaming Preferences and Habits*: gaming frequency and habits measures (platforms, genres of choice, play time per week), the Digital Games Motivation Scale (DGMS) [45], etc.; (iv) *Basic Needs and Norm Adaptability*: questions about character creation choices (e.g., skin tone preferences, feelings about playing character of other ethnicities), the accuracy of representations they have encountered, open-ended questions about their choices in character selection, design, and features needed to accurately represent their race and ethnicity; (v) *Emotional and Contextual Responsiveness*: if/how current norms affects their gaming habits, experiences with stereotypes, etc.; (vi) *Expressions to Developers and Industry*: expected responses to greater diversity from their community and the U.S. population, open fields for communicating personal experiences and notes for game developers, etc.. See [98] for an in-depth breakdown of survey design and questions.

Procedure
Data were gathered through Amazon Mechanical Turk (MTurk). MTurk is a platform connecting researchers with participants through paid opportunities to perform Human Intelligence Tasks, proven reliable and valid for diverse and representative sampling [25,57,77,127]. Time spent per questionnaire was measured to ensure task performance and participant attentivity during online completion in accordance with best practices [25,57,77,127]. The survey was exclusively available to workers in the USA (18 years of age or older) with MTurk approval ratings over 89% for quality control. Participants were asked to provide informed consent before proceeding. They received $3.00USD compensation for completion of the 20-min survey. They were informed that no deception was used and that their identities would remain confidential.

Data was collected over one day and resulted in 286 total responses. Participants completed the 92-question survey, which consisted of multiple-choice, choose-all-that-apply, 7-point Likert scales ("1=strongly disagree" to "7=strongly agree"), and 12 open-ended questions (e.g., "When you imagine creating a human digital character, why do you choose the skin tone that you do?").

Data Analyses
Mixed-method, quantitative and qualitative analyses were performed on the data collected. In accord with best cross-cultural and racial-ethnic identity practices, analyses were conducted between- and within-group [26,100].

Quantitative Data
All analyses were conducted in SPSS 24.0 (IBM, 2017). Non-parametric tests were applied to all questions utilizing Likert scales and check-all-that-apply responses.

Qualitative Data
Standardized methods for thematic and semantic analysis [20,21] were used. Respondent answers were imported into NVivo 11 (QSR, 2017) and the lead researcher kept a reflexivity journal prior to and during all phases of analysis (for the purpose of recording and monitoring analyst biases, creating a record of codes and themes in development, and allowing for greater control over determinations of data) [20]. We followed the exact analysis approach outlined in [97], in which we began with an inductive and grounded phase, followed by a second phase inductive approach, and a third-phase deductive approach (see [97] for details).

Operationalization, themes, and coding structure are discussed in the results. Theme and code validity was tested through construct correlation with word clusters. High theme and word cluster correlation was achieved for related themes (>0.6) with low correlation between unrelated themes (<0.2). Codes and themes were exported for each participant from NVivo for analysis in SPSS.

Racial Identities and Identification of Participants
Analysis of responses required grouping participants into more-shared-than-not racial-ethnic categories. To group players with sensitivity and accuracy, we evaluated a participants' racial-ethnic identity through several methods: a standardized US Census method ("*How are you formally identified in terms of race/ethnicity? Check all that apply:* American Indian or Alaskan Native, Asian, Native Hawaiian

or Other Pacific Islander, Black or African American, Hispanic or Latinx, White or Caucasian, and I prefer not to answer"); and two open-field questions for participants to subjectively identify ("*Please describe who you are (your identity) in twenty words or less*," at the beginning of the survey, and, "*If you think of yourself in terms of heritage, ancestry, family, or community, how would you describe your ethnicity? (e.g., Traditionally practicing Mohawk, 3rd Generation Muslim Pakistani, Scottish-Irish American, etc.)*" at the end. Open-field self-identification answers were coded and compared to the standardized racial category responses. If subjective racial-ethnic identification conflicted with a participants' racial category response (e.g., they checked "White" but identified "I am light skinned but identify as black, African American") their subjective identification overrode formal racial categorization.

17 multi-racial respondents (n=23) exclusively identified with a single racial/ethnic identifier at exclusion or dismissal of the other, as did 6 of the "Prefer Not to Answer" (n=8). 8 participants (2 White Hispanic, 1 Asian-Caucasian, 2 Asian Hispanic, 1 Asian African American) identified as "multi-racial" without definite preference for a racial-identifier, or remained unidentifiable (2). Distinct grouping would have resulted in very low sample sizes; grouping these 8 participants showed variable experiences and answers too low for statistical power. Regretfully, for this study we excluded this subsample as well as the 1 Native American participant from the study's results. (We discussed including these participants' experiences (as they are valid and informative), but the content of their data risked wider-scale interpretation as over-representative.

The total sample (n=277) after exclusionary criteria was applied supported grouping under four conceptual racial/ethnic groups: White (Caucasian American) (n=81, 29.2%), Asian (n=75, 27.1%), Black (African American) (n=75, 27.1%), and Hispanic (and Latin-x American) (n=46 16.6%). These groupings were a pragmatic choice for the purposes of this study exclusively. In no way should they be interpreted as definitive, universally applicable to anyone's "racial/ethnic experience", and serve only the purpose of comparing generalized "more similar than not" experiences of participants for comparative purposes. Criticality is necessary when interpreting the following results in accord with racial-ethnic grouping. Because identity is fluid, socially-dependent in its construction, and contextually-determined in its expression, it is not inconceivable to us that most participants subjectively self-identified in terms of White, Black, Hispanic, or Asian within this study—particularly given racial category norms in both the US and in digital games. The racial groupings here show higher variance in Asian and Hispanic samples than White and Black groups, which is consistent with census data and previous literature.

Of our 277 participants (mean age=32, SD=9.4), 98 were female, 3 non-binary or prefer not to disclose; 11 did not play digital games; the majority (*n*=254) played digital games weekly.

RESULTS

We first present results related to the identification of our participants, followed by the customization choices that players make and, then what they feel is important to represent their race-ethnicity in character design.

Identification with and Importance of Race-Ethnicity

Before we can establish a relationship between race-ethnicity measures and the representational needs in digital games, we must first establish how much our participants identify with or value their race-ethnicity.

We asked participants to rate agreement with the statement: *I identify with my race/ethnicity/heritage/ancestry* on a 7-point Likert scale. All groups significantly agreed with the statement—i.e., were significantly greater than the neutral point in a Wilcoxon Signed Ranks Test (p_{White}=.001, p_{Asian}<.001, p_{Black}<.001, $p_{Hispanic}$<.001); however, a Kruskal-Wallis Test for multiple independent samples showed that White players agreed significantly less than Black (p<.001), Asian (p=.015), or Hispanic (p=.010) players. See Table 1.

Table 1. Means (SD) for agreement (1=strongly disagree, 7=strongly agree, 4=neutral), Kruskal-Wallis Test results.

White	Asian	Black	Hispanic	Test	p
M (SD)	M (SD)	M (SD)	M (SD)	df = 3	
I identify with my race/ethnicity/heritage/ancestry.					
4.70 (1.71)	5.40 (1.34)	5.57 (1.48)	5.59 (1.05)	16.28	**0.001**
My racial and/or ethnic identity is important to understanding who I really am.					
4.15 (1.81)	4.92 (1.51)	5.17 (1.80)	4.52 (1.87)	16.000	**0.001**
A character's skin tone matching my own is enough for me to identify with them.					
3.72 (1.77)	3.83 (1.61)	3.71 (1.77)	4.07 (1.69)	1.87	0.599

We also asked for agreement with the statement: *My racial and/or ethnic identity is important to understanding who I really am* on a 7-point Likert scale. All groups agreed, but only Asian (p<.001) and Black (p<.001) players significantly agreed in a one-sample Wilcoxon Signed Ranks Test. Further, an Independent Kruskal-Wallis Test showed that Black players agreed more than White (p,.001) and Hispanic (p=.038) players and Asian players agreed more than White players (p=.014). Racial or ethnic identity is not as important for self-understanding among White players. See Table 1.

These findings show that participants identify with their race-ethnicity and that identification is stronger for and more valued by players of colour.

Skin Tone Choices and Player Rationale

We were interested in what skin tone choices players make when given the option to customize their characters. We asked: *Given a range of options for creating an avatar or character, on average I select skin tones:* with several options for a check-one answer as shown in Figure 1. Chi-squared tests for each answer showed that groups did not differ in their answers, except to *Slightly darker than my own* (χ^2_3=16.8, p=.001), with more White players selecting this answer than players of colour.
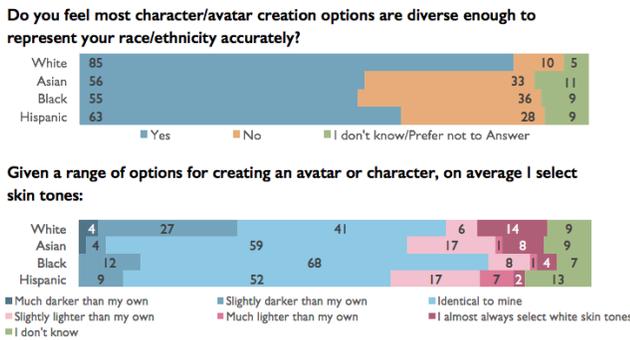
Figure 1. Percentage of answers on check-one questions.

To understand their rationale for the skin choices made, we asked the open-ended question: *When you imagine designing characters or avatars, why do you choose the skin tones that you do?* Participants typically reiterated their choice from the previous selection with an accompanying rationale (e.g., "I choose skin tones that match my own as often as available, if not, I choose the skin tone closest to mine"). Instances of skin-tone preferences were coded into preferences for *"identical to my own", "darker than my own",* and *"lighter than my own."* and mirrored the check-one data, thus are not reported further. A "why" question, participant responses centered on rationales or justifications for character aesthetic choices. Players often described tensions between the choices they would make ideally against the choices they made commonly. Thematic analysis constructed 11 themes:

Immersion: "seeing my real self in the characters I play is important to me for immersion"; *Representation:* "I want to represent who I am when I game through my character's appearance"; *Self-Worth*: "I am proud of who I am and want to represent that in game-worlds"; *Enhanced self-representation:* "I want to play as an ideal version of myself"; *Variability:* "Changing up the kinds of characters I play is important to my sense of play/fantasy"; *Gameworld Suitability:* "It fits or looks better in the game world"; *Anticipated Discrimination:* "My choices are because I will face discrimination or threats"; *Limited Options:* "My choices are limited by lack of in-game selections"; *Attractiveness:* "I like playing attractive characters"; and *Tans:* "I think tans look better on characters".

Immersion, Representation, Self-Worth, and Enhanced Self-Representation share themes of player desire *and* attempts taken to represent one's physical self in digital environments ("A desire to represent myself on-screen,"), while Variability and Gameworld Suitability have conceptual similarities with the desire to represent as someone else ("I like to play as someone else or create characters that fit the game I am playing,"). Anticipated Discrimination and Limited Options share desire to self-represent but inability to do so ("games don't include the features I need,"), while Attractiveness and Tans pair agency with aesthetic preference ("It's attractive to me").

We conducted Chi-squared tests for each theme; significant group differences (p<.05) are shown in Figure 2. Differences

between groups were not significant, save for White-grouped players preferring Attraction and Tan rationales over players of colour. Overall, player rationale favours character customization as a means of self-representation, preferred more by players of colour than White-grouped players. White-grouped players were more likely than players of colour to represent as another and significantly more likely than players of colour to do so for purely aesthetic reasons and because White people like tans. Players of colour demonstrated greater preference for identical skin-tone matching, with some mention of the inability to do so successfully.
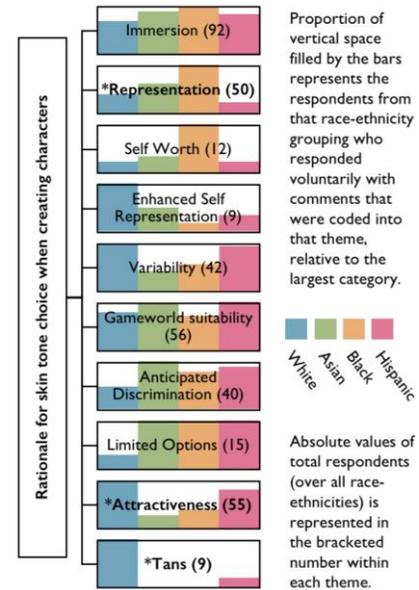

Figure 2. Coded themes (# of responses) for why players choose the skin tones they do. * significant group differences.

If not Skin Tone, then What?
Players reported customizing the skin tone of their game characters for 11 primary reasons; however, players of colour did not feel skin tone was sufficient to feel self-represented or racially-ethnically represented. We asked: *What character features are important to you when you design an avatar?* Responses varied in length and detail with players of colour generally providing longer responses than White-grouped participants, and female-or non-binary-identified players providing longer descriptions.

Descriptions focused on specific features and/or physical attributes, sometimes with commentary on the inaccurate portrayal or absence of ethnically-distinct features. Features were coded individually, and due to varied degrees of detail (e.g., from "Hair" to "The texture, colour, and style of hair") organized hierarchically; 4 participants did not answer or misanswered the question (e.g., "just being chill", "Something similar to myself." "None."). See Figure 3.
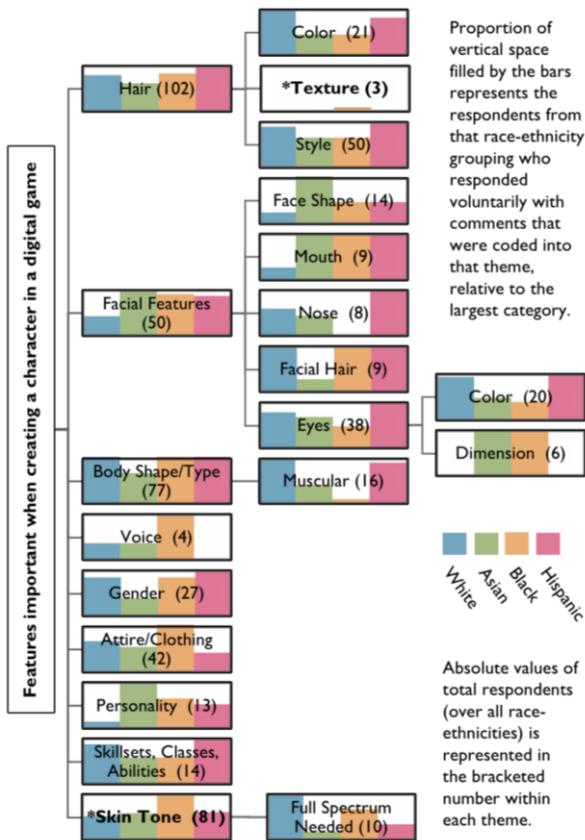
Figure 3. Coded themes (# of responses) for important features when creating characters. *significant group differences.

A Chi-squared test showed that Black-grouped players mentioned skin tone and hair texture significantly more than other players.

Players perceive the inadequacy of character creation interfaces

The majority of players of colour chose skin tones identical to their own. Yet when considering current character creators, there were not many differences among the groups in terms of identifying which character features are important to include, which suggests that current character creation options may not be meeting players' needs.

We asked participants, *Do you feel most character/avatar creation options are diverse enough to represent your race/ethnicity accurately?* with potential answers of Yes, No, or I don't know. Chi-squared tests for each answer showed that groups differed in their proportional responses marginally of Yes (χ^2_3=7.23, p=.065), significantly of No (χ^2_3=12.4, p=.006), and not of I don't know (χ^2_3=7.23, p=.634). A greater proportion of White players answered *Yes* than players of colour and a lower proportion answered *No* than for players of colour. See Figure 1.

What Would it Take to Feel Identified?

Players of colour did not agree that current customization options represent their race-ethnicity. To understand what it would take for them to feel identified, we first asked for
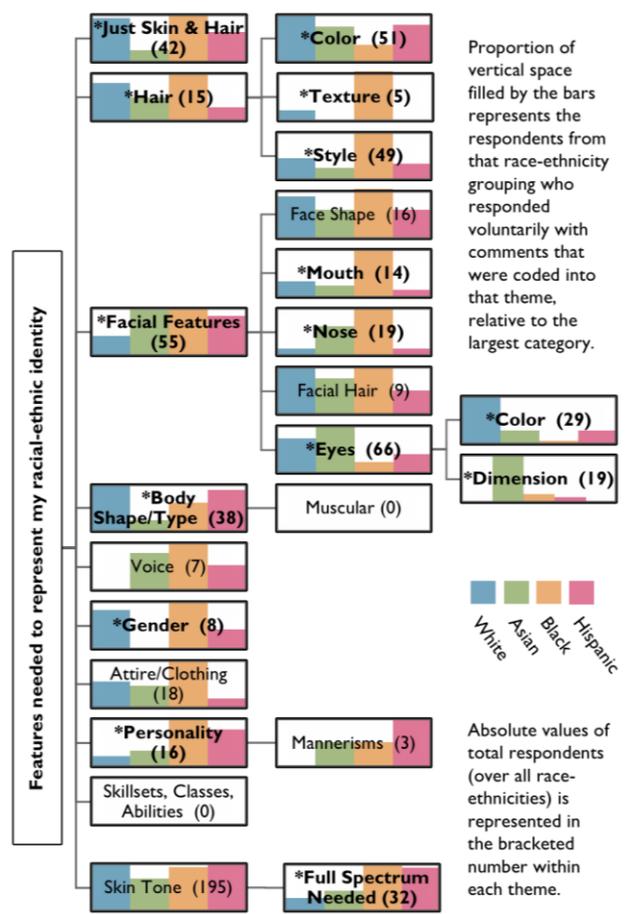

Figure 4. Coded themes (# of responses) for what character features are important to represent players' racial and/or ethnic identity. *significant group differences.

agreement with the statement: *A character's skin tone matching my own is enough for me to identify with them* on a 7-point Likert Scale. All groups were clustered around the neutral position on the scale and did not differ from neutral in a one-sample Wilcoxon Signed-Ranks Test (p_{White}=.647, p_{Asian}=.252, p_{Black}=.134, $p_{Hispanic}$=.874). Further, there were no significant differences between their responses in an Independent Kruskal-Wallis Test (see Table 1).

We asked the open question, *What character features do you feel are important for you to accurately represent your racial and/or ethnic identity?* Unlike the question on the importance of character features for designing avatars, this question focused on accurate self-representation.

Features were coded individually and arranged in a conceptual hierarchy by theme (see Figure 4). Significant group differences in a Chi-Squared test are bolded. Responses varied in detail from brief (e.g., "just skin colour") to highly-detailed lists of features, traits, dimension, and personal experiences. Answers also ranged between descriptions of real-life features characteristic of one's race and/or ethnicity to the avatar features a participant customizes to represent their race (e.g., "The character features I've used in the past are dark coloured hair, light

skin, and slanted eyes. I think those characteristics represent my Asian culture"). 31 responses were interpreted as "Do not care or do not really think about racial features", whereas 12 participants did not answer or misanswered the question (e.g., "just being chill", "Something similar to myself." "None.").

Responses were semantically and thematically similar to responses from the Racial Features question; however, a number of patterns in racial differences of this data were present. Codes for "eye shape or eye dimensions" were almost exclusively from Asian-grouped respondents; "mouth and lip size and shape" as well as "hair texture", "hair style", and "nose" were largely from Black-grouped players; and "hair colour" and "eye colour" was predominantly from White-categorized respondents.

Most responses made at least one mention of skin tone (195), Hispanic and Asian groups described common skin tones as "too dark or too light" and having "the wrong undertone of colour":

"There's usually not one that matches my skin tone. I'm southern Chinese, so our skin is darker, but still has the beige/yellow tones. Games have either a lighter beige/yellow skin tone or Hispanic dark tan."

The request for "a full spectrum of colours" formed a prominent sub-theme for skin tone (comprised largely of players of colour with some White respondents). We further unpack group differences in the discussion, providing supporting quotes and contextualizing results within theory.

DISCUSSION

Players Want to Self-Represent; are Aware they Can't
Players share recurring experiences and wants based on their ethnicity. Due to the open-ended nature of the questions asked, recurring themes and identified features and attributes are particularly salient to their gaming experiences. We can recognize that recurring asked-for features—especially when repeated by members of one ethnicity—*suggests* a pattern of unmet needs more apparent to players of color.

White-grouped players appear more satisfied with current representational standards, requesting fewer racial features (predominantly citing "only skin tone and hair," "hair colour" and "eye colour"), with less importance on ethnic identity measures in general and less preference for playing characters of their ethnic representations than other groups:

"I am always able to self-represent in games, so I don't think about it much.";
"Virtually any white character will accurately represent my racial and ethnic identity. Changing the hair colour or build or skin tone (provided it's still white) doesn't change my perception that it's a white character and I'm a white person."

In relation to the more-often brief or sparse asks by White-grouped players, the longer detailed responses of players of colour can be framed as *reactions* to gaming's current norms in representations, requests for corrections to recurring issues that bar access to a level of self-representation taken for granted by White-grouped players. Players of colour often described a much greater range of facial features, physical features, feature nuances (hair textures, skin undertones,

etc.), and contextual factors (culture, attire, setting, etc.). Those in the Black-grouping—who show the highest overall means for racial-identity valuation and value of ethnic representation—described the most additional features needed to feel accurately portrayed (particularly, "mouth," "nose," "personality," "hair style" and "hair texture", etc.) of all groupings. Players of colour in general placed greater value in their racial and ethnic identities than their White-grouped cohort, and Asian- and Black-grouped players felt significantly stronger that ethnicity is essential to who they are, who they want to game as, and how they wish to embody their characters.

Skin-Tone: A Superficial Solution
Though neutral on the question "is skin colour is enough to identify with a character," skin tone was mentioned by almost every participant when asked to describe features important to representing their ethnicity in-game and important to their character appearance choices.

Hispanic- and Asian-grouped players were more likely to request "full spectrums" for skin tones or cite incorrect skin under-tones in avatar customization:

"I choose a lighter skin tone because I am a darker asian so it causes problems with the game. When I choose my skin colour, all the faces makes it look like they're African American."

Consistent with "Asian" and "Hispanic" racial categories representing the widest range in skin colour, players often cited insufficient spectrums of skin tone and incorrect or absent skin under-tones:

"If there are dark skin options, it's usually tan then dark dark black."

As discussed, skin tone is a primary identifier in racial categorization and for immediate affiliation [7,22,45,126]. However, sustained perception falls on facial physiognomy (i.e., facial features, the physical and spatial attributes of the face) as a more significant predictor for both racial-ethnic classification and identification [111]. The immediate, visual prominence of skin colour explains why skin tone is the most commonly referenced (and included) character customization option; however, over half of all themes coded concerned facial features, reinforcing skin tone's insufficiency for adequate identification.

Our Faces Reflected
We did not directly focus our questions on the facial features needed to self-represent in digital games, yet most responses described facial elements. More accurate mouth, lip, hair textures, and nose dimensions were requested by Black-grouped players. Eye dimensions were cited exclusively by Asian- and some Black-grouped participants. Specific needs from Hispanic/Latinx and Asian groups were present in frequency but the diversity of these two racial categories (in skin tone, physical features, etc.) were not found to be statistically significant. These results are in keeping with ethnic differences between facial aspects and dimensions seen in physiological and psychological studies.

Whether recognized or not, the face-to-(digital-)face is a keystone in player experiences. As discussed above, faces concentrate our learned affection for others, engender affiliation, trust, and care [69]. Faces can also concentrate our implicit and explicit negative biases. Prototypical facial features (i.e., features and dimensions common to a person of a specific ethnicity) are shown to prompt negative reactions and affective states, as primed by individual biases [45]. Skin tone and facial features independently affect implicit and explicit bias [45]; social evaluations, the kinds of judgements we make every day, are primed by the facial physiognomy of others, and we are largely same-race biased in our emotional induction [103].

The subtle nature of these perceptual judgments—their preconscious processing and the amount of subtle data carried by the mere 10% difference in faces—places a responsibility on developers to create accurate representations. Fictitious digital worlds or not, digital faces are perceived by players pre-loaded with very real biases, judgments, assumptions, cognitive and affective responses—all rooted in social power relations. We all have difficultly noticing subtleties of those of a different ethnicity/race [46,113,121], and we often impose same-race preferences across perception, recognition, emotion, and presentation. Our face is not just how we look to others; it is a representation of how we look at the faces of others, a projected reflection of the same face we see in a mirror.

Where some players of colour described features missing from digital representations in gaming, others detailed how characters of colour were given "Caucasian" features:

"If you are going to put 'diverse' characters in the games then it's important to treat them the same as Caucasian characters i.e. make them look like the real thing. They shouldn't just look like a white character with a pixel swap"

These experiences point to same-race facial biases in character design, as well as other oversights:

"A lot of the hair, clothing, and other options seem to look better on avatars with lighter skin."

While literature on norms and privilege explain larger systemic discrepancies, consider what these perceptual and cognitive biases mean if approximately 75% of game developers are White [5,33,104]. Biases in perception of "other-race" features explain how even the best-intentioned developers are continually creating mis- and non-representational characters in games. Same-race bias studies, and those like [39] help elucidate why players so readily identify issues of misrepresentation concerning their own ethnicity far more than in other ethnicities.

For example, a White developer is likely biased to place less accurate emphasis on eye dimensions when creating a Chinese character. Not only does this developer risk their biases in assuming eye dimensions are more similar to their own, but a Chinese player is more likely to notice these discrepancies in design due to their heightened focus on eye dimensions. Because norms and heuristics are insidiously pre-conscious, we tend to notice when a character of our own

ethnicity looks "off" while accurate representations feel unremarkable. Mistakes in representation can seem glaring to some, invisible to others. Contextualized within a culture in which stereotyping, under- and mis-representation, and low diversity awareness abound, these mistakes can recall feelings of being an afterthought, of inserted stereotypes, and of discrimination, as discussed in [97].

Preference for same-race faces and features combined with misperceptions of other-race specific details helps to explain a dual-ended issue in misrepresentation: how White/Caucasian developers can unintentionally "white-wash" characters of colour while providing empirical evidence for why players of colour feel like "afterthoughts" even when attempts at their digital representation are made. If inattentive to the real aspects of diversity, unconscious facial foci and preferences compound the problems of low diversity in game development. For players, we see how this can result in uncanny (inaccurate) representations, at best, and oppressive or insulting stereotypes at worst.

With the ability to focus our implicit and explicit racial biases, how we utilize digital representations has the potential to strengthen or weaken said biases. Such biases are learned from birth but they are adaptable. Research already shows gaming's potential to disrupt and correct negative racial biases [6,13,43,44], evidencing reductions in racial biases, short- and long-term.

The Face Is A Source from Which All Meaning Appears
Many participants who dismissed the importance of their ethnic-heritage/ancestry spoke to representational needs that were uniquely cultural (e.g., Asian-grouped participants emphasized the importance of eyes, Black-grouped participants emphasized the importance of mouth and nose dimensions, White-grouped participants emphasized eye-colour, etc.). Eye-gaze studies show same-race fixations on these areas of the face, regardless of the ethnicity of the face perceived [46,121]. Even though our sample was drawn exclusively from the U.S., our data shows culturally-specific behaviors, values, and needs at play. Regardless of nationality, player ethnicity informs preferences for and focus on ethnically-common facial features. In other words, our cultures persist—even if we migrate, acculturate, or fail to acknowledge our roots.

Typicality: Framing the Face
"Just like white people, not all black people are the same"

If we have data suggesting more typical-than-not physiological dimensions for each ethnicity, should this kind of prototypical physiognomy be used? As some participants warned, resorting to physiological norms may help avoid problems like the explicit White-washing of characters or biased interpretations of other-race character appearances. However, this approach not only fails to recognize an increasingly multi- and mixed-cultural population, it fails to address the stereotyping, tokenizing, and typecasting that targets players of color. Beyond the social responsibilities of developers in their portrayal of humans, prototypicality

cannot address the contextual issues—representations of settings, personalities, ideologies, ways of life, and cultural practices—that frame the faces we game with.

It is due to the cognitive and affective power of the face that simply giving White-designed characters darker skin tones or curly hair is insufficient. This is a practice seen as transparent and pandering by even our White participants.

"In terms of accurately representing racial and ethnic identity, having authentic voices makes for better immersion. Appearance is important, but nothing breaks immersion quicker than having the character start speaking in fluent English despite being in a foreign setting. For instance, there are games that try to simulate Chinese dynastic periods and focus heavily on martial arts and other Eastern culture, yet the characters all speak English or have a faux Chinese-accent when speaking. This can be offensive and most of the time comes across as farcical."

Human faces are no more inseparable from the racial-ethnic features that compose them than players are from their cultures—cultures that inform how personae and situations are "read", what a particular face represents, expresses, and means [11,73,76,80]. Context—narrative, setting, treatment of characters, relationships—is key for non-stereotypical, realistic, unoppressive, and socially-beneficial representations. It follows that racial-ethnic representations of digital human characters are thus inseparable from (inherently ethnic) player experiences. In addition to skin tones and facial features, players mention attire, personality, culturally-tailored narratives, body type, gender, and culturally-unique relationship types. To players, greater diversity means, for example, settings in the middle east that celebrate Muslim or Turkish cultures.

The same racial bias that leads to darker-skinned people more likely to become victims of violence, (e.g., shot in police encounters) is present even when non-human looking robots in digital games are skinned with darker colors [10]. Otherwise identical, darker robots were significantly more likely to be shot in game. Our preliminary interviews show that even young players dawn helmets or equipment that cover up gaming's inherent Whiteness, projecting their own identity onto the characters they play and avoid greater targeting. While this may in part explain why Black-grouped participants were twice as likely as other groups to utilize equipment and attire in character creation, cultural prejudices are inseparable from our gameplay. For reasons like these, even if we obtain adequate and accurate ethnic-characters, without an address of social contexts discrimination unequally impedes player experiences.

Cultures of Gaming: An About Face

"Most of the media that I experienced growing up mostly portrayed whiteness as the main hero. This has arguably shaped my preference for light skin tones when creating characters."

Extensive character creation interfaces (like EVE) have existed since 2003. Highly diverse games like Overwatch or Battletech have proven themselves incredibly successful and widely applauded by players who are overjoyed to identify beyond the limits of today's norms [31,101]. If games wish to be taken more seriously, they need to take more seriously the deep player experiences hinging on identity factors. The technology to correct issues of player under-representation are more than available; what remains to be seen is industry's desire to catch-up, correct, and improve player experiences—for all ethnicities.

For reasons like these, participants made clear that attire, cultural contexts, values, and behaviors are necessary for accurate identification and ethnic representation. Our focus was more general and preliminary, and so we cannot provide more specific data on these aspects of identity.

That games portray fantasy and creative worlds no more exempts them from lived social and cultural realities than they can suspend the very preferences, biases, and cognitive tendencies of a game's players. There is no suspension of disbelief here. Though players from all ethnicities are willing (or accept being forced) to represent from "fantasy" or "aesthetic" rationales, White players are significantly more likely to *choose* representations different from their ethnicity. Players of colour, who are less likely to desire representing as other, described having to select non-identical character choices due to limited options, developer oversights, and/or discriminatory norms. Ultimately, our data shows that White players are over-served in their representations while players of color remain under-served.

Shaw explores in much greater depth how "representation matters because it makes [players'] identity legible," and, simultaneously, "representation does not matter because the so-called target market does not always need to see itself represented." As discussed in [81,97,98,105], most players of colour (and many female and queer players) feel current representational options are not sufficiently diverse. Though they cope with or, in Shaw's words, accept these barriers, falling on gaming's other benefits to keep them engaged, gaming's norms currently underserve those to whom ethnic self-representation is most important while overserving those for whom ethnic self-representation matters the least. Such persistent (and ambiguous) norms of Whiteness disserves players and developers alike, with some White-grouped player calling attention to this as well:

"White people are pretty overrepresented in games anyway so I don't really know. I guess I would like to see more variety than just Anglo-Saxon looking white people, maybe more choices like Southern European or Eastern European would be nice."

As a set of heuristics, norms ease cognitive load. In repetitive excess, however, norms can reduce the experiential value as an individual's expectations allow stimuli to be taken for granted. Novelty effects are one explanation for why all groups agree that self-representation is important in games, but White participants show lower additional features, were scarce to describe features needed to represent themselves in-game, and were more likely to endorse playing as other types of characters:

"I want to create a character I haven't had a chance to play as much in games before."

Paralleling colourblindness and privilege studies, those who are frequently represented are also those who are less likely to benefit from additional representation. Novelty effects alone support what players of colour express throughout our results: they are more likely to respond positively to opportunities of self-representation.

A Note To Developers

"C.J in San Andreas was a big moment for us in games, and drew in a lot of people to become casual gamers."

Developers are culture makers, begging the question: what kind of culture are games making? As we have shown, a representation's goodness of fit—a player's identification with a character sharing one's race or ethnicity—is best determined by players of that race or ethnicity. Overlooking the relationship between player ethnicity and accurate representational needs (which even some players do) compounds the growing list of costs to player experiences resulting from gaming's current racial norms.

Accurate representations do not occur in a void; narratives with respectful treatments of the successes and struggles and mundane life of people beyond stereotypical portrayals go hand-in-hand with their appearance.

Significant aspects of emotion and experience (e.g., attraction, memory, motivation, sensation) may be universally felt; however, culture frames how these aspects are understood, communicated, and perceived—as far down as the psycho-physical structures surrounding neuronal arousal [3,116,117]. Players bring their life experiences to the games they play; there is no total suspension of our beliefs and experiences, conscious or preconscious. Players ask that design and development, especially with human representations, engage their lived experiences.

The mere variation between humans exceeds what is possible to represent in any individual current digital environment. In this sense, perfect and total diversity is likely impossible. Even more beyond our reach is the possibility for every player to achieve total identification. Results from our study propose a far more reasonable set of conclusions. Players wish to see greater, more accurate diversity in their gaming experiences, and are supportive of efforts that push away from current representational norms:

There are so many different people in the world and different people like different things, including games, so by making characters more diverse and not just stereotypes, it would benefit everyone.

Our results issue a complex challenge for developers. We cannot design characters that merely represent one ethnicity or another—especially in superficial ways. The litmus test for a successful representation comes from those players whose identity is being represented. With respect to the host of barriers and biases, it is only the player's perspective that can evaluate a representation's success. Developers must rely on the people they wish to represent rather than their own subjective—humanly-biased—conceptions of how a character of a certain race-ethnicity should look.

Future Research & Limitations

Results should be interpreted with the following in mind: responses and statistical tests would likely be different were participants directly prompted (e.g., "which facial features, eye dimensions, body types do you need to feel represented accurately?"). Narrowing of questions, including those specific to narrative and settings (i.e., character contexts) may advance our understanding of diverse player needs. Within-group variance in Hispanic and Asian groupings suggests that identity centrality may be a stronger indicator for preferences and behaviors. Repetition of this study using identity-centrality measures is important for future methodological accuracy moving forward. Our samples, once divided into groups, were quite small. Combined with internal race-category variance, larger sample sizes divided into more specific and sensitive racial-ethnic groups would likely show higher effect sizes and significant differences.

Interviewed players of colour cited using coping strategies to identify with their characters: wearing gasmasks or helmets to cover white character faces and pretend they are represented underneath, or pretending the white character is a friend, were used to create a meaningful connection with their digital actors. Further research would be valuable for understanding the relationship between players, representational choices, and their rationale behind such choices—not to mention better understanding the degree to which players are merely coping with representations.

CONCLUSIONS

Players largely wish to self-represent in games, making their ethnic identities key to their experiences. These identities inform the kinds of characters they play (or wish to play) in digital games, their needs in terms of features from these characters, and how these needs differ by ethnicity. Despite gaming's current representational norms, players of colour game in great proportion. And though a lack of accurate representation denies access to the same benefits from gaming accessed by other players on the basis of race-ethnicity, gaming shows immense potential to interrupt and reverse these trends.

Despite White-grouped players feeling generally satisfied with their representation in digital games, they too express the desire for greater representational diversity. Achieving this diversity, however, has no shortcuts. It involves recognition of cognitive and perceptual biases on the parts of developers, greater sensitivity to the physiological and cultural nuances of players of colour, and of the contexts and circumstances surrounding—and informing—experiences far more profound than skin deep.

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