

Perception of “This is not a game”: Definition and Measurement

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Participatory narratives are compelling, at least partly because of their ability to help players suspend disbelief in the fictional world in which they engage. Game makers have used the phrase “This is Not a Game” (TINAG) to capture the willingness of players to buy into such narratives in ways that promote productive roleplaying and authentic engagement. Although TINAG has permeated the academic and popular literature on gaming and immersive narratives for decades, there has not been a scientific grounding for the term that provides researchers support for a more rigorous study of the topic. This paper makes two primary contributions. First, it provides a definition of the Perception of TINAG based on a systematic literature review of 50 articles that define or describe critical characteristics of TINAG: *The Perception of TINAG is a player’s acceptance that they are embedded in and able to influence a fictional story woven into the real world.* Second, the paper develops and validates a survey instrument that researchers can use to measure the Perception of TINAG and its three unique components: *1) the player accepts that they are embedded in a fictional story, 2) the player believes their actions influence the narrative, and 3) the player perceives that the story is woven into the real world.* We evaluated the instrument using exploratory factor analysis using expert reviewers and game players. We include a table of the articles describing TINAG and our final scale to facilitate future research.

Keywords: “This is not a game;” TINAG; alternative reality games; participatory narratives; pervasive games; virtual environmentsPRISMA methodology; survey validation

1. Introduction

The field of human-computer interaction (HCI) has a long and fruitful relationship with games research. Consider, for example, Tom Malone's (1982) classic paper at the first CHI conference that drew user interface design insights from computer games, the 174 games papers published in CHI from 2003-2013 (Carter et al., 2014), and the formation of the Games and Play CHI subcommittee and a stand-alone CHI PLAY conference that has attracted HCI design/research participation since 2014. Carter et al. (2014) illustrate how games research within the HCI community has informed our understanding of digital games as important and impactful cultural artifacts, as well as informed non-game experiences inspired by insights from games. As HCI has broadened to encompass pervasive and social computing, a parallel broadening has occurred within the HCI games research community to focus on "pervasive play" experiences (Ahn et al., 2016). The goal of this paper is to clearly define, measure, and discuss the "This is Not a Game" (TINAG) construct that has grown out of pervasive gaming, but has much wider application potential in educational simulations, computer-mediated storytelling, museum and theme park exhibits, escape rooms, and novel forms of online narrative play.

The past two decades have seen a flood of innovations in pervasive games, transmedia storytelling, Alternate Reality Games (ARGs), and other genres of interactive narrative. Immersed in a "participatory culture" (Jenkins, 2009), artists and writers have envisioned new ways to facilitate artistic expression through collaborative storytelling. Though participatory narratives are still not as mainstream as other forms of gaming, they can be life-changing for those who lose themselves in collaborative fantasies. For example, the Cloudmaker community grew out of The Beast (McGonigal, 2003b), an interactive transmedia experience that extended the story world of the film, "A.I." They can be used to build community (Jagoda et al., 2015),

inspire collective action, such as in World Without Oil and Superstruct (McGonigal, 2011), and promote the development of 21st Century literacies (Bonsignore, Hansen, et al., 2012), among other worthwhile goals.

What makes participatory narratives so compelling and potentially impactful in people's lives? While there is no single answer, a litany of research over the past 20 years has pointed to the importance of the "This Is Not A Game" (TINAG) construct. At its heart, TINAG is the idea that players suspend disbelief as they engage with a fictional world that bleeds into their everyday life. Gamemakers do not deceive players into believing the fictional world is real. Instead, players consciously buy into a fictional narrative whose distributed story elements are missing an explicit "magic circle" (Huizinga, 1950) that defines what is in-game or not (Dena, 2008). Rather than taking on a fictional role, as stipulated by live-action and tabletop roleplaying games (Montola et al., 2009), players step into the narrative action as themselves, which helps them feel like they are an integral part of an unfolding, authentic, real-world experience.

Although many research articles, discussion forums, and online articles reference TINAG, the concept is still elusive. Some people believe TINAG refers to feelings or perceptions inside a player's head, while others see it as a characteristic or ethos of the game itself. Commentators have referred to it as an aesthetic, an ethos, and a mantra. Some researchers define TINAG as a standalone construct, while others define it only in the context of an ARG. This disparity of definitions has been an essential part of "divergent thinking," helping to unpack the various aspects of TINAG. However, the time has come for some "convergent thinking" around the concept of TINAG. Just as measurable constructs such as "immersion," "usability," and "engagement" have helped researchers identify designs that improve traditional games and user interfaces (e.g., the Player Experience Inventory, (Abeele et al., 2020)), having a well-

defined and measurable construct for TINAG is essential to quantitatively exploring designs that lead to effective engagement in participatory narratives.

The goal of this research is twofold: first, to define the Perception of TINAG (p-TINAG); and second, to present an instrument that can measure a player's p-TINAG as they participate in a game or similar interactive experience. The paper begins with an examination and synthesis of a comprehensive body of articles that discuss the nature of TINAG, allowing us to identify critical elements of TINAG discussed in the literature. In this section of the paper we show how prior definitions and descriptions of TINAG map to three primary components. Our approach is highly inductive, letting the definition emerge through a careful analysis of existing literature that directly engages with TINAG as a concept and collection of distinct design components. Our findings arose through iterative, thematic analysis of articles gathered as part of a systematic literature review coupled with our own analysis of the way these insights relate to one another.

In the following section, we use the TINAG definition drawn from our systematic literature review to develop a survey that can measure the critical components of p-TINAG. In this section of the paper, we report on our expert panel review of the different TINAG components. The experts come from interdisciplinary fields of HCI, learning sciences, instructional design, interactive media, and the digital humanities, all of whom have either created, implemented, or evaluated interactive experiences imbued with TINAG, to evaluate the survey (Table 3). After several rounds of refinement and discussion with these experts, we used the items to evaluate three different educational experiences with varying levels of TINAG and gameplay to demonstrate the instrument's effectiveness.

As game designers and educators, we have seen the value of incorporating TINAG into participatory narratives. We have explored ways to decouple the defining components of TINAG

first seen in ARGs and live-action roleplaying genres and apply them to other genres, such as educational simulations. Defining p-TINAG as an independent construct will allow others to perform design and evaluation work on participatory genres by measuring p-TINAG's impact on outcomes of interest such as game enjoyment, player retention, and learning.

2. This Is Not a Game (TINAG) Overview

“THIS IS NOT A GAME” flashed red on the screen at the end of the *AI: Artificial Intelligence* movie trailer (E. Lee, 2010). The phrase appeared in other AI promotional materials alongside references to fictional characters such as “Sentient Machine Therapist Jeanine Salla.” Curious fans who searched for Salla online discovered her website, which led them to a phone number, which led them further down the rabbit hole into “The Game.” This large-scale, interactive fiction created by Elan Lee and a team at Microsoft, dubbed *The Beast*, referring to the 666 narrative elements game makers scattered across the Internet and real world, helped define a new genre called Alternate Reality Games (ARGs) (Stewart, 2006). According to Lee (2010), a crucial component of the marketing experience was to affirm to the audience (and potential “players”) that the interactive elements are *not* bound within a traditional, fictional game world; instead, they are as real as events and activities occurring in audience members’ daily lives (E. Lee, 2010). Lee, along with *The Beast* team at Microsoft, whose leads included game designer Jordan Weissman and writer Sean Stewart, argued that ARGs were a novel form of collaborative storytelling in which the authors and designers “*would present the evidence of [the] story, and let the players tell it to themselves*” (Stewart, 2006 emphasis added). The core idea was that audience and author could collaboratively craft the story in ways that afforded audience members more narrative agency than ever before. The recurring TINAG aesthetic suggested that “The Game” must be real. After all, the phrase “This is not a Game” sign-posted

several of the initial online elements of The Beast as evidence of the extended A.I. story world that audiences were invited to piece together. In the same way that Magritte's surrealist painting, "*Ceci n'est pas un pipe*" ("This is not a pipe") cannot be labeled "this is a pipe" because it is a *representation* of the real object rather than the object itself, early ARG designers used TINAG to deny that the interactive story elements they planted were part of a game to be played.

Since those early days, the concept of TINAG has been explored extensively by ARG designers and researchers. Sean Stewart (2006) likens ARGs to roleplaying games where the players "*enter the world... and interact with it, both online and in the real world*" He states that a hallmark of an ARG is where

"the audience is not only brought into the world because THEY are the ones responsible for exploring it, the audience also meaningfully affects how the story progresses. It is built in a way that allows players to have a key role in creating the fiction."

Stewart highlights that Elan Lee believed that disbelief was a fragile soap bubble. ARG designers who aim to engage people to uncover story elements hidden in their everyday lives must make it easy for players to suspend their disbelief.

The academic literature surrounding the concept of TINAG has explored how players behave as if the fictional world they have entered is real, at least for the duration of gameplay (Pohjola, 2004). Researchers have discussed TINAG in the context of pervasive games, which are games that have "*one or more salient features that expand the contractual magic circle of play socially, spatially or temporally*" (Montola, 2005, p. 18). Some pervasive games, such as Human Pacman (Cheok et al., 2004), do not attempt to promote TINAG or any sense of authentic experience. Other pervasive games, most notably ARGs, include TINAG as one of

several fundamental design principles. ARG makers have promoted TINAG by using gamerunners, the distribution of puzzles scattered across media types, long play durations (e.g., weeks to months), and collaboration among players (Bonsignore, Hansen, et al., 2012; Kim et al., 2009).

Though ARG designers were the first to describe TINAG, researchers since then have applied the construct to other participatory genres. For example, researchers have explicitly incorporated TINAG into educational simulations and games to provide students with a sense of authenticity and application (Bonsignore, 2016; Flushman et al., 2015; Giboney et al., 2021; Hansen et al., 2013, 2017; McDonald et al., 2019). They have described the role of TINAG in enhancing urban games (Ferri & Coppock, 2013). Hansen, et al (2013) point to a variety of experiences that don't constitute a full ARG, but incorporate TINAG, including museum exhibits, Fourth Wall Studio "RIDES" (brief, pre-scripted transmedia narratives), theme park experiences (e.g., Disney's *Kingdom Keepers Quest*), and massive survival tag games like *Humans vs Zombies*. Still others have described how conspiracy theorists such as Q, who initiated QAnon, have incorporated the concept of TINAG through quotes such as "*Everything has meaning. This is not a game. Learn to play the game*" (Davies, 2022, p. 66). Though not yet explored by researchers, TINAG is often a desirable element of other experiences like escape rooms, haunted houses (e.g., *Fear Factory*), *How to Host a Murder* games, and some forms of interactive theater. By separating the concept of TINAG from ARGs, it is possible to understand how the construct can play into other genres and can help inspire new genres that do not share all ARGs' design properties or principles.

While many qualitative and design-oriented studies have referred to TINAG as a design aesthetic or philosophy, the concept has not been rigorously defined and measured, thus limiting

its potential impact. Defining and measuring the perceived level of TINAG in an experience will allow researchers to build new theories and find causal relationships with other concepts.

Along with defining what TINAG is, it is essential to identify how it is distinct from other related constructs. *Psychological absorption* is the total engagement in an experience with an altered state of consciousness (Brockmyer et al., 2009; Irwin, 1999). According to McGonigal and other ARG pioneers, deep psychological absorption assumes that ARG players have credulity about the boundaries between the game world and the real world (McGonigal, 2003b). ARG players and puppetmasters engage in a conspiratorial, performative collaborative storytelling wherein they hold the playful mindset that life “*can* be a game,” not necessarily that the game itself is “*real*” (McGonigal, 2003a). McGonigal (2003a) called this aspect the “Pinocchio effect,” related to the notion that the puppet boy “*could*” become a real boy, given a willingness to play into the possibility.

Other constructs relate to TINAG but do not fully capture its multifaceted nature, particularly as it relates to the tacit pact between designer and player to ignore the typical boundaries of the game. *Engagement* is a general indicator of game involvement constructed of immersion, presence, flow, psychological absorption, and dissociation (Brockmyer et al., 2009). While TINAG may lead to increased engagement, the construct of engagement does not capture the sense of realism that TINAG encompasses. *Immersion* is the feeling of becoming engaged in an experience maintaining awareness of one’s surroundings inducing a feeling of being a part of a game (Baños et al., 2004; Brockmyer et al., 2009; Jennett et al., 2008; Singer & Witmer, 1999; Wirth et al., 2007). While those who perceive TINAG also experience a sense of immersion, some environments, such as virtual reality (VR), promote immersion but not necessarily TINAG. For example, ASTRO BOT Rescue Mission players are highly immersed in the animated VR

world but do not perceive the game as part of their everyday life. *Presence* in games and VR environments refers to a player's sense of being integrated "within" the game world (Brockmyer et al., 2009; Ryan et al., 2006; Wirth et al., 2007). The Player Experience of Need Satisfaction (PENS) instrument (Ryan et al., 2006) relates a player's sense of presence along three dimensions: physical ("I feel like I am in the gameworld"), emotional ("I experience feelings as deeply in the game world as in real life"), and narrative ("When playing the game I feel as if I am an important participant in the story"). However, presence seems most often referred to in a spatial or physical sense (e.g., Wirth et al., 2007), and PENS does not explicitly address TINAG as a game design construct. *Flow* is a state where people will persist in working on tasks while losing a sense of the passage of time (Csikszentmihalyi, 1988). Those experiencing TINAG may enter into a sense of flow, but it is not required to perceive TINAG.

This prior literature, however still leaves important issues unanswered. One is that prior research has not provided a consistent definition of TINAG, verified by research data. This makes it difficult to compare findings across studies claiming to report the effects of TINAG, given that researchers may have been working from different operational definitions. Second, given this lack of consistency, researchers, simulation designers, and transmedia authors interested in applying the principles of TINAG do not have guidance on the most effective actions they can take to increase players' p-TINAG in their work. Nor do they have clear, research-based guidance on whether their actions may actually interfere with p-TINAG rather than support it. These issues motivate our current research, meant to define p-TINAG and develop a scale that measures how specific game features affect it.

The first step in developing a p-TINAG scale was to perform a systematic review to identify the essential components of TINAG. In the section below we highlight our method for

reviewing the literature that named the concept of TINAG and literature from early papers that helped define the concept before it was widely used (e.g., McGonigal, 2003b).

3. TINAG Systematic Literature Review

We followed a process inspired by the PRISMA (Moher et al., 2009) methodology to systematically review articles related to TINAG and create a list of definitions. Originally developed for medical literature reviews, PRISMA has now been used for systematic reviews in other fields including HCI (e.g., Hansson et al., 2021) and games research (e.g., Raith et al., 2021). PRISMA uses a refinement process to identify articles of interest.

We began by performing a systematic search on Google Scholar, Scopus, and Web of Science Core Collection for the term: “TINAG This Is Not a Game.” The search was made on full papers, and venues including conference proceedings and journal articles. While a time interval was not defined, results dated from 2007-2021. This search resulted in 249 articles.

Next, we filtered the results to find articles with original definitions of TINAG. First, we removed 149 articles that were in other languages or unrelated to the game construct of TINAG (e.g., articles referencing the TINAG gene coding protein, email addresses, or fictional books). Of these excluded articles, 10 were duplicate articles, 4 were broken links, 88 were non-English articles, and 46 were unrelated. Second, we removed 35 articles that referred to TINAG but did not include a definition or expanded description of TINAG, original or cited. These articles discussed ARGs and TINAG but assumed that the reader was already familiar with the term. Next, we removed 28 articles that included definitions of TINAG that were not original. We considered definitions unoriginal if the author quoted another author but did not paraphrase, summarize, or provide any additional distinguishing features. We tended toward inclusiveness

since sometimes even slight wording changes or paraphrasing revealed new insights and perspectives of the authors.

Finally, each time we encountered a citation to a TINAG definition in a paper not yet included in our search results, we examined the cited paper and added it to our list if it met our inclusion criteria. We continued this step until we exhausted all connections that contained definitions. This process resulted in the papers listed in Appendix A.

Drawing from this final corpus, we recorded explicit definitions of TINAG as direct quotes with memos annotating the main idea or characteristics in the definition. Often, TINAG was described only in the context of ARGs, making it hard to distinguish between ARG experiences overall and TINAG as an independent feature. When these cases arose, we included quotes likely to apply to TINAG and ARGs, recognizing the need to differentiate them later when creating our definition. After we had all the quotes, we performed a thematic analysis (Hsieh & Shannon, 2005; Nowell et al., 2017) to identify common themes related to the definition of TINAG across the corpus of papers. As authors, we met twice a month for four months to discuss and debate emerging themes and how to best capture them individually and as a comprehensive definition (Hsieh & Shannon, 2005; Nowell et al., 2017).

By highlighting recurring patterns until we reached saturation of synonyms, concepts, and phrases noted within the quoted definitions and themes, three preliminary propositions about TINAG emerged. Once we had settled on these three key components, we returned to the corpus, working through each quote to ensure that the definition captured the most salient ideas. We continued this process until we were satisfied that our definition captured the key elements of TINAG. We include the articles we analyzed in Appendix A, excerpting the most important quotes from each paper.

4. Proposed Definition of p-TINAG

Definitions serve purposes. They inspire, clarify, reduce ambiguity, make measurable, and reify ideas. This paper aims to define TINAG in such a way that it can be measured. Only then can researchers systematically track the impact of TINAG on other outcomes of interest. The definition of TINAG presented in this section was grounded in the systematic analysis of TINAG articles and expert feedback (see Table 2). In this section, we outline the reasoning we have used to justify the definition presented here and how it relates to the key ideas found in earlier definitions.

One critical decision we made when defining TINAG was to tie it to a perception experienced by players rather than a feature of the game itself. For this reason, we will define the Perception of TINAG (p-TINAG) as experienced by a player. Not all definitions treat TINAG this way. Janes (2017, p. 13) aptly describes how TINAG can be perceived “as both something which the audience performs (and has the choice to perform) and a design choice made by [Puppet Masters, i.e., game designers] PMs.” Most definitions pick one or the other. For example, some definitions emphasize that TINAG relates to how players “feel” (e.g., “players do not necessarily feel like they are playing a game”), while others emphasize that TINAG games “do not represent themselves as games.” Our focus on the perception of TINAG aligns with our overall goal of measuring TINAG as participatory. From this perspective, game designers do not design games containing TINAG; instead, they design games that increase the p-TINAG experienced by players. This approach is similar to how game designers and researchers typically measure constructs such as “engagement,” “usability,” and “immersion” as a player’s perception. Furthermore, it recognizes that not all players perceive TINAG the same way, even when experiencing the same game.

With this backdrop, we define the p-TINAG as *a player's acceptance that they are embedded in and able to influence a fictional story that is woven into the real world*. p-TINAG is comprised of three main components:

1. The player accepts that they are embedded in a fictional story,
2. The player believes their actions influence the narrative, and
3. The player perceives that the story is woven into the real world.

Our definition combines these three independent components that, in aggregate, make up a player's p-TINAG. While each can be thought of and measured separately, each captures a unique aspect of p-TINAG that, only when combined, can convey the complete construct of TINAG as discussed in the literature review articles. For example, imagine a player receiving a text message from a fictional character and writing a response suggesting where the character should go to find the next clue. This strategy would help players perceive that they are (a) part of a fictional story, (b) able to influence that story, and (c) able to interact with the story via the platform of the real world. Since we require all three components jointly, talking about the p-TINAG as experienced by a player instead of an intrinsic game feature makes sense. However, measuring each of the three independently (as discussed in Section 5) allows for a more nuanced understanding of the perceptions that make up p-TINAG. We discuss the three components in the following sections.

4.1 The player accepts that they are embedded in a fictional story

Players who participate in games that foreground a sense of TINAG accept that they are embedded within a fictional story and choose to suspend their disbelief when engaging with the game. In the words of Hakulinen, “*the idea is not to make players believe that the game is real but rather to make it easy for them to pretend that it is real*” (Hakulinen, 2015, p. 34). The irony

of this situation is that game developers say, "this is not a game," yet everyone involved clearly knows that it is a game. Players understand that there is a boundary and that the game is not real. However, they participate alongside the designers as though the narrative is a real versus fictional storyline (E. Lee, 2010; Waern et al., 2009). As Hunter states, "*the game narratives that players are challenged to piece together often involve frankly unbelievable scenarios, revealing TINAG to be more useful as a perspective on play rather than an inviolable mission to efface the game's fictionality*" (Hunter, 2016, p. 95). Acting as though the storyline is real creates a phenomenon explained by McGonigal, in which players go as far as protecting the boundaries of the game itself (McGonigal, 2003b). This phenomenon shows that players *choose* to believe in the game and understand that they are part of (i.e., embedded within) an unfolding narrative. However, they recognize that even while pretending "this is not a game," they do not believe it is reality. Players may choose to participate because they find the story fascinating (Kim et al., 2009), which creates a desire to enter the world and suspend their disbelief. They cooperate and roleplay as necessary to continue the story as they play. McGonigal (2003b) describes this as "performance of belief" as if the game were real, yet they know it is fictional. In games incorporating TINAG, players do not participate as characters but as extensions of their selves. In a way, they are playing as themselves, as embedded characters, within a world parallel to reality. We note that these examples incorporate ideas from the other two components. As we have explained, all three are necessary for a genuinely TINAG experience.

4.2 The player believes their actions influence the narrative

In TINAG games and experiences, players influence the narrative with their actions or, at a minimum, believe that their actions influence the game. They may do this by collecting and sharing clues, collaborating to solve puzzles, creating their own content, or taking other actions

that further an unfolding narrative. In this sense, players are stepping into a fictional world and actively participate in the co-construction of the game world, with origins in the field of performance studies (Schechner, 2013). This co-creation belief is part of the performance of belief discussed by McGonigal (2003b) in that as players step into their role in the world, they believe that they can change the course of the world. Stewart (2006) described this phenomena as “*the audience also meaningfully affects how the story progresses.*” An example of this is when ARG puppetmasters create new content based on players’ contributions. However, players’ actions need not influence the narrative; players must believe that their actions influence the narrative. For example, an experience may be wholly pre-scripted but give players a sense that they control and direct the outcome, as with 4th Wall Studio Rides (Hansen et al., 2013). Many definitions of TINAG and ARGs implicitly or explicitly pointed to the importance of players’ involvement in the story. Bonsignore et al. discuss how “*players have a central role in assembling the story world*” (Bonsignore, Kraus, et al., 2012, p. 252). Kim et al. explain that “instead of passively witnessing entertainment, players take part and shape their own interactive, collective experience” (2009). This second component of p-TINAG is more vital than the first component since a player must feel that their actions make a difference to the narrative, not merely that they are a part of it.

4.3 The player perceives that the story is woven into the real world

The third component of p-TINAG is that the player perceives that the TINAG story or experience is woven into the real world. Like other pervasive games, games that employ TINAG take “*the substance of everyday life and weave it into narratives that layer additional meaning, depth, and interaction upon the real world*” (Phillips & Martin, 2006, p. 6). The game dissolves boundaries and allows players to perceive fiction and reality blurring (Mansilla et al., 2006).

Blurring boundaries does not mean players do not understand whether they are in the game or real life, but rather, they mentally distinguish between fiction and reality even while both play out around them in their everyday physical and virtual spaces. Lee describes how in ARGs, players “*interact with the fictional world through everyday artefacts (email etc)*” rather than “special equipment” or a “virtual world,” making it possible to become “*integrated fully in players' lives - both on and offline*” (T. Lee, 2006). He argues that “*it is in this omnipresence that the genre's mantra of 'This Is Not A Game' (TINAG) is cemented*” (T. Lee, 2006). While the other two components of p-TINAG focus on the feelings people have about their role and influence on the narrative, this component emphasizes the blending of the real and fictional world in authentic ways that allow players to support the argument that “this is not a game.” Johnson states, “*The TINAG philosophy dictates that all aspects of the simulation are included as part of the game world itself, ensuring a realistic and authentic player experience*” (Johnson, 2018, p. 10).

5. p-TINAG Instrument Development

In this section we will discuss how we evaluated and developed the instrument. We followed guidance on creating scales, had the scale evaluated by experts, and used the scale to collect data from two samples.

5.1 Instrument development process

Mackenzie, Podsakoff, and Podsakoff (2011) provide instructions on constructing and validating behavioral research measures. They state that there are six phases to scale development: conceptualization, development of measures, model specification, scale evaluation and refinement, validation, and norm development.

The first phase to scale development, conceptualization, is defining the construct of interest. Researchers discuss the domain of the construct based on previous research, provide the scope of the construct and explain how it differs from other constructs, and discuss the components of the construct, terms used by previous research, dictionary definitions, and what practitioners discuss when implementing the concept. The goal is to provide a crystal-clear, unambiguous definition of the construct, where it applies, and how it is used. The prior section defining p-TINAG constitutes our conceptualization phase.

After establishing a general definition, researchers discuss whether the construct has sub-dimensions. If there are sub-dimensions, the process of defining the sub-dimensions follows the same iterative steps, along with checks to determine whether the construct is formative or reflective. Formative constructs comprise sub-dimensions that can move independently and represent the higher-order construct when taken together (Mackenzie et al., 2011).

Socioeconomic status is a formative construct that includes specific education, income, and occupation measures. Sub-dimensions for reflective constructs move together to measure the construct (Mackenzie et al., 2011). An example of a reflective construct is social presence measured by four items measuring the same thing (Schuetzler et al., 2020). We believe p-TINAG is a formative construct, hypothesizing that the three components introduced in the prior section will move independently.



Figure 1. Scale development process (Mackenzie et al., 2011)

The second phase is the generation of items that represent the construct. This phase aims to generate a set of scale items representing the construct and limiting overlap to other related

constructs, then validate the items. One way to assess the validity of the items is to ask a panel of experts how well the items fit on the sub-dimensions (e.g., using Table 1, where each column represents a different dimension of p-TINAG). Panel experts rate how well an item fits with each sub-dimension. Panel experts are asked, “Rate each scale item by how well it connects to each component: 1 = not at all, 3 = somewhat, 5 = perfect fit”. The results allow researchers to ensure that each item fits into only one dimension and is strong in that dimension. Once researchers collect the measurements from experts, they can run a one-way ANOVA on each item to ensure it fits well in the dimension.

Table 1. Example of an item rating task

	Embedded	Influence	Real-world
1. The interfaces helped me believe in the experience.... The interfaces made me feel like I was on the outside looking into the experience.	3	3	2
2. I let the experience become part of me. ... I kept the experience separate from me.	5	3	2
3. I played pretend during the experience. ... I did not play pretend during the experience.	2	5	1

Phase 3 is the specification of the model. In this phase, the researchers specify how to place the items into the factor analysis model. Researchers do part of this in previous phases as they design the dimensions. Researchers formalize dimensions as formative or reflective constructs (Mackenzie et al., 2011). As stated previously, we assume that p-TINAG is formative.

In phase 4, the researchers test their items in a pretest. In this phase, researchers measure convergent validity to ensure that the items are loading on the expected construct/dimensions. After the pretest, the researchers remove or modify underperforming items. Convergent validity can be measured with Chronbach’s alpha, factor loadings, AVE, and R^2 .

In phase 5, the researchers validate the scale with known groups or experimental conditions. In phase 6, the researchers run multiple measurements to discover the norms for the

scale. Multiple measurements help future researchers see trends and whether they accurately measure the construct.

5.2 Perception of TINAG scale development

We first developed ten scale items that reflect each of these components (thirty in total). We invited thirteen researchers and designers who have in-depth experience in the field of ARGs and TINAG (Table 2) to be a panel of expert evaluators for the scale. Names have been anonymized in accordance with institutional review board policies regarding research with human subjects. The group includes designers and researchers from a range of interdisciplinary fields (e.g., HCI, Interactive Media Arts) and geographic regions. All of the evaluators have designed ARGs or other games and simulations incorporating TINAG or have published articles discussing and evaluating TINAG. Recruiting scholars studying TINAG and those with practical experience designing TINAG narratives was essential. In most cases, our experts had done both.

We told the experts via an online survey that we would like their help evaluating a scale to measure TINAG and introduced them to our definition and the three components of TINAG. We then asked them to rate the scale items. Specifically, we asked them to “rate how well the scale items are connected to the three components and to TINAG in general by rating the connection on a scale from 1 to 5, where 1 means that the scale item does not connect to the component at all, 3 means that the scale item somewhat connects to the component, and 5 means that the scale item fits perfectly with the component.” We then presented the expert raters with a randomly ordered list of scale items.

Table 2 Experts: Experience across disciplines and design/evaluation

Expert ID	Discipline	Design Experience	Region
P01	Learning Sciences / Interaction Design	Educational Simulation Design	Australia/North
P02	Education Research	Gamified Learning Design	Australia
P03	Education / Digital Humanities	ARG design / implementation	Europe
P04	Education / Digital Humanities	ARG design / implementation	Europe
P05	Theatre and Performance Art	ARG design / implementation	North America
P06	Interactive Media Arts	Transmedia Producer/Designer	North America
P07	Digital Humanities / Games	Game Design / Evaluation	North America
P08	Digital Humanities / Games	ARG / Transmedia Design	North America
P09	Instructional Designer	Playable Case Study Design	North America
P10	Human-Computer Interaction	Mixed Reality Game Design	North America
P11	Human-Computer Interaction	ARG / Transmedia Design	North America
P12	Interactive Media	Transmedia Designer/Producer	Australia
P13	Human-Computer Interaction	Pervasive Games Design	Europe

We ran a series of statistical checks to check the validity of the items—our first analysis measured whether the item was likely to be associated with TINAG. Participants rated whether the item was related to TINAG. A high mean with a low standard deviation indicates a strong relationship. All the scale items had a median of at least 3. A score above 3 indicates that a scale item was related to TINAG generally. Our second analysis measured whether the item was the highest in the predicted component.

The third and fourth analyses were similar. The third was an ANOVA to verify that variation existed between the components' means, and it checked if at least one component differed from the others. The fourth was an ANOVA with contrast codes to check whether the component of interest differed from all the other combined components. In the final analysis, we ran a pairwise comparison with the item's predicted component and each of the other two components. This final test tells us that the component of interest is not predicting the other components. Based on the expert scores, we refined our measures, added two more, and sent the

measures to experts again. We ran the same tests as before on the second data collection. After our revision, we finalized our 32 item scale in Table 3.

Table 3. Perception of TINAG items

The following statements are about your interaction with the game(s) you just experienced. Rate how much you agree or disagree with the following statements about the simulation(s).

During my interaction...

#	Component	Item
1	Embedded	The interfaces helped me believe in the experience. ○ ○ ○ ○ ○
2	Embedded	I let the experience become part of me. ○ ○ ○ ○ ○
3	Embedded	I played pretend during the experience. ○ ○ ○ ○ ○
4	Embedded	I welcomed becoming a character inside the experience. ○ ○ ○ ○ ○
5	Embedded	I embraced being a member of the experience. ○ ○ ○ ○ ○
6	Embedded	I thought the environment was an extension of my life. ○ ○ ○ ○ ○
7	Embedded	I let my actions be part of the experience. ○ ○ ○ ○ ○
8	Embedded	I accepted that I was part of the experience. ○ ○ ○ ○ ○
9	Embedded	I enjoyed letting myself believe I was part of the story. ○ ○ ○ ○ ○
10	Embedded	I agreed with letting myself feel responsible for the tasks I was given. ○ ○ ○ ○ ○
11	Embedded	I recognized characters as real people. ○ ○ ○ ○ ○
12	Embedded	I allowed myself to belong in the experience. ○ ○ ○ ○ ○
13	Embedded	I presumed my tasks affected people's lives. ○ ○ ○ ○ ○
14	Embedded	I empowered myself to make-believe. ○ ○ ○ ○ ○
15	Influence	I assumed I was a contributor to what was happening. ○ ○ ○ ○ ○
16	Influence	I could change what occurred. ○ ○ ○ ○ ○
17	Influence	Everything was open-ended. ○ ○ ○ ○ ○

18	Influence	The interface allowed me to modify my circumstances.	o o o o o	The interface acted like a television.
19	Influence	My tasks altered the story.	o o o o o	My tasks were just tasks to complete.
20	Influence	I believed my tasks were consequential.	o o o o o	I believed my tasks were inconsequential.
21	Influence	My actions were goal-oriented.	o o o o o	My actions did not have a direction.
22	Influence	I had many choices.	o o o o o	I had few choices.
23	Influence	I had complete freedom.	o o o o o	I had a narrow path to follow.
24	Influence	Characters reacted to what I did.	o o o o o	Characters were unaware of my actions.
25	Real world	Blurred reality and make-believe.	o o o o o	Had a distinct separation between reality and make-believe.
26	Real world	It was an illusion.	o o o o o	It was factual.
27	Real world	I accepted the experience was part of life.	o o o o o	I thought the experience was make-believe.
28	Real world	I felt the other characters were other people.	o o o o o	I felt the characters were computer-generated.
29	Real world	Was non-fiction.	o o o o o	Was fiction.
30	Real world	The interfaces connected me to actual systems in the world.	o o o o o	The interfaces were simulated.
31	Real world	I believed the veracity of the story.	o o o o o	I thought the story was imaginary.
32	Real world	It was easy to believe the experience was real.	o o o o o	It was hard to believe the experience was real.

In addition to evaluating the scale, our panel of experts provided feedback on the overall definition of the perception of TINAG and the process of developing the scale. All the experts agreed with the three main constructs, specifically: that player is embedded in the experience; player influences action; the experience/story is woven into the “real world.” However, several experts suggested that more emphasis and nuance should be placed on the player’s willingness to view their interactions as an integral part of a fictional world, that they not only “accept” that they are taking part in the unfolding story, but that they “*embrace*” their role in it (**P07**). **P05**, **P06**, and **P07** all mentioned that player’s “*willing acceptance*” of the game world leant a fun, performative, “*theatricality*” that distinguishes interactive game play designed to include TINAG

from other immersive experiences. In addition, **P13** noted that the broader idea for designers to keep in mind when developing interactive experiences with TINAG is to enable both players and designers to enter into a social contract where they “*never enter into meta-discussions about the game*,” nor actively engage in player forums, because all player-designer interactions should remain **inside** the fiction. For example, a player could talk to a real person on the phone (as in the ARG, “*I love Bees*”) who is also a gamerunner playing as a character, but neither player nor gamerunner would acknowledge that: each would remain in-character, in-game. In short, while all of our experts agreed with the constructs, they also recommended emphasis on the player’s acceptance of being embedded in a fictional world.

5.3 Perception of TINAG scale evaluation

We evaluated the scale with two samples. The two samples were chosen to get a range of youth, who consume a large portion of game content, and adults. We wanted participants that could participate in a game with physical components and participants from an online environment as to not have a context limited to either. Neither sample was introduced nor expected to have special knowledge in TINAG. The first sample included 138 youth 13-18 (69 females and 69 males) and 11 K-12 teachers (all male) attending a cybersecurity camp at the university. Participants in this first sample self-selected to be part of the camp. During the camp, they interacted with a 45-minute starship simulator with cybersecurity challenges called the ICE (see Appendix B for an image). The simulation was a team-based activity with a captain, science officer, navigator, and other roles. The team fought off enemy ships while trying to rescue a stranded crew from another ship. The starship simulator room looks like a real starship deck with track lighting, swivel chairs, and a large projector screen showing a view into space that responds to the player’s navigation actions. Participants were asked to fill out a survey about the

simulation at the end of camp (within two days of the simulation) through Qualtrics. The questions in the survey can be found in Table 3.

The second sample included 50 adults from Amazon's Mechanical Turk. Participants were recruited from the United States with the subject "Answer a survey about educational games." Participants were paid \$7.50 for 30 minutes. There were 24 females and 26 males. The average age was 40.28, with a standard deviation of 10.66. Each Mechanical Turk participant was randomly assigned to play 15 minutes of one of two games. The first was a series of simple multiple-choice cybersecurity games¹, named Aggie games (see Appendix B for an image), in the form of a horse race and Plinko, a game where a player drops a puck that can fall into multiple buckets, among others. These games were meant to be fun and educational but were not designed with TINAG in mind. The second was a cybersecurity playable case study (PCS) named Cybermatics (Giboney et al., 2021) (see Appendix B for an image), which researchers designed explicitly to include elements of TINAG, though it is a pre-scripted experience. We chose the three different simulations as they had varying degrees of TINAG elements. The ICE was in a physical environment where the players had a lot of control over where in the world the players went (influencing the narrative). Their actions helped save or not a friendly ship. They were given roles to play on the ship before entering the environment (embedding them in a fictional story). In Cybermatics, the player is given ethical dilemmas without clear solutions and interacted with non-player characters in a realistic manner (video chat). They played as themselves woven into a realistic world. After playing their respective games, participants answered the scale items from Table 3 in a Qualtrics survey.

¹ <https://it.tamu.edu/cybercircus/>

Our first task was to verify the convergent validity by performing an exploratory factor analysis (EFA). As not all the items loaded on a factor, we repeated the EFA removing the worst loading factor one at a time. We did this until all items had a loading of at least 0.6 (see Table 4). The removal process left us with the strongest items for each factor.

Table 4. Exploratory factor analysis of items

#	Item	Embedded	Influence	Real world
1	TINAG_interface_believe_in_experience	0.62		
4	TINAG_character_in_experience	0.62		
5	TINAG_member_of_experience	0.91		
7	TINAG_actions_part_of_experience	0.74		
8	TINAG_part_of_experience	0.85		
9	TINAG_belief_part_of_experience	0.68		
10	TINAG_responsible_for_tasks	0.86		
12	TINAG_experience_belonging	0.73		
15	TINAG_contributor	0.71		
21	TINAG_goal_oriented_actions	0.74		
17	TINAG_open_ended		0.69	
19	TINAG_tasks_altered_story		0.74	
22	TINAG_many_choices		0.68	
23	TINAG_freedom		0.86	
6	TINAG_extension_of_life			0.81
25	TINAG_blurred_reality			0.62
27	TINAG_experience_part_of_life			0.87
29	TINAG_non_fiction			0.67
31	TINAG_veracity_of_story			0.60
32	TINAG_easy_believe_experience			0.80

After performing a Cronbach's Alpha analysis to show the reliability of the items (see Table 5), we averaged the items by factor. Averaging the items allowed us to investigate the means of each factor for the three different games in our samples.

Table 5. p-TINAG means and alpha

Factor	Mean	Cronbach's Alpha
1. The player accepts that they are embedded in a fictional story.	4.14	0.94
2. The player believes their actions influence the narrative.	3.59	0.88
3. The player perceives that the story is woven into the real world.	3.25	0.89

We expected that the ICE would result in the highest p-TINAG due to the physical immersion in the room, control over the ship's actions, and the fact that participants took on active roles in the story. We expected the PCS to be the next highest due to the TINAG-oriented design. We expected the Aggie game to be the lowest as it was not designed with TINAG. We only had participants engage with the PCS for 15 minutes to align with how much someone could play the Aggie game without getting bored. The total PCS typically takes 3-4 hours. More prolonged exposure to the PCS may have resulted in different numbers, though the exposure was sufficient to introduce them to the simulation's interface and overall narrative structure and to allow them to accomplish some tasks.

Factor 1, the player accepts that they are embedded in a fictional story, was highest in the ICE and the PCS (see Figure 1). Our pairwise comparisons test shows that the ICE (mean = 4.27, $sd = 0.81$) and PCS (mean = 4.24, $sd = 0.66$) are significantly different from the Aggie game (mean = 3.47, $sd = 0.98$) ($p < 0.001$ and $p < 0.01$, respectively).

TINAG Factor 1

The player accepts that they are embedded in a fictional story.

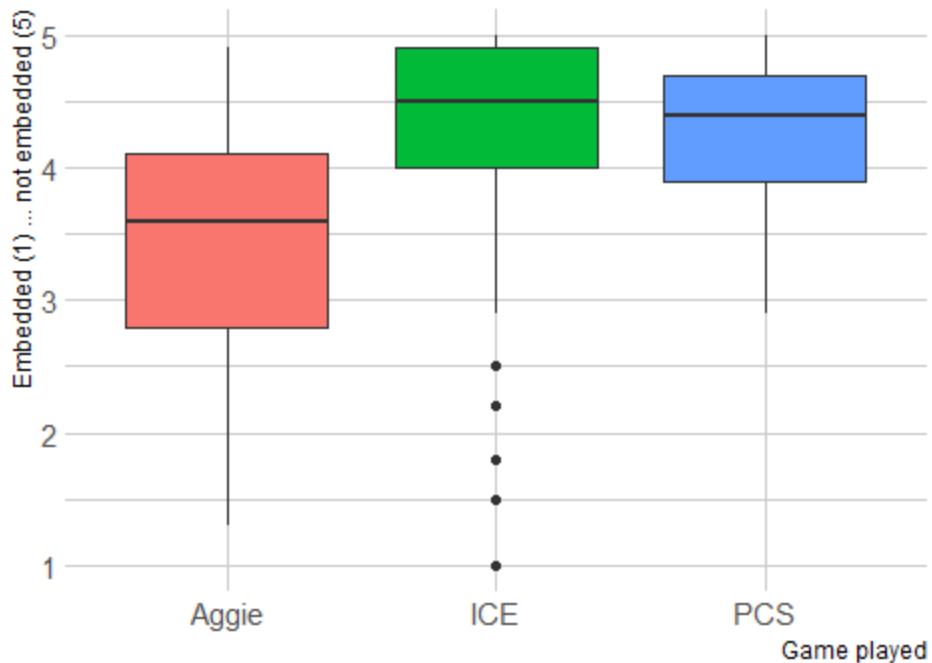


Figure 1. The results of the player accepts that they are embedded in a fictional story across three games.

Factor 2, the player believes their actions influence the narrative, was highest in the ICE (see Figure 2). A pairwise comparisons test shows the ICE (mean = 3.99, $sd = 0.91$) is significantly different from the PCS (mean = 2.82, $sd = 0.95$, $p < 0.001$) and Aggie games (mean = 2.20, $sd = 0.93$, $p < 0.001$) and that they are not significantly different than each other ($p = 0.07$). Because the PCS simulation was a pre-scripted narrative, players' actions in the narrative were more limited than the ICE experience. Thus, the results matched our expectations.

TINAG Factor 2

The player believes their actions influence the narrative.

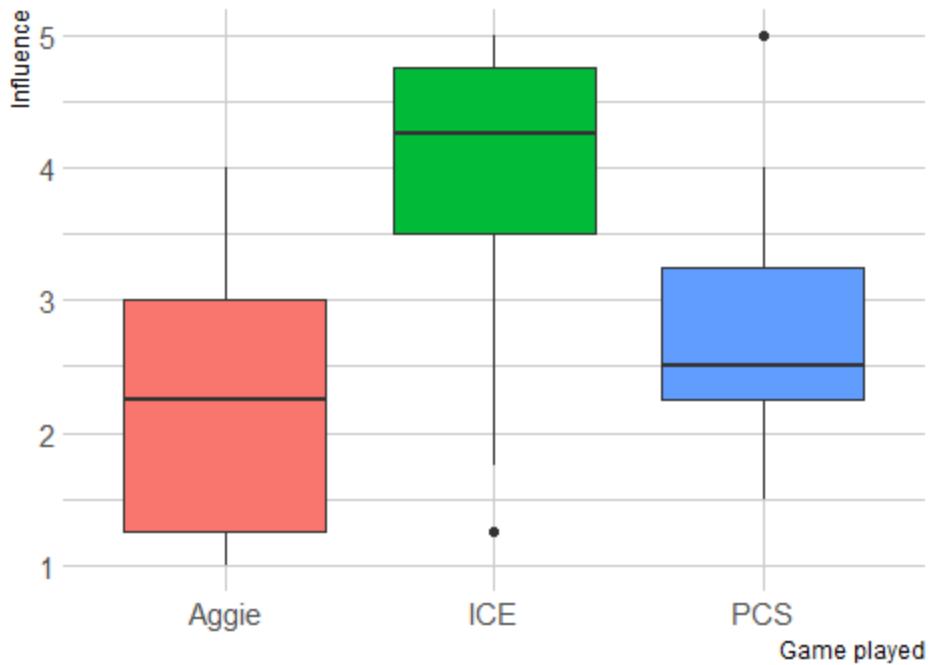


Figure 2. The results of the player believes their actions influence the narrative across three games.

Factor 3, the player perceives that the story is woven into the real world, was highest in the ICE (mean = 3.37, $sd = 1.06$) and PCS (mean = 3.51, $sd = 0.71$) (see Figure 3). A pairwise comparisons test shows that the ICE and PCS are both significantly different than the Aggie game (mean = 2.62, $sd = 0.94$) ($p < 0.001$ and $p < 0.05$, respectively). The result is consistent with our expectations because the ICE and PCS interface are patterned after “real world” technologies. The space control deck of the ICE was fictional yet consistent in the fully immersive design elements that made it feel authentic. The PCS interface was patterned after a

corporate intranet and mimicked an integrated email, group chat, a Linux terminal, and code documentation dashboard that might be typical of professional online workspaces. While both experiences mimicked elements of reality within their sphere, they did not integrate with participants' existing social media accounts, email, or messaging systems, which may help explain why the averages are not higher.

TINAG Factor 3

The story is woven into the real world.

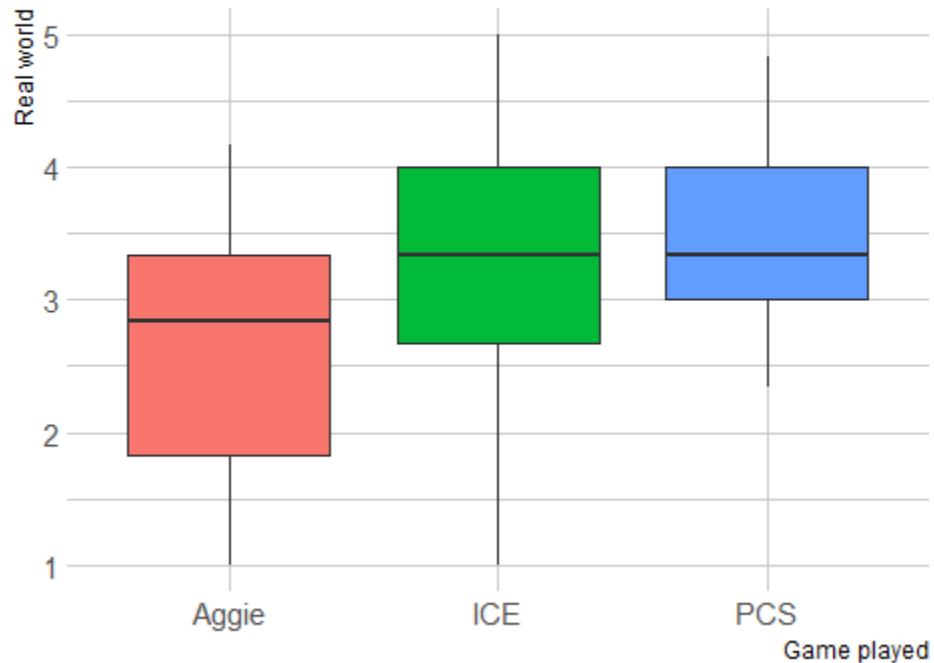


Figure 3. The results of the player perceives that the story is woven into the real world across three games.

6. Discussion

In this section we include our contributions, future research, and limitations.

6.1 Contributions

Participatory narratives that can instill the perception that ‘This Is Not A Game’ have the potential to influence players in profound ways (McGonigal, 2003b). The rich experimentation with participatory narratives over the past 20 years has provided compelling examples of such games. Moreover, applying TINAG principles in other interactive experiences, such as Playable Case Studies (Balzotti & Hansen, 2019), suggests that game makers can effectively use the concept in contexts beyond those initially envisioned. Domains that seem particularly ripe for TINAG integration include those that have people participate as themselves as part of a narrative, such as escape rooms, museum and themepark exhibits, haunted houses, and tabletop exercises. Perhaps the time has come for designers to consider how p-TINAG can fit into completely new participatory narrative genres.

Defining the construct to understand better the techniques that can promote p-TINAG among players is essential. This paper has synthesized data from 50 articles into a single definition of p-TINAG, including three components. Another contribution of this paper is the dataset of definitions and explanations of TINAG, as found in the papers we reviewed and quoted in Appendix A. We aimed to capture the core dimensions of p-TINAG found in explanations of TINAG. However, the wording is more objective and arguably less provocative than many of the explanations of TINAG found in the appendix.

We also developed and validated an instrument to measure p-TINAG. Our instrument evaluation showed that it is sensitive enough to pick up statistically significant differences between games designed with TINAG in mind and ones that are not. Measuring the level at

which participants perceive TINAG allows researchers to identify which game mechanics and aesthetics increase or decrease it. Perhaps most importantly, studies can now compare p-TINAG to outcomes of interest, such as player engagement or educational transfer. Until there is a well-accepted definition and scale to measure the construct, it is difficult to make strong claims about the impact of the TINAG. This paper helps provide such a foundation for future work.

6.2 Future research

Several additional studies can follow as a result of this research. First, our instrument was intentionally meant to measure p-TINAG as an isolated construct separate from other simulation features. It will be useful for future research to study interactions between p-TINAG and additional features that contribute to the overall player experience. Some of these could include interactions with other players, or how invested players are in the overall simulation goals and purpose. Second, as noted in our study, fully completing simulations rather than only playing through them for 15 minutes may have led respondents to perceive TINAG in different, hopefully richer, ways. Additional research could therefore use our scale to measure p-TINAG at the conclusion of simulations or other transmedia narrative experiences. Third, studies could examine which design patterns, such as those identified by Mata (2022), lead to increased p-TINAG in players. Without a p-TINAG scale, it is impossible to know which are most effective and in which contexts. Finally, another possibility will be to continue to refine the p-TINAG scale through additional studies conducted using simulations all designed with TINAG in mind. For our initial research it was useful to compare simulations where TINAG was not an intentional feature with the Cybermatics PCS where it was. But refinements could be made to the scale by comparing more subtle details of scale items as would be revealed through applying it to simulations or experiences that attempt to implement TINAG in different ways.

6.3 Limitations

There are several limitations to this work. The articles we reviewed were limited to those indexed by the databases we searched. We may have missed additional definitions and descriptions related to TINAG. However, the large number of articles reviewed and the consistent appearance of the three components we identified give us confidence in our results. We also do not claim that other researchers would have necessarily come up with the exact definition and three components after reviewing the papers. By making the dataset available, we hope to continue the conversation with others who want to help refine and formalize the Perception of TINAG, or perhaps game- or designer-centric definitions of TINAG. We believe our definition is well justified, carefully thought out, and worth using now. One drawback of having three components to the Perception of TINAG is that a compound construct adds complexity. Sometimes, people may want to implement just one or two of the three components. Indeed, future work may show that only certain of the three components influence some outcomes of interest. Scales that measure each component could help better understand if all three are needed to influence outcomes or just a subset of the three.

Another limitation was that we evaluated the p-TINAG scale for the ICE with a different group of participants than the other two experiences. It was necessary since the ICE happened in a specific physical space, and we did not have sufficient time with students to complete all three experiences. However, the goal of our study was not to definitively evaluate the differences between the three specific games. Instead, it was to show that the scale was viable and sensitive enough to pick up differences given different game designs. In that regard, the studies were sufficient.

Lastly, the two samples do not represent a global population, and to some extent, not even one from the United States. The mTurk sample is from people who self-select to perform tasks and surveys on the platform. Their goal is to finish the tasks as quick as possible. mTurk participants have been shown to be similar to other convenience samples (Aguinis et al., 2021). The camp attendees was a convenient sample for participants in a physical environment. However, it gave us access to a youth population that can traditionally be hard to access.

7. Conclusion

Our goal in this research was twofold. First, we sought to define the Perception of TINAG through a systematic literature review of academic sources, resulting in the definition: *A player's acceptance that they are embedded in and able to influence a fictional story that is woven into the real world*. Second, we developed and validated an instrument that researchers and game makers can be used to measure the Perception of TINAG. This instrument provides measures for each of the three components of our definition, and we show its capacity to distinguish games based on their varying degrees of TINAG elements.

Prior literature has not provided a consistent definition of TINAG, verified by research data. This makes it difficult to compare findings across studies claiming to report the effects of TINAG. Given this lack of consistency, researchers, simulation designers, and transmedia authors interested in applying the principles of TINAG do not have guidance on the most effective actions they can take to increase players' p-TINAG in their work. The definition we have based on literature along with the scale can now be used by researchers and practitioners to measure the effects of their work.

Given the increasing interest in using games and immersive narrative experiences in various settings, the TINAG definition and accompanying instrument to measure the Perception

of TINAG are important contributions to the academic literature. We offer them with the hope that they will allow future researchers to design experiences more intentionally that include this vital aspect of immersion and realism.

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Appendix A. Articles from Systematic Literature Review Used in Analysis

Title	Reference	Quote
A Real Little Game: The Performance of Belief in Pervasive Play	McGonigal (2003a)	<p>In other words, the players actively supported and protected the game's belief in itself. (...) The more a player chooses to believe, the more (and more interesting) opportunities are revealed. (...) Their failure to pursue the Zartman course of action reveals that players were, in fact, respecting a game-reality boundary, even as they played along with the idea: "This is not a game." They clearly had not slipped into genuine belief in the game, for they self-regulated their actions in accordance with what they considered to be "fair play" within a game. (...) Pervasive play...consists of 'mixed reality' games that use mobile, ubiquitous and embedded digital technologies to create virtual playing fields in everyday spaces. Immersive games...are a form of pervasive play distinguished by the added element of their (somewhat infamous) 'This is not a game' rhetoric. They do everything in their power to erase game boundaries - physical, temporal and social - and to obscure the metacommunications that might otherwise announce, 'This is play.'</p>
Storytelling in New Media: The Case of Alternate Reality Games, 2001–2009	Kim, Lee, Thomas, & Dombrowski (2009)	<p>ARGs encourage players to participate in an emerging collective story to motivate particular types of behavior and encourage the formation of social groups. Players participate because they find the story fascinating, and the social network encourages them to continue to participate, team up and work for recognition. Instead of passively witnessing entertainment, players take part and shape their own interactive, collective experience. (...) ARG designers focus very strongly on the story at the heart of the game. They use new media to reveal and shape collective stories, with amazing results. (...) For instance, in one game (<i>I love bees</i>) a participant answered a phone and spoke with the villain of the story, who demanded to know where a valuable character was. Against all odds and to the dismay of all the other participants, the player told the villain. At that point, the entire story that had been created for the game had to be scrapped and re-written (Lee, 2009). This interaction gives the players real-time involvement in the story. ["this is not a game" shown in Figure 1 when describing a key feature of the <i>Beast</i> ARG].</p>
Worlding through Play: Alternate Reality Games, Large-Scale Learning, and The Source	Jagoda, Gilliam, McDonald, & Russell (2015)	<p>ARGs are games that engage in transmedia storytelling (Jenkins 2006). They commonly use the real world as a storytelling platform and distribute clues, puzzles, narrative revelations, and opportunities for play across everyday situations and technologies (Stewart 2006; Kim et al. 2009) (...) ARGs encourage a permeability of the spatial, temporal, and social boundaries in which we ordinarily play through their unique this-is-not-a-game aesthetic used by designers to suggest to players that the shared experience is not a ludic fiction the designers created but rather an extension of the real world (McGonigal 2003).</p>
Alternate Reality Games as Platforms for Practicing 21st-Century Literacies	Bonsignore, Hansen, Kraus, & Ruppel (2012)	<p>Alternate reality games (ARGs) are a new genre of transmedia practice in which players collaboratively hunt for clues, make sense of disparate information, and solve puzzles to advance an ever-changing narrative that is woven into the fabric of the real world. (...) Because of the frequently difficult nature of these operations, the inherently communal aspect of ARGs is essential, where each participant contributes her own unique skill set and her own unique interpretations that aid in the progression of the story as a whole. (...) A successful ARG, then, is not simply the result of an audience doing the right things at the right time; instead, it is a dynamic and mutable interplay between producer and player, one that relies on the overlapping literacies of each. (...) Building upon such frameworks, ARGs adhere to the ethos that "This Is Not a Game." In such a context, reality is privileged over fictionality.</p>
Business Models	Phillips & Martin (2006)	<p>This phrase was originally coined at the start of <i>The Beast</i>, within the game itself, and quickly became strongly associated with ARGs in general. As one of the major differentiators between <i>The Beast</i> and <i>Majestic</i> (see earlier), with the former a runaway success and the latter comparatively a severe failure, the TINAG concept gained a reputation for being core to any successful ARG. The underlying concept was that the game itself must never in any way recognise that it was, indeed, a game - it must consistently pretend to be real.</p>
'This Is Not a Game': Immersive Aesthetics and Collective Play	McGonigal (2003b)	<p>The immersive genre is able to dissolve effectively not only the boundary between "game" and "reality," but also the boundary between "perceived game" and "real game," because the rhetoric of "This is not a game" is inevitably deployed whether something is an immersive game or not. (...) In this sense, it is reasonable to argue that nothing about this virtual play was simulated. The computer-driven alternate reality <i>The Beast</i> created was make-believe, but every aspect of the player's experience was, phenomenologically speaking, real.</p>
Narrative Friction in Alternate Reality	Stenros, Holopainen	<p>In ARGs, the this is not a game -aesthetic is just that, an aesthetic. Players do not actually think that the game is not a game, or that there is no distinction between game and reality. Like actors rehearsing a play, they are quite capable of separating the diegetic "reality" from the</p>

Title	Reference	Quote
Games: Design Insights from Conspiracy For Good	, Waern, Montola, & Ollila (2011)	non-diegetic mechanics of play. They want to ensure that they play it right, and will seek to repair any gaps in the fiction by themselves if given the opportunity.
The puppet master problem: Design for real-world, mission-based gaming	McGonigal (2010)	As I have argued previously about alternate reality games, for example in the 2003 essay "This Is Not a Game: Immersive Aesthetics and Collective Play" (McGonigal 2003), in contrast to immersive artworks that try to create realistic sensory experiences and meaningful interactivity in an artificial setting (the history of this tradition is explored most thoroughly in Oliver Grau's 2003 <i>Virtual Art: From Illusion to Immersion</i>), the immersive aesthetic proposed by ARGs use natural settings as the immersive framework, employing everyday network technologies as virtual reality devices.
This Is Not A Game...	Thompson (2005)	To put it simply, TINAG provides puppetmasters with a philosophy to support their game design. By embracing the ideals of TINAG, puppetmasters are afforded the ability to build a full and complete world that believes that it is as real as our own. It allows players to become immersed in and explore an alternate reality that feels very real despite the, often extraordinary, differences from our own reality. To return to an earlier thought, the TINAG philosophy truly allows players the freedom to play at not playing.
The ABC's of ARGs: Alternate Reality Games for Learning	Olbrish (2011)	TINAG is commonly used to describe the tone of an ARG. The goal in the design is to create an experience in which the players don't necessarily feel like they are playing a game. The actions they take, the decisions they make, and the puzzles they solve shouldn't be extraneous to the storyline. That said, many ARG themes have a more fantastical feel, so the designer's responsibility is to create a game experience that mirrors realistic activities as part of the game play even when the storyline makes it clear that the game is not "real."
This Is Not A Game: Alternate Reality Gaming and its Potential for Learning	T. Lee, (2006) as cited in Piejko (2012)	Similarly, in an ARG you interact with the fictional world through everyday artefacts (email etc) that you use to interact with the real world - there is no special equipment, and no virtual world. The idea is that the gameplay becomes integrated fully in players' lives - both on and offline. It is in this omnipresence that the genre's mantra of 'This Is Not A Game' (TINAG) is cemented.
Revisiting History: Using Alternate Reality Games to Tell a Century-old Tale	Lynch, Mallon, & Connolly (2014)	Players act as themselves rather than assuming the role of a fictional character, which can prove advantageous as it helps blur the lines of reality and fiction and immerse players in a life-like world. This helps strengthen the aforementioned TINAG i.e. the suspension of disbelief that This Is Not A Game.
This is Not a Game: A Guide to Alternate Reality Gaming	Szulborski (2005)	"In fact, one of the main goals of an ARG is to deny and disguise the fact that it is even a game at all. This is what the community of immersive gaming fans and creators embrace as the main principle of Alternate Reality Gaming and what has come to be called the TINAG philosophy, for This Is Not A Game."
Game design for promoting counterfactual thinking	Bonsignore , Kraus, Visconti, et al. (2012)	The ARG's porous boundary between a fictional game world and the "real world" does present challenges. By embedding game play and story seamlessly into existing technologies, ARG designers often strive to "deny and disguise the fact that it is even a game". Known as the "This is Not a Game" (TINAG) ethos by ARG designers and players, it can be the game's primary apparatus for prompting critical, counterfactual thinking and information literacy practices, because players are responsible for distinguishing "truth" from fiction...ARGs ask players to engage with a past, present, or future alternate world that they can influence. Imagining and "living in" an alternate world requires them to look at the world around them critically, constantly asking "what if" questions. (...) Players have a central role in assembling the story world, by collecting, connecting, and sharing the distributed story bits that comprise the game's narrative. (...) ARGs ask players to engage with a past, present, or future alternate world that they can influence. Imagining and "living in" an alternate world requires them to look at the world around them critically, constantly asking "what if" questions.
Promotional Alternate Reality Games	Janes (2017)	TINAG therefore means the ARG denies its status as a game to provide a more immersive experience. (...) Many players perceive TINAG as something performed by the game rather than themselves. It is always important that the game maintains a sense of itself as real even if players prefer to enjoy the fiction in a different, possibly less immersive manner. The ability to jump in and out of the fiction is indeed one

Title	Reference	Quote
(ARGs) and the TINAG Philosophy.		of the pleasures of an immersive ARG. We can perceive TINAG as both something which the audience performs (and has the choice to perform) and a design choice made by PMs. This reflects McGonigal's articulation of a co-created mode of immersive gameplay, but also allows TINAG to become flexible enough to cater to the needs of audiences seeking different levels of immersion in ARGs both promotional and non-promotional, something which the games must embrace if they are to seek broader audiences.
Integrating Realities Through Immersive Gaming	Hunter (2016)	In ARGs in particular, most immersive gestures involve a game aesthetic commonly referred to by the acronym TINAG, for 'this is not a game': a refusal to disclose its own nature as a fiction, instead pretending at every turn to be a manifestation of actual events. (...) The game narratives that players are challenged to piece together often involve frankly unbelievable scenarios, revealing TINAG to be more useful as a perspective on play rather than an inviolable mission to efface the game's fictionality: it is unlikely, for instance, that many players of <i>The Beast</i> thought the game's central conceit, involving a futuristic reality and a mysterious murder accomplished in the year 2142, focused on actual rather than fictional events. Instead, the game became notable for the immersive experience offered by the extensive reach and impressive detail of its narrative and supporting materials.
ilovebees: Playing and Designing in Real-Time	Sheldon (2010)	A core design principle of ARGs is called TINAG (This Is Not a Game). Fact and fiction blur. In-game actions can cause real-world events; and the games can react to those who play them. It's often not possible to differentiate what is part of an ARG, and what isn't.
This Is Not a Game: Violent Video Games, Sacred Space, and Ritual	Wagner (2014)	In other words, such [TINAG] games intentionally spill over from the circumscribed space of the game and into real life, mapping order onto it, lighting the world up with a sense of possibility that works much like religious awe. This spillover can happen through clues for the game that are shared by real life actors, phone calls made to player's cell phones, and 20 IJCS through live group play that intersects with online goals.
Alternate Reality Games: Defining Gender through an Updated Taxonomy	Ruiz-Garcia (2020)	But beyond minimum agreements, the truth is that Alternate Reality Games are a true catalogue of dissensions, discrepancies and slippery slopes where what is defined in consensus is systematically redefined by a new practice: if for some people TINAG means a philosophy to be strictly followed, disguising the game in reality and deceiving the player until the weight of fiction forces the voluntary suspension of disbelief, for others it is nothing more than an aesthetic that governs but starts from an <i>a priori</i> agreement with the players while some people underline its potential to produce changes in the life of the players, speaking at another time of the manifestation of an identity crisis.
Breaking Boundaries: Learning by ARG within an academic conference presentation	Kocher, Rusnak, & Eklund (2010)	One of the most important aesthetics of ARGs is the principle of "TINAG" (This Is Not A Game), meaning that the game tries not to signal its fictional nature in an obvious way. Depending on the game design and the media skills of players, this can result in a blurring of the border between "in game" and "out of game" zones, meaning that participants might not know exactly where the magic circle of the game starts and where it ends.
"I am Trying to Believe": Dystopia as Utopia in the Year Zero Alternate Reality Game	Hall (2009)	This effect of ARGs is at least partly supported by the "this is not a game" (TINAG) mantra that underlies its structure — the game as a game is intentionally downplayed. (...) Instead, players of immersive games might make or receive phone calls, send or receive packages via the United States Postal Service, find hidden messages in films and television shows, and receive emails — all pertaining to the game. But these "real world" methods of participation help to hide the proverbial man behind the curtain, which maintains the TINAG mantra of the ARG.
Playing for real: Designing alternate reality games in learning contexts	Bonsignore (2016)	Known as the "This is Not a Game" (TINAG) ethos by ARG designers and players, it can be the game's primary apparatus for prompting critical thinking and information evaluation practices, because players are responsible for distinguishing "truth" from fiction.
Practical considerations for integrating alternate	Bellocchi (2012)	The TINAG aesthetic requires that players suspend deliberately their knowledge that they are playing a game and instead treat the game as reality. For example, in <i>World Without Oil</i> , players made video recordings of themselves experiencing the oil crisis as if it had occurred.

Title	Reference	Quote
reality gaming into science education		
The Pedagogical Application of Alternate Reality Games: Using Game-Based Learning to Revisit History	Lynch, Mallon, & Connolly (2015)	ARGs blur the lines of reality and fiction, asking players to suspend their disbelief and deem what they are experiencing as real, and asking PMs to create 'real life' (and not game) experiences. This is known as the TINAG mantra.
Alternate Reality Games: Platforms for Collaborative Learning	Bonsignore , Kraus, Ahn, et al. (2012)	By embedding game play and story seamlessly into existing, everyday technologies, ARGs neither acknowledge nor promote the fact that they are games. The lines between "what's real" and "what's not" are unclear, fostering "what-if" interrogation. Known as the "This is Not a Game" (TINAG) principle by ARG designers, it can be the primary apparatus for prompting critical, counterfactual thinking and information literacy practices, because players are responsible for distinguishing "truth" from fiction.
Serious Urban Games. From play in the city to play for the city	Ferri & Coppock (2013)	As a beginning, two key trends will be introduced. The first will be labeled "TIAG/TINAG ambiguity": a semiotic design strategy based on overlapping of different contextual rules aiming at mixing fictional game elements with elements from the real world. (...) this second intradiegetic frame asks players to adopt "the habit of pretending to believe that this is not a game": which we can designate as the This-Is-Not-A-Game (TINAG) system. (...) the ambiguity between TIAG and TINAG expectations in this game exemplifies a powerful semiotic mechanism that may be used for motivating players to undertake certain actions in the real world.
Where the wild games are: Ecologies in Latin American video games	Woolbright & Oliveria (2016)	An interesting phenomenon of this game genre is This Is Not a Game (TINAG), which consists in pretending that the game is real to enhance the experience.
Online recruitment and engagement of students in game and simulation-based STEM learning	Gibson & Grasso (2009)	TINAG "this is not a game" aesthetic, (the verisimilitude, authenticity or epistemic reality of the game).
Place as Media in Pervasive Games	Davies (2007)	Alternate Reality and Immersive Games, considered by some academics and designers to be forms or genres of Pervasive Games, even employ a TINAG (This Is Not A Game) rhetoric, by which they deny their very existence as games. It is this very ambiguity of game to reality that makes these games so compelling and immersive.
This Might Be a Game: Ubiquitous Play and Performance at the Turn of the Twenty-First Century	McGonigal (2006)	To "TINAG" a game now means to deny and to obscure its nature as a game. It is no longer enough to create a game that looks and feels real; it must explicitly claim to be real as well.
Transmedial Storytelling and Transfictionality	Ryan (2013)	Through a convention known as "This is not a Game" (TINAG), the websites that provide clues look as if they were designed for other purposes- in other words, they hide the fact that they are fictional documents created specifically for the game.
The 'Blood on the Stacks' ARG: Immersive Marketing	Donald (2008)	The lack of self-identification as a game is referred to as This Is Not a Game, or TINAG.

Title	Reference	Quote
Meets Library New Student Orientation		
Microcore: A Playable Case Study for Improving Adolescents' Argumentative Writing in a Workplace Context	Hansen, Balzotti, Fine, & Ebeling (2017)	Players of ARGs subscribe to the “this is not a game” (TINAG) ethos, wherein they participate in the experience in authentic ways that make it feel like it is not a game, although in most cases they know it is.
This is not a threat: Conspiracy For Good	Hunter (2015)	This aesthetic, commonly shorthanded as TINAG (for ‘this is not a game’), requires that game designers treat the fictional narratives they deploy as if they were naturally or actually occurring.
Pervasive Games Beyond the Promotional Tools: Approaches of Aesthetic Pervasiveness in Consumption of Experience	Oliveira (2017)	TINAG serves as a useful reminder of the limits of the boundaries of what is reality and what is fiction; it reflects the immersion of players in the diegetic universe created by the ARG. In this temporary suspension, the participant imagines him or herself as a part of the narrative. Such interactive matrices are sensory-cognitive and affective. It is a fictional agreement not formalized by the game, but established in the very act of playing for the player who already knows the interactional dynamics of the ARG. In other words, there is no rule explicitly presented to the players when making such a fictional agreement. The decision to adhere to TINAG is made by the player seeking a totalized experience from the game. The experience of the interactor is directed by curiosity, which is encouraged by the suspense of the narrative (Baroni, 2006). TINAG maximizes the experiences of players, allowing them to surpass the boundaries between reality and fiction, as an agreement between the gamer and the production. This is a commonality between ARGs and pervasive games more broadly.
Acclimating Students To College Campus Utilizing Games	Piejko (2012)	The most commonly found term, or in this case phrase, within the genre of alternate reality gaming is TINAG, or “This Is Not A Game”. Olbrish explains that “the goal in the design is to create an experience in which the players don’t necessarily feel like they are playing a game”... “the designer’s responsibility is to create a game experience that mirrors realistic activities as part of the game play even when the storyline makes it clear that the game is not ‘real’”(Olbrish, 2011). This design method is reinforced since, as mentioned earlier, gamers participating in an ARG maintain their real world identities.
Designing Authentic Cybersecurity Learning Experiences: Lessons from the Cybermatics Playable Case Study	McDonald et al. (2019)	ARGs are unique in their demand for the “This is Not a Game” (TINAG) ethos, wherein all activities related to the game are presented as part of the gameworld, making it easy for players to engage in authentic ways.
Designing Alternate-Reality Games for the Public Library’s Summer Reading Programs	Bonsignore , Hansen, & Kraus (2019)	This is known as the "This Is Not A Game" (TINAG) ethos by ARG designers and players, because their goal is to blur the lines between "what's real" and "what's not".
Gaming practices and technologies in education: Their educational potential, limitations and problems in the	Gilyazova (2020)	ARGs blur the line between the game space and the real-world experience. They do not make it clear where the reality ends and the game begins. Therefore, central to ARGs is the concept known as ‘this is not a game’ or TINAG.

Title	Reference	Quote
world-of-work and world-of-play context		
"The Game Did Not Take Place."	Hook (2016)	This Is Not A Game (TINAG) is a core aesthetic of the medium of Alternate Reality Games, creating a blurred space between the fictitious and the actual. This opens a liminal space between the story world and the real world spaces or events, those that are in-game or out-of-game.
ARG Technology as a Method to Promote Goods and Services	Shemchuk, Komarachev a, Seksetsova, Lobach, & Konovalova (2019)	TINAG – (from English This is not a game). This principle implies that a game does not behave as a game. Each element in the game (website, phone number) shall be functioning.
Gameful Approaches for Computer Science Education: From Gamification to Alternate Reality Games	Hakulinen (2015)	One central concept in alternate reality games is the This Is Not A Game (TINAG) aesthetic that emphasizes the idea that ARGs do not represent themselves as games but they balance between real life and fiction. The idea is not to make the players believe that the game is real but rather to make it easy for them to pretend that it is real. McGonigal calls it the Pinocchio effect, meaning that the players choose to pretend that the story is true even though they actually know it is fiction. In other words, ARGs are trying to make it easy for the players to fall into the immersive fiction.
Tracking the emergent properties of the collaborative online story “dues city” for testing the standard model of alternate reality games	Brackin (2008)	This is Not a Game (TINAG): The ARG motto. It is the key concept by which an ARG itself does not acknowledge that it is a game. It follows that it does not have an acknowledged ruleset for players; and instead relies on the principle that as in real-life, players determine the "rules" either through trial and error or by setting their own boundaries. The narrative presents a fully-realized world in this manner and a new level of immersion through real-world elements.
This Is Not (Just) An Advertisement	Askwith (2006)	TINAG Stands for “This is Is Not A Game.” Is considered one of the defining characteristics of traditional ARGs. Emphasizes the importance of immersion, and insists that ARGs should not acknowledge their own fictional status.
The Playable Case Study: An Online Simulation for Skill and Attitudinal Learning	Winters et al. (2020)	The culture encouraged by these means of interaction is known as “This Is Not a Game” (TINAG), meaning the simulation strives against interface forms that participants perceive to have been fabricated.
Evaluating an Educational Cybersecurity Playable Case Study	Johnson (2018)	The TINAG philosophy dictates that all aspects of the simulation are included as part of the game world itself, ensuring a realistic and authentic player experience.
Beyond the screen: Emerging cinema and engaging audiences	Atkinson (2014)	The ARG is governed by a number of discernable rules and principles, the central conceit being "This Is Not A Game" (TINAG), the philosophy of making everything in an ARG appear real.

Title	Reference	Quote
Alternate Reality Gaming	Labitzke (2014)	The make-believe dimension of the ARG is promoted by the implicit assertion of its authors that "this is not a game" (TINAG). This constitutive formula is an invitation for players to pretend that the game story is real, a pretense that enhances the experience of immersion.
Using Playable Case Studies to Influence Teen Girls' Self-Efficacy and Interest in Cybersecurity	Winters (2019)	The signature characteristic of ARG's is the "This is Not a Game" (TINAG) culture, which allows players to suspend belief that they are playing a game and interact with the virtual environment as if it were real life. TINAG ethos is supported through these authentic, embedded means of interaction, but violated through interactions and interface forms that participants perceive to have been fabricated.
Storyscape, a new medium of media	Blumenthal (2016)	TINAG: An acronym for This Is Not A Game. The implication of reality in a game is related to verisimilitude, and a storyscape's integration into real world interactions.

Askwith, I. (2006). *This Is Not (Just) An Advertisement: Understanding Alternate Reality Games*.

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Appendix B. Screenshots from games

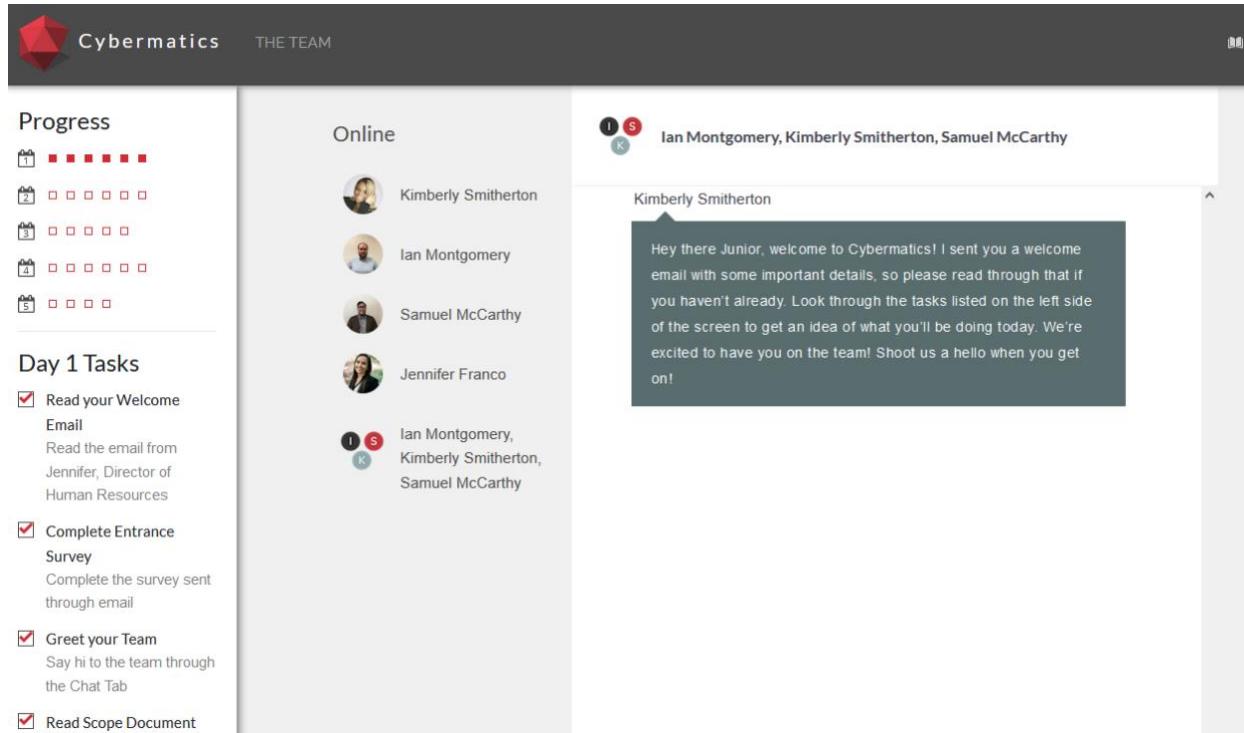


Figure 2. Cybermatics interface

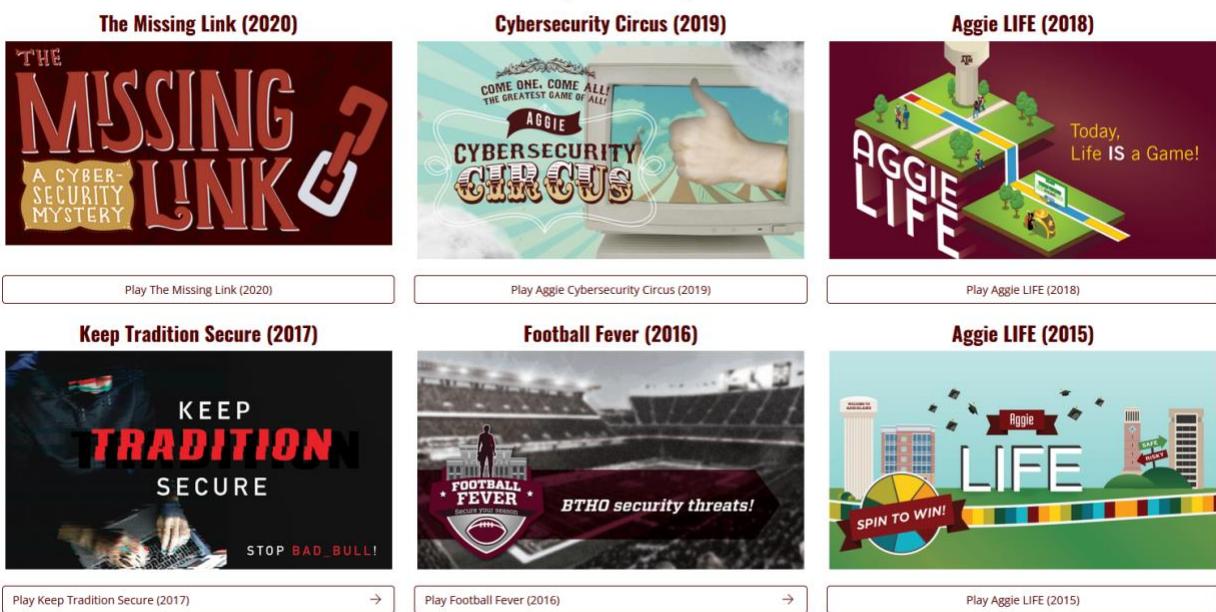


Figure 3. Aggie interface



Figure 4. ICE environment