Who Gets to Be the Player Character? A Visual Content Analysis of Representation in Video Game Design Programs

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The global video game industry is growing rapidly, with revenue reaching an estimated $179.7 billion in 2020—to put that in context, the international film industry just surpassed $100 billion in revenue in 2019 while North American sports brought in an estimated $75 billion in 2020 [1]. Indeed, 64% of US adults and 70% of those under 18 regularly play video games [2]. While most of these players are young men, there is growing diversity among the player base especially given the isolating impact of the COVID-19 pandemic [2], [3]. For instance, in Asia, which accounts for about 48% of the global gaming revenue, women join the gaming world at greater rates than men, seeing 19% growth in 2019, which translates to about 38% of the gaming population in Asia [4]. In addition to growing gender diversity, BIPOC (Black, Indigenous, and People of Color) youth spend more time playing video games than white youth in the United States [5]. The non-white player base continues to grow nationally and internationally, with projections showing that this group will become the majority within the next decade [6], [7].

Despite the increasing diverse player-base, the video game industry has, historically, failed to create a welcoming environment for these diverse players, especially women and players of Color [8], [9], [10], [11], [12]. Indeed, game communities are often called 'toxic technocultures' that weaponize misogyny and racism to protect the status quo [13], [14]. Racial and ethnic stereotypes portrayed in video games have been shown to produce cultivation effects that may contribute to further bias and negative attitudes toward non-white people in real-world experiences [15], [16]. These biases have translated to toxic game-play environments for people of Color, especially in online environments [17]. The #Gamergate scandal, an attack on women advocating for greater inclusivity in gaming, also illuminated the toxic qualities and exclusionary attitudes prevalent in the video game sphere [13], [18].

The biases in games and the gaming industry are partially a reflection of those creating video games. The International Game Developers Association (IGDA) found that about 71% of developers are binary (cis) men and 69% of developers are white; in comparison, only 24% identified as binary (cis) women, 3% of respondents identified as non-binary, and 24% identified as BIPOC [19]. This lack of diversity fits the overall perception of the video game industry as "overwhelmingly white, male, and straight" [20]. Like the cultures surrounding games, video game companies are notoriously subject to scandals about toxic work environments that are often exclusionary toward non-male and non-white people. For example, recent class-action lawsuits against Riot Games and Activision Blizzard highlight the systemic issues with gender discrimination abundant in the industry [21], [22], [23].

This lack of diversity partially stems from diversity, equity, and inclusion issues that plague STEM programs that feed these industries [24], [25]. STEM education has a problem with both racial and gender diversity, and women of Color are significantly underrepresented in STEM fields, presenting "serious equity concerns that connect with important historical and contemporary issues of social justice in the US education and employment systems" [26]. It is imperative to understand what issues of representation start in the academy that the video game industry then perpetuates.

To explore issues of diversity and representation in video game culture, I employ a visual content analysis of images from the top 25 undergraduate video game design programs according to the Princeton Review to address the following research question:

RQ: How frequently are underrepresented intersectional gender and racial identities represented in visuals from the top 25 video game design programs' websites?

Sub-RQ: How are these underrepresented intersectional gender and racial identities presented in these images?

Using these research questions, I unpack which gender and racial identities are represented in these images and what this might convey to those interested in pursuing a career in video game design.

Why representation in visual content matters

Representation in higher education marketing materials is a contentious subject. Several scholars have explored how higher education marketing materials such as viewbooks [27], [28] and online sources such as program websites [29], [30], [31], [32] use language and visuals to convey messages to prospective students about diversity and inclusion on campus. These materials often misrepresent true campus diversity and fail to accurately depict who is a part of the programs in reality [29], [30]. Indeed, online marketing materials tend to over-represent minority groups in visuals while failing to provide clear information on diversity in text-based materials [33].

Despite this cosmetic approach to depicting diversity, representation still shapes how future students and their families perceive inclusive opportunities in the program and school [27]. Furthermore, seeing 'role models' in marketing materials of similar identities makes students more willing to enroll in an institution's program [34]. Digital sources are important places to explore because they play an increasingly important role in the application and enrollment decisions for students and are taking a more prominent part than other admissions-related communications such as printed brochures [35], [36], [37]. While depicted representation may not accurately reflect the video game development program's actual demographic composition and the inclusivity of said program, these sources nonetheless play an important role in who feels welcomed by the program and who would apply to these programs.

Other media studies have explored how visuals act as a "proxy for other social forces" and that individuals portrayed frequently in these images are seen as more powerful [38]. Portrayals, including visuals, may have cultivation effects on viewers that drive associations between particular identities based on how individuals are represented [39]. For instance, when women are shown as nurses frequently, viewers may begin to associate genders with professions, building stereotypes in the process. At the same time, increasing visual diversity that defies societal stereotypes can, over time, reverse or at least weaken these associations [40]. Those viewing images from program websites, such as those programs included in this study, may feel empowered when there is more representation of diverse identities. They may also think that, despite the perception that white (cis)men dominate video game design, trends may change to

make space for those that do not fit this norm. However, cultivation effects can be overstated, and media cannot be the only driver for shaping beliefs [39]. Still, for all applicants and general viewers of the websites, greater representation for BIPOC people, non-binary folx, and women can help build mental associations that connect with these diverse identities with the field, helping to address some implicit bias that may exist. Visual media can play a crucial role in redefining who belongs in the video game design industry from even the beginning of the career pipeline. In the next section, I discuss the value that intersectionality can bring to this conversation to explore further opportunities for diversifying video game programs and the industry.

Intersectionality

As the focus of this study is on representation, critical race theory (CRT) offers a beneficial lens to explore these data. CRT is a movement examining race, racism, and power that rejects incrementalism, favoring more significant systemic change [41], [42]. Born out of critical legal studies, CRT is a powerful tool for examining social issues not only about race but other social identities such as gender, sexual orientation, class, and beyond [42], [43]. Splinter movements such as LatCrit and Critical Race Feminism are situated under the CRT umbrella and demonstrate approaches that remain true to the founding theory while also offering more opportunities for identifying and addressing issues about the particular identities of interest [44]. As such, CRT provides many opportunities to explore how many different socially constructed identities are subject to issues of power, privilege, and oppression.

To explore this point further, I am using intersectionality, a concept emerging from CRT, which explores how social systems like gender, race, or class "mutually construct" systems of oppression rather than act separately on people [45]. Indeed, Kimberlé Crenshaw [41] coined the term to address the "experiences of women of color," which "are frequently the product of intersecting patterns of racism and sexism" not fully discussed by feminists and antiracist theorists. Individual experiences "can seldom be understood as shaped by one factor," and intersectionality, as an analytic tool, addresses issues of inclusivity and equity that go beyond a "one-at-a-time approach," utilized in spaces like higher education [46]. Thus, intersectionality is an established tool and framework for confronting issues of representation that plague the academy.

Using intersectionality in this work, I can expand upon findings from other content analyses on representation in spaces tangential to video game design while also unpacking more contextual layers ignored when focusing on singular identities. For instance, Kerkhoven et al. [47] explored gender stereotypes in STEM education visual resources. They found that these gendered stereotypes are pervasive in the materials distributed to young people who are still forming their identities and their perceptions of STEM overall. Williams et al. [48] also conducted a visual content analysis of the video games themselves and explored race, gender, and age representations. While both content analyses found visuals exacerbated stereotypes and were fraught with representation issues, they kept all identity categories separate. By studying identities as separate entities, researchers fail to acknowledge that individuals often associate (and are associated) with a multiplicity of identities that influence their experiences in STEM programs and industries [46]. As such, this study builds off work from previous content analyses

and strengthens the validity of these approaches to exploring representation; however, this research can go beyond these strict categories and explore where identities may intersect to create different opportunities for representation and inclusion in video game design programs. Despite this aim, this work only scratches the surface of what researchers can explore with intersectionality in mind.

Method

Visual content analysis is a popular method for examining media content, allowing researchers to make statements about representation through counting procedures [49]. Visual content may refer to any type of image, even "immaterial mental images," that can be examined and counted, such as photos, videos, paintings, and beyond [50]. Indeed, visual content analysis is a valuable means of understanding how images communicate meaning to audiences [51]. Despite the method's popularity, there are valid concerns about the claims that scholars attempt to make using this method [49]. I want to clarify that I am not claiming that the findings are entirely accurate to the institution and those viewing the images. Instead, this practice is rooted in Stuart Hall's [52] heuristics of representation and meaning, which purports that meaning is not fixed when someone produces an artifact, but instead it undergoes a complicated process between the producer and the viewer unpacking the object's significance. Based on the encoding/decoding process, I read visuals in this study based on the image itself, not the creator's intentions, nor the entire reality depicted in the image [51]. Indeed, the encoded meanings from producers are impossible to understand or discover. As such, this study examines pictures from the audience's perspective, decoding the meaning without the insider context a producer would hold. My analysis focuses on perceptions of representation rather than the actual demographics of the programs themselves. Scholars [53] have successfully used this approach to study racialized and genderized visuals in higher education contexts.

Data collection

I manually scraped images from the websites for the top 25 undergraduate video game design programs according to the Princeton Review's list of the top 50 undergraduate video game design programs [54]. Visuals were included if they featured 1) at least one human being who is 2) depicted as a faculty member, student, guest lecturer, or otherwise associated with the university in question and 3) if humans were depicted clearly enough to code (eliminating huge crowds). After finishing data collection, I reviewed the sample (N = 797) and removed duplicate images to create the final sample (N = 769).

Coding process

I manually coded the images using a counting system. I developed the codes into two categories: 1) perceived identities and 2) presentation in images. Perceived identities were determined using a priori codes for gender (binary men, binary women, non-binary) and race (Black Indigenous and People of Color dubbed BIPOC and white) to better understand the perceived representation of people in the selected programs. As I mentioned previously, I am not making claims about individuals or aiming to make claims beyond what a person outside the organization, such as a prospective student, may perceive from an image. I added the

presentation category to understand better how the people represented are depicted to viewers, including the star (PC), the background characters (NPC), playing video games (PLAY), designing video games (DESIGN), watching game-play or game design (DESIGN), teaching game design (TEACH). I often coded individuals for multiple presentation codes. I assigned presentation codes to a person's intersected identity rather than an individual's perceived race or gender alone.

To explore these codes further, I used chi-squared tests, a common practice with visual content analyses, to explore relationships with representation and presentation in these images. I used the JMP statistical software to run statistical analyses with rejection levels set at the standard $p<.05$ level. Results are measured using the Pearson correlation coefficient to understand the relationships between identities and presentations in the data.

To bolster the interpretability and reliability of the visual content analysis, I asked an independent coder to code a sample (N = 127), representing 16.6% of the images, well within the bounds suggested by Lombard, Snyder-Duch, and Bracken [55]. I calculated the intercoder reliability using Krippendorff's alpha (K-alpha) and found that each code met the minimum intercoder reliability (K-alpha = 0.70). Thus, I can draw conclusions based on these validated codes. I removed a few codes from the analysis after running initial tests. Two codes, focusing on students (STUDENT) and whether or not an individual's face was visible (FACE), did not meet the minimum K-alpha threshold. The third code, a person posing for a picture (POSE), was removed because I felt it did not provide helpful insights for the analysis compared to a similar code, PC. Images in which there was apparent disagreement between coders stemmed from the image's composition, making it challenging to differentiate individuals, such as low-resolution images or images featuring groups of people.

Results

Identity codes

In total, there were 1748 people coded across 769 images. For gender identity codes, there were 1,241 binary men coded, 73.80% of all people; 469 binary women coded, 26.83% of all people; and, 38 non-binary people coded, 2.17% of all people (see Figure 1). There were 458 BIPOC people coded, 26.20% of all people; and, 1,290 white people coded, 73.80% of all people (see Figure 1). Looking at each of these identity groupings alone, it is evident that the findings in the literature about the video game industry are also showing up in the images from programs that train video game designers as well—men and white people were represented the most.
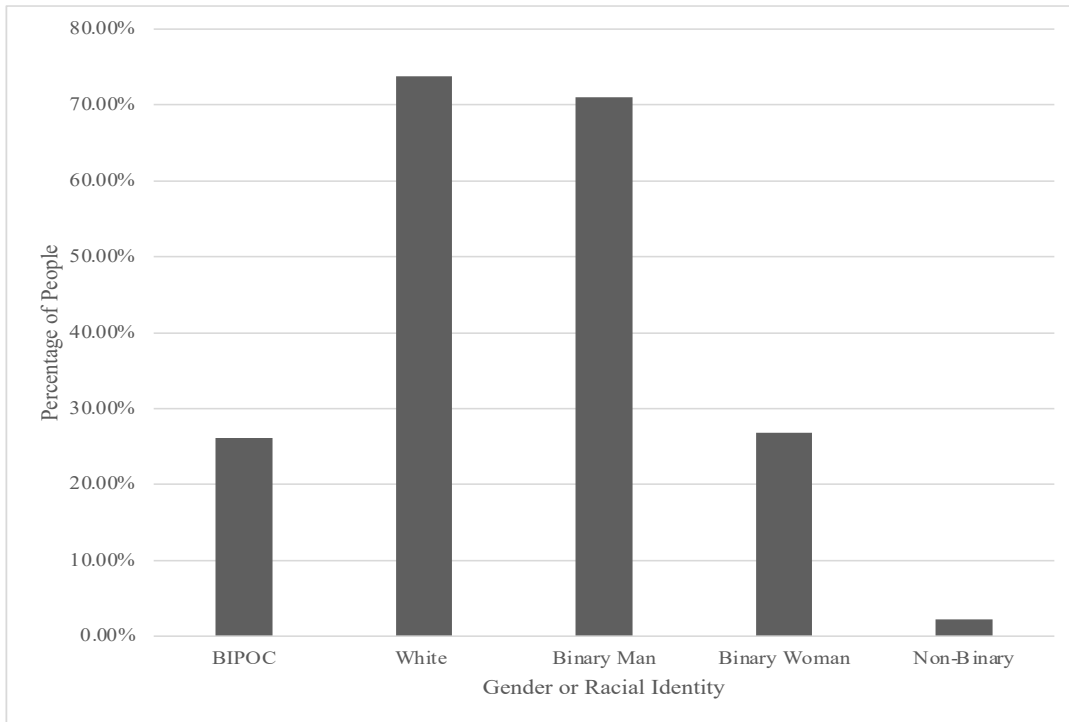
Fig. 2. Percentage of individual gender and racial identities in the sample.

However, the results become more nuanced when examining representation from how these identities intersect. For these intersections, BIPOC binary men were coded 304 times (17.39%), BIPOC binary women were coded 143 times (8.18%), BIPOC non-binary people were coded 11 times (0.63%), white binary men were coded 877 times (53.60%), white binary women were coded 326 times (18.65%), and white non-binary people were coded 27 times (1.54%). I performed a chi-squared test for perceived gender and race codes, showing a statistically significant difference between distributions of gender across race (X^2 (2, N = 1748) = 6.476, p<.0392). Based on this, I concluded that there were significantly more white binary men in the sample while non-binary BIPOC folx were not well represented, even in comparison to the metrics provided by the IGDA's survey of the field [19].
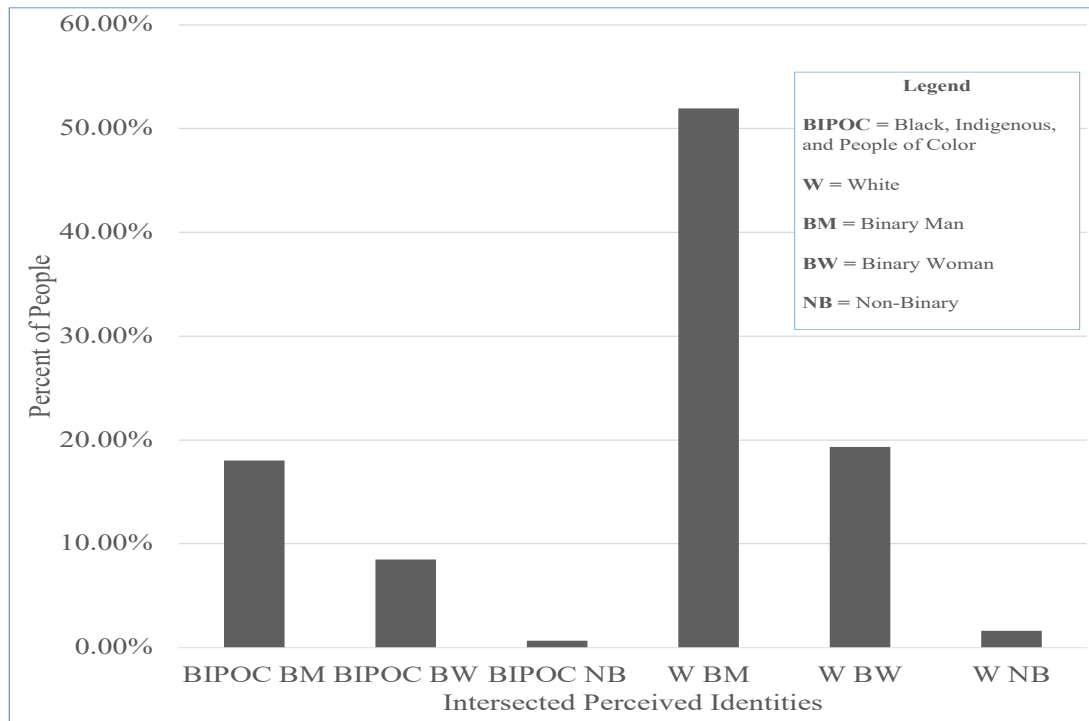
Fig. 2. Percentage of perceived intersected gender and racial identities.

Presentation codes

There were 2,528 presentation codes, averaging about 1.45 presentation codes per person, meaning I coded the typical person for more than one presentation code. Every person in the sample was coded as either the central figure in the image (the PC) or a background figure (the NPC) in addition to any other presentations. As evidenced by Figure 3, white binary men were the most frequently coded as the PC (N = 531; 17.73% of codes) while BIPOC non-binary people coded least frequently in designing and teaching roles (N=1 for both; .0033% of codes). I performed a chi-squared test for the intersected gender/race variable, and the presentation codes showed a statistically significant difference between the presentations across the distribution of intersected identities (X^2 (25, N = 2528) = 84.614, p<.0001).

While these findings give a macro look at representation, I wanted to look closer at some of the presentations, specifically who stars in these images and who is a background character (PC vs. NPC). A chi-squared test for the intersected gender/race variable and the presentation codes for PC and NPC. The results showed that there is a statistically significant difference between the perceived identities and their presentation as PC vs. NPC, where white binary men dominate the starring role (X^2 (5, N = 1685) = 14.822, p<.0112). Indeed, white men featured were the player character about 31.5% of the time compared to BIPOC women who were featured as the PC only 2.61% of the time.
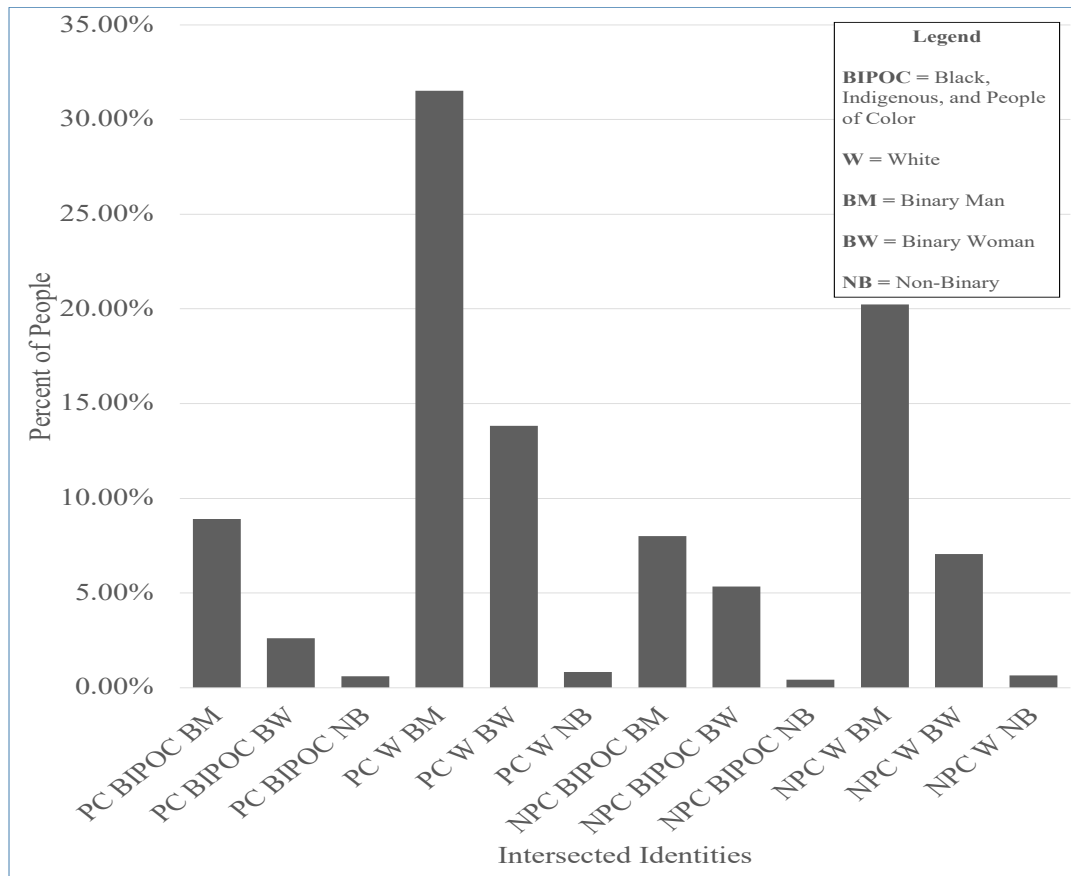
Fig. 3. Percentage of player character (PC) and non-player character (NPC) codes by perceived intersected gender and racial identities.

Looking at the activity-focused codes, representation as active figures is also an issue in the sample. I examined the activities (DESIGN, PLAY, TEACH) once again with a chi-squared test, which revealed that there is a statistically significant difference between the activities across the intersected identities (X^2 (10, N = 529) = 31.908, p<.0004). Figure 4 demonstrates that the programs most frequently depict white binary men participating in activities important to the video game design discipline. BIPOC non-binary folx, followed by white non-binary folx, were almost wholly obscured or absent from these images.
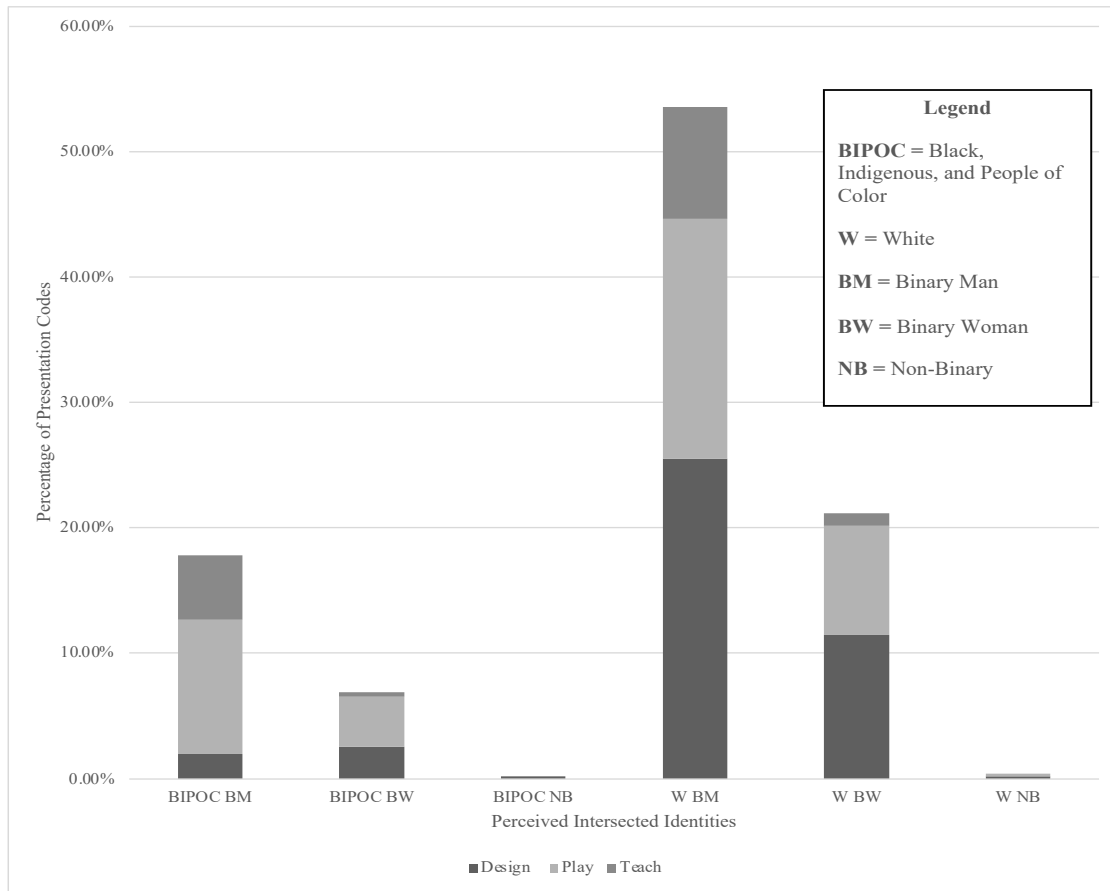
Fig. 4. Percentage of presentation codes by perceived intersected gender and racial identities.

Discussion

Overall, this visual content analysis's results suggest that video game design programs mirror the issues with representation that plague the industry. Looking at race and gender as singular constructs tells such a story—in these images, BIPOC people, binary women, and non-binary folx were clearly underrepresented. Fitting the "gamer" stereotype, white and binary men are predominately featured and perpetuate the idea that these identities are the norm.

Yet, examining these constructs as singular entities disservices the data and fails to strive for genuine representation. Looking at gender and race together reveals that representation issues are far more complex than they appear on the surface. While white, binary men continue to dominate these images, white women are featured far more often than BIPOC binary women; indeed, white women frequent these images more than even BIPOC binary men. As such, these racialized, heavily white photos send a message of white dominance in these fields and could make students of Color feel unwelcomed in these programs. Furthermore, an intersectional approach to representation offers more support and space for those who need it most. Studies focusing on just one identity boast about increasing numbers of women, but they fail to examine issues related to race, class, and beyond [56]. While women deserve more representation in the

field, there is evidently an issue with representing a diverse panel of said women. Failure to explore this point further may convey a message that the problem is 'fixed' in video game design. In addition to this point, BIPOC non-binary folx were all but absent from these images. If they genuinely value inclusivity, these programs should highlight those identities often erased or invisible in similar spaces to make them feel welcome in their programs and communicate that there is space for them in the video game design world.

Still, representation on its own is not enough; indeed, how the programs portray individuals in the images they feature is also crucial. bell hooks [57] critiqued the use of Black models in fashion magazines, who were "represented so readers will notice that the magazine is racially inclusive even though their features are often distorted" and exploit these Black bodies as a means to an end. In this same way, representation in this study cannot simply count and examine bodies to meet a quota, so I decided to explore the depicted roles and activities. BIPOC women and non-binary folx were more frequently depicted as the non-player characters (NPCs) in these images, often as bodies that do little to contribute to the action of the picture. Indeed, an individual viewing these images would likely assume that BIPOC women and non-binary folx are not as important or valued in the educational spaces where they teach video game design. Furthermore, the frequent starring (PC) role of white binary men would suggest an issue with power in these spaces. That is, individuals in these images are seemingly labeled as dominantly powerful and valuable, which leaves little room for other identities to take center stage. The emphasis on white binary men in these images seemingly supports the status quo in the video game industry and does little to encourage inclusivity in design programs.

In tandem with this point, white binary men were frequently teaching, playing, and designing video games, visually adding complexity to their stories as portrayed through the visual—that is to say, by presenting these identities in these crucial roles for the program and industry makes their value to the audience more evident. These visuals serve the "white male template" prevalent throughout higher education [58]. For instance, these programs highlight white, binary men teachers, which presents significant implications for perceptions of power and authority since teachers are often depicted as the literal authority in a classroom [59]. By giving white men positions of power in the visuals, the programs perpetuate an exclusionary image to audiences that serve the status quo while stripping those that do not meet this 'white man norm' as less credible [60]. At the same time, programs fail to depict BIPOC binary women, for instance, in positions of power and influence, which reinforces stereotypes about who belongs in the industry. The programs, through these images, do little to portray the value that diversifying their video game design programs and the subsequent industry provides.

Along with the NPC depictions, these images frequently showed folxs as bodies filling space rather than active and engaged individuals. Depicting these identities as central and active in these images can encourage more diverse future video game designers to attend school and pursue a career. Presenting more diverse role models can encourage greater enrollment from diverse students while also potentially rewriting the stereotypes people have about the video game design

Conclusion

This visual content analysis examined representation in the top 25 video game design programs. My analysis revealed that while white binary men dominate these images, in line with the lack of diversity in the field, more complex issues are revealed when looking at the intersections of race and gender. BIPOC individuals, when accounting for gender, were underrepresented in the images, and non-binary folx were given little space at all. White binary men were assigned the PC in the majority of images. They were also the most active figures in these visuals, while BIPOC women and non-binary folx were largely NPC characters.

While I aimed to design a rigorous study, there are several limitations to this work. For one, these findings are based on perceptions and not reality—as visual content scholars [49] suggest, I cannot make causal claims and inferences from visual content analysis, limiting the scope of this work. Furthermore, because this project uses my perceptions, my implicit and explicit biases can shape how I interpreted the findings. In line with this, I had to decide about identities that may not be evident, especially for non-binary folx. At the same time, while I used names when available to research a person's preferred pronouns, I certainly misgendered individuals in this sample. Additionally, as a white binary woman, I hold certain privileges that may obscure my interpretations and hinder me from fully interpreting the images as a person not holding my identities would. While an independent coder examined the images to help with my bias, the other coder was also a white woman, which may insert further bias into the work, the opposite of my aim. Additionally, I used intersectionality to guide this work, but I only examined two identities which does not dig into the issues enough to understand representation in and audience interpretations of these images. Finally, while I used BIPOC to avoid assuming a person's race, this categorization is problematic for concluding the experiences of all people under the 'color' umbrella—for instance, the experience of Black people in this United States differs from that of Asian people, and this may translate to issues of representation as well. Using such an all-encompassing category, I failed to explore the more nuanced experiences of the various identities in the BIPOC category.

Future research can help address some of the limitations I outlined above. For one, future research must explore the experiences of races within the BIPOC umbrella in the video game design field. Interviews with individuals in higher education and the video game industry will give a voice to these individuals and gain greater insight into their experiences. Furthermore, future research should explore more identities, such as class and how they intersect with other identities, to shape experiences with video game design programs using surveys, focus groups, individuals, and beyond. Additionally, visual content analyses like this project should compare findings with actual program statistics to draw further conclusions about how programs convey their inclusivity versus how it manifests in reality.

Ultimately, my research found that white binary men dominate video game design images, mirroring issues in the video game industry. Programs need to do more to represent diverse individuals to communicate messages of inclusivity. However, representation is not enough. Images need to depict those identities often invisible in the video game design industry as active, central figures to communicate the importance of inclusivity and the significant role these identities can take in video game design. If they value diversity and inclusion, video game design programs must take greater steps toward highlighting BIPOC binary women and non-binary individuals. By making these identities central figures in their program content, they can

communicate the importance of these identities to the field, defying the "white man" stereotype and ushering in a new era of video game creation that serves its increasingly diverse player base.

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