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A key feature of video games relevant to their enjoyment is their perceived realism—as players engage an authentic and plausible gameworld, they enjoy the gaming experience (Daneels et al., 2018). Perceived realism is relevant to the enjoyment of historical video games, or games which "make meaning out of the past" (Chapman, 2016, p. 16) and in which action is often situated in locations and events from world history. Given the centrality of place in historical games (e.g., detailed renderings of the Cathédrale Notre-Dame de Paris in *Assassin's Creed Unity*; BBC News, 2019), a parallel area of study is the notion of sense of place in digital worlds, or the extent to which players form self-referential and emotional connections with digital worlds, including renderings of physical places (e.g., *Fallout 76*'s West Virginia; Bowman et al., 2020) or places without any physical location (e.g., *World of Warcraft*'s Azeroth; Robinson & Bowman, 2022). On this backdrop and given the increased interest in translating digital experiences into physical ones—such as using video games to motivate travel and leisure (Rainoldi et al., 2022)—our current study explores potential relationships between perceived realism, sense of place, entertainment outcomes, and tourism intentions.

Perceived Realism in Video Games

In the context of video games, perceived realism has been commonly conceptualized only in terms of the graphical quality of a game (e.g., McGloin et al., 2011), although scholars have argued for expanding the construct to include other assessments of in-game content as well (e.g., Breuer et al., 2012; Lin & Peng, 2015; Malliet, 2006). Ribbens et al. (2016) proposed a multidimensional approach to examine how players perceive a game as realistic, consisting of five dimensions: *social realism* (the degree to which game characters and events resemble real-life people and occurrences), *perceptual pervasiveness* (the degree to which games create a

compelling audiovisual illusion), *character involvement* (the degree to which players feel engaged with the game world through a close connection with their character), *freedom of choice* (the degree to which in-game choices resemble real-life choices) and *simulational realism* (the degree to which in-game behavior resembles real-life behavior through a game's pre-programmed set of rules). These dimensions have been useful for understanding player experiences with different types of shooting games (e.g., fantasy- and military-themed shooters; Daneels et al., 2018; Ribbens & Malliet, 2010; Ribbens et al., 2016) and action-adventure games situated in historical locations and periods (Alcindor et al., 2022; Vandewalle et al., 2022).

Questions of perceived realism are especially important in the context of games with historical aspirations (Burgess & Jones, 2022). Historical video games employing a realist simulation style (Chapman, 2016) often directly represent or simulate historical periods and/or locations in which players take the role of a person (real or fictitious) from that period (as opposed to games like *Civilization*, which use a conceptual simulation style in which historical systems and processes are simulated, rather than a specific location or period). As such, social realism is central to these games, as the (perceived) fidelity of the in-game world with the real historical world is often one of the main draws of these games (Wright, 2022). Here, social realism can also be understood as the degree to which the simulation of history is perceived to resemble a historical reality—regardless of the accuracy of that portrayal.

Sense of Place in Digitized Worlds

Relevant to perceived realism and historical gaming, sense of place is broadly understood as the idiosyncratic and emotional connections that people make with places and locations (Tuan, 1975). Relph (1976) argued that sense of place is generated from a combination of what we do in a place, the meaning we attach to those activities, and our perception of the character of a place.

Similarly, Bott (2000) noted that sense of place emerges as a function of the significance and inspired transcendence of a place, as well as our memories and aesthetic judgments towards the place.

These concepts were recently applied to video games by Bowman et al. (2020), who found that players' sense of place for West Virginia (the setting of *Fallout 76*) increased and sustained over time. Their study found that prior to gameplay, there was an expected difference in sense of place for West Virginia (the actual U.S. state) between people native to the state and those not, with natives feeling more strongly about their state. After two weeks of gameplay, this sense of place gap closed such that non-natives' sense of place increased. Two months into game play, non-natives who were still playing *Fallout 76* retained this higher sense of place, whereas non-natives no longer playing reported sense of place scores falling to pre-study levels.

Developers of digital worlds have already begun considering how on-screen environments could allow for more intimate and personal engagement (Lentini & Decortis, 2010). Just as *Fallout 76* developers toured and documented locations in West Virginia (Good, 2018), the team crafting *Assassin's Creed Odyssey*—set in ancient Greece—traveled Greece and embarked on guided and unguided tours of ancient locations to craft the feel of the gameworld (Hall & Dansereau, 2019).[1] Some have subsequently argued that historical video games can be useful at influencing (popular) perceptions of history: Gilbert (2019) described how the *Assassin's Creed* series teaches players how history is a human experience (showing them, for example, how people would have reacted to the Boston Massacre in *Assassin's Creed III*), and

[1] In one instance where the game's portrayals might have been 'too realistic' for gamers, statues in the game were portrayed in full color (as they originally were; Politopoulos et al., 2019), which confused gamers used to seeing marble white statues in museums (Ouellette, 2018).

Ramsay (2015) argued that game recreations of war history allow players to grasp the spatial logics of where battles were fought.

Enjoyment and Appreciation in Historical Video Games

Research on the entertainment of video games has generally distinguished between hedonic enjoyment and eudaimonic appreciation (Oliver et al., 2016). While hedonic responses have been primarily linked to enjoyment and related notions of fun, excitement, and arousal (e.g., Vorderer et al., 2004), less agreement exists regarding eudaimonic outcomes (Daneels et al., 2021). Entertainment scholars tend to define eudaimonic appreciation as "an experiential state that is characterized by the perception of deeper meaning, the feeling of being moved, and the motivation to elaborate on thoughts and feelings inspired by the experience" (Oliver & Bartsch, 2010, p. 76). Multiple aspects such as competition (Caroux et al., 2015; Vorderer et al., 2003), control and character customization (Kim et al., 2015; Klimmt et al., 2007), and character identification (Bowman et al., 2016; Hefner et al., 2007) have been identified to impact players' enjoyment. Likewise, a broad range of eudaimonic experiences have been found in games research (Daneels et al., 2021), including meaningfulness (e.g., Oliver et al., 2016), feeling emotionally moved (e.g., Bopp et al., 2016), and experiencing nostalgia (e.g., Wulf & Baldwin, 2020).

Prior research already showed that players' perceptions of realism are positively related to their hedonic enjoyment experiences (Daneels et al., 2018; Vandewalle et al., 2022) and likewise, sense of place facilitates enjoyment outcomes (such as higher game ratings; Bowman et al., 2020). However, scholarship on the association between perceived realism, sense of place, and appreciation is lacking. Due to the evocative nature of eudaimonic experiences (Bartsch & Hartmann, 2017; Daneels et al., 2021), it makes sense that video game experiences that are

perceived as highly realistic and foster a sense of place could be seen as more eudaimonic. For example, Possler et al. (2021) found *Fallout 76* players to report high levels of awe for the in-game landscapes, which in turn predicted higher levels of appreciation.

Tourism Intentions and Media Content

Finally, there is a tradition of research into the influence of media portrayals of locations encouraging travel to those locations. We broadly understand tourism intentions as the subjective decision whether to travel to another destination (Hsu & Huang, 2010), and note that sense of place is highly relevant for tourism intentions. Campelo et al. (2014) argued that without a sense of place, the social and cultural meanings of tourism destinations are removed, which has a negative impact on overall tourism experiences as individuals are unable to make meaningful connections. Conversely, scholars have found sense of place to positively predict emotional connections to geographic regions (Shaykh-Baygloo, 2021) and to encourage repeat tourism (Abou-Shouk et al. 2018). Sense of place is also fostered by increasingly personalized experiences, from community interactions (Amsden et al., 2010) to experiencing local food and drink in a cultural context (Haven-Tang & Jones, 2005).

Media entertainment has been explained as a driver for tourism, as enjoyable and meaningful experiences with entertainment media products drive interest in travel to destinations featured in those products. Such effects have been seen in film (Beeton, 2006; Connell, 2012), entertainment television (Kim & Long, 2012; Tessitore et al., 2014), social media (Zeng & Gerritsen, 2014), virtual reality (Ana et al., 2021), and video games (Dubois & Gibbs, 2018). The last-referenced study looked specifically at tourism-related online comments left by players of *Assassin's Creed II* (set in 15th century Italy) and *Assassin's Creed Unity* (set in Paris during the French Revolution). They found evidence of several types of tourism behaviors, including both

serendipitous tourism (e.g., noticing a location from a video game, without planning to seek it out) and planned tourism inspired by video game play (e.g., visiting Italy because of playing *Assassin's Creed II*). Regarding *Fallout 76* and West Virginia, ongoing state-sponsored campaigns leverage the game to encourage tourism, including official sources such as the state tourism board (West Virginia Department of Tourism, 2022), unofficial agencies such as travel and leisure publications (West Virginia Explorer, n.d.), and online fan communities (Barton, 2019). Similarly, Lowe (2021) has discussed how the addition of ancient imagery in different levels of fighting games "effectively adds a form of tourism to the game experience" (p.90), and Mochocki (2021) argued that historical video games can offer similar types of engagement with the past as real-life heritage sites.

The extent to which players perceive the represented historical location as realistic potentially transforms their play session into a form of digital tourism. For example, in the case of games inspired by Greek antiquity, recognizable icons of "Greekness" such as using Greek text (Vandewalle, 2021), incorporating vases and pottery art (Clare, 2021; Lowe, 2012) or using other architecture such as temples (Politopoulos et al., 2019) or the Athenian Acropolis (André, 2016; Lowe, 2021) are employed to convey a sense of ancient Greece. Although such representational strategies are found in a variety of media, they become increasingly relevant in video games, which immerse players in a participatory and virtual space (Murray, 1997). In this respect, a historical game could parallel a touristic experience, which similarly revolves around historical highlights and, in a sense, the reduction of a specific culture or environment to a well-known set of signifiers.

Current Study

Combining the above frameworks, we forward the following directional hypotheses and open research questions. First, we expect that **H1** social realism will be positively correlated with game enjoyment, and that this relationship will be positively moderated by sense of place perceptions (**H2**). Less clear from prior research is **RQ1** the possible correlation between social realism and appreciation, and likewise **RQ2** the possible moderating influence of sense of place on this relationship. In these analyses, we control for the other dimensions of perceived realism, given their relevance for entertainment outcomes (Vandewalle et al., 2022).

Finally, as a related component of this study, we explored the main effects of (**RQ3)** social realism, (**RQ4**) sense of place, and (**RQ5a**) entertainment outcomes of enjoyment and (**RQ5b**) appreciation on tourism intentions, as well as possible interactions between these variables.

A nuance to the current study is the comparison of ancient and modern history in these processes. We might expect modern history to be more recognizable to players and thus, games rooted in modern history to be perceived as more realistic (i.e., they will look more similar to modern portrayals of the same places): Vandewalle et al. (2022) found that games set in more modern environments (e.g., 18th century) scored higher on social realism than those set in antiquity, which they argued was a result of the similarity between the modern in-game world and the real world. These considerations are included given the diversity of historical games; operationally, we included video games representing ancient and modern history and compared our analyses across those different games. Thus, our hypotheses and research questions presented above are conducted within four unique stimuli (i.e., four different games) for comparative purposes, allowing us to test focal prediction and questions on a variety of stimuli (see Reeves et al., 2016; Cummings & Reeves, 2022).

Methods

Our study was a convenience sample of self-identified gamers active in various online discussion forums and other spaces interested in the *Assassin's Creed* franchise, as one of the most popular franchises focused on historical games (having sold over 140 million copies as of June 2019; Tyrer, 2019). All study materials and data analysis files are included online at https://osf.io/mrej5/?view_only=5eb93df1f0684025b47ef21bd6fbb529.

Focal Games

We focused on the *Assassin's Creed* franchise for several reasons. First, the *Assassin's Creed* series is one of the most popular series of historical games (as previously noted). Second, the *Assassin's Creed* games present graphically lavish and highly detailed reconstructions of history, facilitating increased perceived realism (Vandewalle et al., 2022) and, potentially, sense of place. Third, the series has a large fan following (e.g., fan artists, podcasts, and active online communities) that often discusses their game experiences (relevant for survey research).

We chose four specific games from the franchise: *Assassin's Creed Unity* set in Paris during the French revolution (1789-1794), *Assassin's Creed Syndicate* set in Victorian London (1868), *Assassin's Creed Origins* set in Ptolemaic Egypt (48-44 BCE) and *Assassin's Creed Odyssey* set during the Peloponnesian War in ancient Greece (431-422 BCE). All of these were released on the same consoles, including PlayStation 4, Xbox One and PC, suggesting they are similar in graphical quality. Additionally, this sample allowed for differentiation between representations of modern (*Unity*, *Syndicate*) and ancient (*Origins*, *Odyssey*) history.

Participants

Of $N = 1007$ individuals who clicked on the survey link, we first cleaned our data for incomplete or suspicious responses (the latter indicated through analysis of open-ended

responses). Of those removed, $n = 2$ did not consent to participate, $n = 15$ had not played any of the four focal games, and $n = 399$ did not complete the entire survey. From this, $n = 124$ were removed from analysis due to having suspicious open-ended data. In terms of survey completion time, the median score was 1158s (about 19 minutes).

After removals, we were left with a final participant sample of $n = 467$ for data analysis. These responses were distributed such that 142 (30.4%) were randomly assigned to *Syndicate*, 130 (27.8%) to *Odyssey*, 128 (27.4%) to *Origins*, and 67 (14.3%) to *Unity*. Out of the respondents who answered, 59.6% (n = 302) played on PC and/or Steam, and 16% (n = 81) on PlayStation. The rest consisted of other systems, including Xbox (8.9%, n = 45). Just over 80% (n = 444) of the respondents completed the main storyline of the *Assassin's Creed* game they responded to, and the median hours respondents invested was 80 hours (with an average of 224.59 hours, $SD = 615.7$), as many players reported continued play after completing the primary storyline.

Just over 75% of participants ($n = 358$) chose to complete demographic items. From those participants, the average age was 28.15 ($SD = 7.21$) and 72.9% of the respondents self-identified as male ($n = 247$) followed by 25.1% female ($n = 85$), and 2.1% as non-binary ($n = 7$). Most of the respondents (66.8%, $n = 221$) held nationalities in the USA, 6.0% ($n = 20$) in the UK, 3.6% in Germany ($n = 12$), and others in 38 different countries. Most respondents, 82.9% ($n = 261$) self-identified as White, and about one quarter (26.4%, $n = 79$) self-reported as Christians. Just over half of those responding (51.6% , $n = 160$) had a college degree, with a median annual income of $48,000. When asked if they had visited the focal location of their assigned video game, 36% of *Unity* players had lived or visited in France, 42% of *Syndicate* players for London, 17% of *Origins* players for Egypt, and 18% of *Odyssey* players for Greece.

Demographics are only reported for sample description purposes, and not focal to any analyses, although some variables are referenced in our discussion section.

Procedure

We conducted an online survey study that inquired into players perceived social realism, sense of place, and enjoyment of historical games, as well as their post-play tourism intentions. Players were asked to complete a survey on their "experiences playing *Assassin's Creed* games," and after completion, were entered into a lottery for one of 10 $50/€50 Amazon.com gift cards (limited to one drawing for every 50 valid respondents). The survey link was shared online in several locations, including Twitter (using the #archaeogaming hashtag), Discord servers of both historical or archaeological games in general and *Assassin's Creed* in particular, the 'Historical Games Studies Network' Facebook group, and Reddit pages dedicated to *Assassin's Creed*.

To mitigate response biases that could come with asking respondents about one specific game, we used a random assignment technique in which respondents were asked which of the four games they had played previously, and afterwards were randomly assigned to one of those games for which they had prior experience. After random assignment, they were shown the official game trailer for their assigned game (all four trailers, approximately 3 minutes in length; see OSF) and then asked to rate the game on several dimensions (such as narrative, game world, and overall game rating; see Oliver et al., 2016) and write a brief review of the game—all designed to prompt recall of the game. Following this, participants completed survey items.

Measures

The following items were included in our survey. The respondents indicated their level of agreement with statements on a 7-point Likert scale ranging from "strongly disagree" to "strongly agree" for all items.

Perceived game realism. An adapted perceived realism scale for historical games by Vandewalle et al. (2022) was used (which adapted the scale by Ribbens et al., 2016). The scale consisted of five dimensions: social realism (3 items, $M = 5.23$, $SD = 1.06$, $\omega = .759$), character involvement (4 items, $M = 5.24$, $SD = 1.11$, $\omega = .882$), perceptual pervasiveness (3 items, $M = 5.51$, $SD = 1.07$, $\omega = .757$), freedom of choice (5 items, $M = 4.96$, $SD = 1.23$, $\omega = .867$), and simulational realism (5 items, $M = 4.40$, $SD = 1.60$, $\omega = .925$).

Sense of place. Sense of place was measured using a 13-item unidimensional scale from Bowman et al. (2020), $M = 5.27$, $SD = 1.03$, $\omega = .933$.

Entertainment outcomes. Entertainment outcomes were measured using an updated scale for assessing enjoyment (six items: $M = 5.56$, $SD = 1.13$, $\omega = .923$) and appreciation (six items: $M = 4.92$, $SD = 1.25$, $\omega = .910$) based on items from Oliver et al. (2016). Confirmatory factor analysis on the updated scale demonstrated acceptable fit: CFI = .952, TLI = .953, RSMEA = .087 (.076, .098).

Tourism intentions. A tourism intention scale was constructed using items adapted from Hsu & Huang (2012) applied to video games ($M = 5.61$, $SD = .1.21$, $\omega = .908$). CFA on the updated scale demonstrated acceptable fit: CFI = .988, TLI = .965, RMSEA = .086 (.052, .124).

Results

Below, we analyze our data in two separate analysis approaches. H1 (the correlation of social realism with game enjoyment) and H2 (the moderating effect of sense of place) were tested in one multiple regression, and RQ1 (the possible correlation of social realism with appreciation) and RQ2 (the possible moderating effect of sense of place) were tested in another multiple regression. Moreover, as we used four separate games for this study for internal replication purposes (two depicting ancient history, two depicting modern history), these

analyses were conducted separately for the four games; the other dimensions of perceived realism are entered as control variables given their known correlation with enjoyment (Vandewalle et al., 2022). Missing data were handled with listwise deletion.

Notably, as each of our four samples is independent, there is no concern for family-wise error inflation and thus, Bonferroni corrections for alpha-inflation are not necessary (and would only increase Type II error rate; see Perniger, 1988). Moreover, as our use of multiple games serves as an internal replication to avoid mono-stimulus bias (see Reeves et al., 2016; Cummings & Reeves, 2022), we chose to conservatively only interpret those findings that are consistent within our historical games (i.e., a finding consistent within the modern historical or ancient historical games group) or across all games (i.e., a finding that replicates across all games used in the study).

Perceived Realism, Sense of Place, and Entertainment Outcomes

Regarding enjoyment, all four regression models were significant at Model 1 (prior to the inclusion of interaction terms, see Table 1 for complete regression results). More focal to our predictions, and controlling for other dimensions of perceived realism, the data confirmed the direct positive relationship of social realism on enjoyment (supporting H1), but only for the *Assassin's Creed* games set in modern history (*Unity* and *Syndicate*); H1 was not confirmed for either of the games set in ancient history. Sense of place had a direct positive relationship with enjoyment, but this relationship was only consistent for the two ancient historical games. Across all four games, the addition of the interaction of social realism and sense of place was non-significant (rejecting H2).

Although not predicted, we note two findings relevant to perceived. The first is that perceptual pervasiveness was a strong and positive predictor of enjoyment for all four games in

our study. The second is that freedom of choice was a significant positive predictor of enjoyment scores, but only for those games set in modern history. Equally notable is that for no game were all five perceived realism variables statistically significant, further suggesting discriminatory power of those factors.

[INSERT TABLE 1 HERE]

For appreciation outcomes, again all four regression models were significant at Model 1 (prior to the inclusion of interaction terms, see Table 2 for complete regression results). However, social realism had no significant impact on appreciation, thus answering RQ1, and the addition of interaction terms offered did not improve regression models, thus answering RQ2. Broadly speaking, neither social realism nor the interaction of social realism and sense of place had a noticeable influence on appreciation.

That said, sense of place scores had a seemingly consistent positive influence on sense of place for games anchored in modern history as assessed by the consistency of unstandardized beta weights (.297 for *Unity*, .267 for *Syndicate*), although the smaller sample size of *Unity* players responding to our survey ($n = 67$) likely accounts for the observed statistical non-significance. Finally related to perceived control, both freedom of choice and simulational realism had a consistent positive association with appreciation for all four games played; with the latter finding, observed effects were more than twice as large for modern compared to ancient historical portrayals.

[INSERT TABLE 2 HERE]

Tourism Intentions

For tourism intentions, again all four regression models were significant at Model 1 (prior to the inclusion of interaction terms, see Table 3 for complete regression results). That said, the

only consistent finding was that sense of place had an overall very strong direct association with tourism intentions for all four games, with scores ranging from B = .645 to 1.06. The addition of two-, three-, and four-way interaction terms was not consistently significant, neither within historical portrayal categories nor across the sample.

[INSERT TABLE 3 HERE]

Discussion

The current study was designed to explore the relationships between perceived realism, sense of place, entertainment outcomes, and tourism intentions in a set of historical video games from the popular *Assassin's Creed* franchise, set in both modern and ancient history. Our expected and unexpected findings are discussed below, with suggestions designed to animate future research.[2]

Enjoyment and Historical Gaming

Our data found a direct positive association between social realism and enjoyment, but only for those games that took place in modern history (*Unity* and *Syndicate*). One explanation for this could be that the locations for modern history (Paris and London, respectively) might be more recognizable for our mostly Western respondents (75% of respondents from the US, England, and Germany) for which France and England are more semantically or geographically accessible. In partial support of this claim, a chi-square distribution analysis of prior experience in these locations found that respondents were far more likely to have visited (or lived in) England (36%) or France (42%) as compared to Egypt (17%) or Greece (18%), $\chi 2(3) = 29.7$, $p < .001$, $\varphi = .252$. From these findings, it is possible that players' determinations of social realism in modern history *Assassin's Creed* games could be informed by their own experiences in those

[2] In cases where supplemental analyses are reported below, data outputs are included in our OSF space.

modern-day cities. For example, both of those games include several concrete and easily recognizable historical landmarks (such as Notre-Dame or Buckingham Palace) that could trigger recognition heuristics (i.e., the digital version of the cities seem 'real') and resultant availability heuristics (i.e., we can easily think of other 'realistic history' components); such effects would be explained in exemplification theory (Zillmann, 1999) and could be a compelling area of future research. Similarly, *Unity* and *Syndicate* were focused on a rich and detailed presentation of their host cities (Paris and London), whereas the two games based in antiquity (*Origins* and *Odyssey*) were designed as larger open-world games in which experiences were comparatively more generic (e.g., by reusing assets from one region to another). That said, supplemental analysis of game rating data did not reveal significant differences between games in terms of world design (overall $M = 81.95$, $SD = 18.61$, $p = .559$ across games) or overall game rating (overall $M = 80.22$, $SD = 15.95$, $p = .632$ across games). Moreover, social realism scores did not differ between games either (overall $M = 5.23$, $SD = 1.06$, $p = .737$ across games) and were significantly higher than the scale neutral point of 4.00, $t(465) = 5.23$, $SD = 1.06$, $d = 1.16$.

Sense of place also had a direct positive influence on enjoyment, but this was restricted to games rooted in ancient history—sense of place in Egypt and Greece was crucial to enjoyment. Extending the discussion above, sense of place need not necessarily require a concrete and recognizable exemplar to be enjoyable but could instead foster a more holistic 'atmospheric sense' of the location in a historical game (for example, the use of "Greekness" aesthetics). Such an argument follows discourse around historical games as "time machines" (Casey, 2021, p. 76) in which we can return to ancient historical periods in an engaging and enjoyable way. Such experiences are not irrelevant to modern history games, but they might be especially enjoyable

for ancient history in which the past is more abstract and exoticized, and perhaps less concretely and readily accessible.

Appreciation and Historical Gaming

Unexpectedly, social realism had no main association with appreciation for any of the games used in this study. One reason for this could be found in Vandewalle et al. (2022), in which *Assassin's Creed* players felt that some of the game worlds (especially in the open-world format games based in antiquity) were generally repetitive, sometimes recycling assets that were obvious to players (repeating scenery or structures, etc.). Another study that focused on *Assassin's Creed Odyssey* (in comparison to other games, see Daneels, Malliet et al., 2021) found that the game's "level-grinding" mechanics (in which players are required to engage in smaller tasks to progress a game) are likely barriers to emotional engagement necessary for appreciation to form.

Sense of place scores were a consistently positive predictor of appreciation, but only for games anchored in modern history: $B = .297$ for *Unity* and $B = .267$ for *Syndicate*, noting that the score for *Unity* did not meet the $p < .05$ statistical significance threshold (due to a small sample size, $n = 67$ players). Among candidate explanations for this observation is that when historical games can foster a sense of place in modern history, this could result in players gaining a newfound insight and appreciation for experiences that they might otherwise take for granted (see Gilbert, 2019. Here, historical video games might be especially useful at encouraging eudaimonic media responses when they can make familiar (or at least, modern) surroundings more emotionally and personally relevant.

Tourism Intentions

Reinforcing prior work on the importance of sense of place for tourism intentions, our study found that increased sense of place had a positive independent association with tourism for all four video games played in our study. These effects were quite large, ranging from one-half to one full scale point increase in tourism intention for every increase in sense of place (B = .645 to 1.06). First, these data reinforce the capacity for video games to facilitate sense of place relevant for tourism, following a lineage of prior research into the capacity of entertainment media experiences to encourage tourism (see Ana et al., 2021; Connell, 2012; Kim & Long, 2012; Zeng & Gerritsen, 2014). Our data offer additional empirical evidence for prior work on tourism and historical games, such as Dubois and Gibbs' (2018) observations about *Assassin's Creed* games set in Italy (*II*) and Paris (*Unity*). As noted by Bowman et al., (2020), state tourism boards are actively embracing video games as a vehicle for travel, and such efforts are indirectly being validated in empirical research.

While our data do suggest that sense of place can influence travel intentions for historical games, less clear is if there are unique aspects of historical games that influence this process. Surface inspection of regression scores shows that those for modern history locations (Paris and London) were somewhat higher than those for ancient history locations (Egypt and Greece), but it could have been easier for respondents to both envision and specify travel intentions to a concrete location (a city) compared to a broader one (a country). It is possible that sense of place drives enjoyment of and a resultant desire to travel to locations featured in ancient history, while sense of place drives appreciation for and a resultant desire to travel to locations featured in modern history.

Ancillary Findings Associated with Perceived Realism

Although included as control measures for focal tests of social realism, the current study also contributed to the broader literature on perceived realism and (historical) games. For example, perceptual pervasiveness strongly and positively predicted enjoyment for all games in our study and was likewise a strong predictor of enjoyment in Vandewalle et al. (2022). Thus, although perceived realism has been suggested as a multidimensional construct (Ribbens et al., 2016), graphical and audiovisual realism still plays a predominant role in how realism is perceived and enjoyed (and broadly, these variables are critical to a game's subjective quality assessment, see Schumann et al., 2016). Shifting to appreciation, both freedom of choice and simulational realism predicted appreciation scores for all four games. This finding was surprising, given that both were associated with enjoyment in Vandewalle et al. (2022). One argument for this finding is that both freedom of choice and simulational realism focus on what the player can do within a historical video game—allowing the player to reenact and influence history while they play (see Chapman, 2016; 2020) and thus, feel a deeper emotional connection with those experiences (Daneels, Malliet et al., 2021)

Connecting these findings to sense of place, it is possible that players enjoy historical games when those games are able to provide impressive and detailed places to connect with (especially relevant for recreating ancient history in video games, to help "close the gaps" for players entering the atmosphere of antiquity), and they appreciate historical games when they are able to freely move through and directly experience and test those places (especially relevant for recreating modern history in video games, to help reimagine otherwise recognizable spaces for players).

Notable Study Limitations

Along with study limitations already noted (such as a variance in gameplay mechanics from our modern to our ancient historical games, and variance in sample size across all four games), a few others should be mentioned. For example, tourism intentions were hypothetical in nature, and for these data to be applicable, more central indicators (such as actual tourism) would need to be assessed (see Rainoldi et al., 2022). Moreover, measures of sense of place and tourism intentions from our *Assassin's Creed* games required us to shift focus from focal cities to more general countries, although we note that neither score differed across games (tourism, overall $M = 5.61$, $SD = 1.21$, $p = .365$; sense of place $M = 5.27$, $SD = 1.03$, $p = .270$) and that both scores were significantly higher than the scale midpoint of 4.00 (ps > .001). Although we used several different *Assassin's Creed* games as an internal replication of our findings (rather than drawing conclusions from only one game), the franchise has its own distinct flavor and philosophy of how historical games should be made. Finally, our data were pulled from an international sample, but that skewed towards North America and Western Europe and likewise, was heavily White and Male (noting that game genres tend to have skewed gender distributions; Yee, 2017). Future research on historical games would benefit from a more inclusive sample that directly invites and raises the voices of other participants and historical moments.

Conclusion

This study contributes to a growing body of research into historical games, including how players make sense of these games and how this might influence entertainment and leisure outcomes. We found social realism to be relevant to enjoyment for historical games in modern history, but sense of place to be more relevant to enjoyment for historical games in ancient history. Social realism was unrelated to appreciation, but sense of place predicted appreciation scores for games in modern history. Sense of place was the lone predictor of tourism intentions,

and other perceived realism dimensions showed unexpected-but-notable relationships with entertainment outcomes.

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Table 1. Enjoyment scores regressed on perceived realism and sense of place, compared across *Assassin's Creed* game titles.

	Modern historical portrayals		Ancient historical portrayals	
	Unity (n = 67)	Syndicate (n = 141)	Origins (n = 127)	Odyssey (n = 130)
Social realism	***B = .409, p = .001***	***.297 (< .001)***	*.166 (.098)*	*-.071 (.563)*
Character involvement	-.009 (.942)	**.269 (.003)**	.195 (.075)	**.301 (.018)**
Perceptual Pervasiveness	***.299 (.011)***	***.247 (.001)***	***.298 (.002)***	***.347 (.003)***
Freedom of choice	***.294 (.035)***	***.192 (.007)***	.178 (.067)	.138 (.175)
Simulational realism	**-.230 (.027)**	**-.301 (< .001)**	**-.279 (< .001)**	-.099 (.148)
Sense of place	***.380 (.039)***	*.139 (.123)*	***.261 (.018)***	***.283 (.029)***
	$F(6,60) = 14.7$ $p < .001$ Adj R2 = .554	$F(6,135) = 46.7$ $p < .001$ Adj R2 = .660	$F(6,121) = 24.0$ $p < .001$ Adj R2 = .554	$F(6,123) = 17.4$ $p < .001$ Adj R2 = .433
Social realism * Sense of place	.080 (.433)	-.043 (.360)	-.046 (.513)	.124 (.166)
	$\Delta F(1,59) = .622$ $p = .433$ ΔAdj R2 = .004	$\Delta F(1,134) = .845$ $p = .360$ ΔAdj R2 = .002	$\Delta F(1,120) = .431$ $p = .513$ ΔAdj R2 = .002	$\Delta F(1,59) = 1.95$ $p = .166$ ΔAdj R2 = .008

NOTE: Regression weights significant at p < .05 level or greater bolded, and findings consistent across historical games (either within one historical gaming category or all games) are italicized.

Table 2. Appreciation scores regressed on perceived realism and sense of place, compared across *Assassin's Creed* game titles.

	Modern historical portrayals		Ancient historical portrayals	
	Unity (n = 67)	Syndicate (n = 141)	Origins (n = 128)	Odyssey (n = 130)
Social realism	.077 (.468)	.104 (.195)	.121 (.205)	.024 (.825)
Character involvement	.132 (.254)	.116 (.233)	.076 (.462)	.129 (.244)
Perceptual Pervasiveness	.055 (.584)	-.138 (.091)	.139 (.120)	-.022 (.831)
Freedom of choice	***.254 (.040)***	***.164 (.033)***	***.210 (.024)***	***.284 (.002)***
Simulational realism	***.351 (< .001)***	***.405 (< .001)***	***.160 (.020)***	***.199 (.001)***
Sense of place	.279 (.086)	**.267 (.007)**	.190 (.069)	**.333 (.004)**
	$F(6,60) = 31.2$ $p < .001$ Adj R2 = .773	$F(6,135) = 72.0$ $p < .001$ Adj R2 = .751	$F(6,121) = 30.1$ $p < .001$ Adj R2 = .579	$F(6,123) = 28.0$ $p < .001$ Adj R2 = .557
Social realism * Sense of place	.080 (.433)	-.030 (.554)	.054 (.415)	**.265 (.001)**
	$\Delta F(1,59) = .194$ $p = .661$ ΔAdj R2 = .001	$\Delta F(1,134) = .352$ $p = .554$ ΔAdj R2 = .001	$\Delta F(1,120) = .669$ $p = .415$ ΔAdj R2 = .002	$\Delta F(1,122) = 12.4$ $p = .001$ ΔAdj R2 = .039

NOTE: Regression weights significant at p < .05 level or greater bolded, and findings consistent across historical games (either within one historical gaming category or all games) are italicized.

Table 3. Tourism intention scores regressed on perceived realism, sense of place, and entertainment outcomes, compared across *Assassin's Creed* game titles.

	Modern historical portrayals		Ancient historical portrayals	
	Unity (n = 67)	Syndicate (n = 141)	Origins (n = 128)	Odyssey (n = 129)
Social realism	.046 (.805)	.071 (.821)	.135 (.248)	-.063 (.609)
Character involvement	-.102 (.577)	-.148 (.147)	-.036 (.776)	.196 (.121)
Perceptual Pervasiveness	.091 (.586)	.066 (.458)	.154 (.173)	.235 (.056)
Freedom of choice	.168 (.399)	-.120 (.133)	**-.228 (.047)**	-.106 (.304)
Simulational realism	-.335 (.076)	**-.180 (.029)**	.013 (.897)	**-.318 (< .001)**
Sense of place	***1.06 (>.001)***	***.834 (< .001)***	***.645 (>.001)***	***.710 (< .001)***
Enjoyment	-.317 (.150)	**.269 (.011)**	.191 (.137)	.076 (.490)
Appreciation	.024 (.923)	-.101 (.296)	.076 (.571)	.224 (.074)
	F(8,58) = 3.64 p = .002 Adj R2 = .242	F(8,133) = 26.1 p < .001 Adj R2 = .588	F(8,119) = 17.3 p < .001 Adj R2 = .537	F(8,120) = 28.0 p < .001 Adj R2 = .567
Social realism * Sense of place	.113 (.731)	-.013 (.899)	-.048 (.699)	.047 (.696)
Social realism * enjoyment	**-.575 (.012)**	-.051 (.446)	.006 (.968)	-.219 (.170)
Social realism * appreciation	.450 (.113)	.102 (.323)	.098 (.505)	.139 (.890)
Sense of place * enjoyment	**.513 (.043)**	-.004 (.323)	-.057 (.705)	.080 (.575)
Sense of place * appreciation	-.230 (.297)	**.203 (.016)**	-.101 (.476)	-.120 (.438)
	ΔF(5,53) = 3.038 p = .018 ΔAdj R2 = .148	ΔF(5,128) = 26.1 p = .001 ΔAdj R2 = .060	ΔF(5,114) = .466 p = .801 ΔAdj R2 = .009	ΔF(5,115) = .436 p = .882 ΔAdj R2 = .008

Social realism * Sense of place * enjoyment	-.362 (.150)	-.061 (.333)	-.123 (.409)	-.161 (.366)
Social realism * Sense of place * appreciation	.207 (.379)	.043 (.518)	.050 (.679)	.103 (.478)
	$\Delta F(2,51) = 1.44$ $p = .246$ ΔAdj R2 = .028	$\Delta F(2,126) = .519$ $p = .597$ ΔAdj R2 = .002	$\Delta F(2,112) = .426$ $p = .654$ ΔAdj R2 = .003	$\Delta F(2,113) = .412$ $p = .663$ ΔAdj R2 = .003
Social realism * sense of place * enjoyment * appreciation	.141 (.145)	.004 (.886)	.080 (.256)	**.307 (.009)**
	$\Delta F(1,50) = 2.97$ $p = .145$ ΔAdj R2 = .021	$\Delta F(1,125) = .021$ $p = .886$ ΔAdj R2 ~ .001	$\Delta F(1,111) = .426$ $p = .256$ ΔAdj R2 = .005	$\Delta F(1,112) = 7.04$ $p = .009$ ΔAdj R2 = .025

NOTE: Regression weights significant at $p < .05$ level or greater bolded, and findings consistent across historical games (either within one historical gaming category or all games) are italicized.