Fake It to Make It: 
Game-based Learning and Persuasive Design in a Disinformation Simulator

Alex Urban
School of Information Science and Learning Technologies, University of Missouri, Columbia, MO, United States
urbanac@mail.missouri.edu, (231) 838-8444

Carl Hewitt
School of Information Science and Learning Technologies, University of Missouri, Columbia, MO, United States
urbanac@mail.missouri.edu, (231) 838-8444

Joi Moore
School of Information Science and Learning Technologies, University of Missouri, Columbia, MO, United States
urbanac@mail.missouri.edu, (231) 838-8444

Keywords: Social media, video games, digital literacy, persuasive technologies

Abstract
In today’s information-rich world, digital literacy includes the ability to quickly evaluate social media for disinformation. Improving digital literacy involves teaching social media users how to verify posts, but how do we motivate users to actually do this evaluation in their daily lives? Video games may be one way. This article presents research on a social-impact game, Fake It to Make It, which positions players as for-profit disinformation disseminators. Drawing upon the BJ Fogg’s Functional Triad for Persuasive Computers and paying particular attention to the usability and perceived credibility of Fake It to Make It, this research analyzed the game from a persuasive design lens using player-participant data. This was accomplished through screen-captured gameplay as well as interviews and retrospective think-alouds. Additionally, to determine if the game affects abilities to assess claims on social media, pre- and post-intervention media literacy assessments were utilized. With this data, the researchers provide design recommendations to increase usability, influence procedural knowledge on social media, and promote continued gameplay and greater emotional/behavioral impact.

Introduction
How can we motivate social media users to critically analyze potential disinformation? Video games may be one way. This project presents research on a fake news simulator created by designer/developer Amanda Warner, Fake It to Make It, which positions players as for-profit disinformation disseminators. Specifically, this research includes: (1) an analysis of the game from a persuasive design lens using player-participant data, (2) an analysis of participant abilities to assess claims on social media before and after exposure to Fake It to Make It, and (3) design recommendations for greater emotional/behavioral impact and usability.

Problem
A concerning study by Stanford researchers shows that many college students lack the skills to distinguish between legitimate journalism and false, misleading, or satirical “news” (Wineberg, 2016). In addition to helping students spot signs of sensationalized or fictional online “news” articles, it is key that they also recognize how it is spread and its social impact. Yet, how can we motivate social media users to critically analyze potential disinformation when it is easier to simply allow confirming viewpoints into social media feeds? Well-designed
video games may be one way to motivate learners to scrutinize news sources in social media spaces. Consequently, it is crucial to analyze the effectiveness of existing serious games as media literacy tools.

**Background**

*Fake It to Make It* is a self-described “social-impact game about fake news” (Warner, n.d.) This single-player, browser-based game positions players as disinformation “entrepreneurs”; players spread illegitimate news—using techniques such as purchasing bots and manipulating viewers’ fears, anger, and other strong emotions—in order to generate shares, and, thus, profit. The developer of the game, Amanda Warner, states that her hope with the game is to see the actions, attitudes, and beliefs of players change after playing the game. (Warner, n.d.)

*Fake It to Make It* does indeed provide a space for players to identify common themes and techniques used in the dissemination of false or misleading stories. The researchers assert, however, that while Warner’s game was created to facilitate role-playing—a key advantage of persuasive technologies—it may lack the persuasive design elements to motivate players to continue playing the game, let alone promote greater media literacy (Fogg, 2007, p. 141). As such, the following research questions were posed:

**Research Questions**

1. How does *Fake It to Make It* utilize persuasive design elements to motivate sustained gameplay?
2. How does *Fake It to Make It*’s usability influence its perceived credibility as a persuasive media literacy tool?
3. How does *Fake It to Make It*’s current design promote procedural knowledge with claims on social media, i.e. verifying a post’s sources and motivations?

**Theoretical Framework**

Although *Fake It to Make It* may have some principle elements of an educational game (such as explanations for the spread of disinformation and a clear win-state), key features could be redesigned for greater skills transfer (procedural knowledge) as well as behavioral and emotional impact. This research utilizes BJ Fogg’s Functional Triad to determine which features require improvements to turn this simulation into a persuasive game.

**BJ Fogg’s Functional Triad**

This research draws upon BJ Fogg’s concept of captology, the study of computers as persuasive technologies, and the three roles that computers can play in the act of persuasion. They may act as persuasive tools, persuasive media, or persuasive social actors—known as the Functional Triad, also coined by Fogg.

Persuasive tools are generally more aligned with teaching the user to act based on making the target behavior easier; they lead the user through a preset process, condition by reinforcing a target behavior, and use self-monitoring among other techniques (Lin, 2016, p. 661). This study, however, did not gather information on the game as a persuasive tool. Warner herself states that it is “possible that this game could inspire someone to make fake news, but that [she’s] willing to take the risk, because [she] think[s] the potential for positive change in players is worth it.” (Warner, n.d.) As such, the researchers did not attempt to determine if the game promotes the spread of disinformation.

This study, instead, was designed to gain insight into the effectiveness of *Fake It to Make It* as a form of persuasive media and as a persuasive social actor. Persuasive media enables people to explore the causal relationships between a behavior and its outcome, to rehearse a behavior so as to create a persuasive experience with symbolic and sensory information (Lin, 2016, p. 661). As social actors, computers persuade people by rewarding
them with positive feedback, modelling a target behavior or attitude or providing social support. (Lin, 2016, p. 661). See Tables 1 & 2 for the specific elements of persuasive media and persuasive actors that were investigated. These elements were studied to determine (a) if players are motivated to continue playing the game in the first place, and (b) if it has the elements necessary to promote procedural knowledge with claims made on social media.

Table 1: Computers as Persuasive Media (Fogg, 2007, p. 139; Fogg, 2003, p. 91)

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cause-and-Effect Simulations</td>
<td>* Allow users to explore and experiment</td>
</tr>
<tr>
<td></td>
<td>* Show cause-and-effect relationships clearly and quickly</td>
</tr>
<tr>
<td></td>
<td>* Persuade without being overly didactic</td>
</tr>
<tr>
<td>Environment Simulations</td>
<td>* Can create situations that reward and motivate people for a target behavior</td>
</tr>
<tr>
<td></td>
<td>* Allow rehearsal: practicing a target behavior</td>
</tr>
<tr>
<td></td>
<td>* Can control exposure to new or frightening situations</td>
</tr>
<tr>
<td></td>
<td>* Facilitate role-playing: adopting another person’s perspective</td>
</tr>
<tr>
<td>Object Simulations</td>
<td>* Fit into the context of a person’s normal life</td>
</tr>
<tr>
<td></td>
<td>* Are less dependent on imagination or suspension of disbelief</td>
</tr>
<tr>
<td></td>
<td>* Make clear the impact on normal life</td>
</tr>
</tbody>
</table>

Table 2: Computers as Persuasive Social Actors (Lin, 2016, p. 662)

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Cues</td>
<td>Provide visually attractive computing products (interface or hardware)</td>
</tr>
<tr>
<td>Language Use</td>
<td>Spoken language to persuade users</td>
</tr>
<tr>
<td>Psychological Cues</td>
<td>A perceived sense that the computing product has emotions</td>
</tr>
<tr>
<td>Social Interaction</td>
<td>Influence users through interaction with them</td>
</tr>
<tr>
<td>Social Roles</td>
<td>Act in role of an authority, expert or a trustworthy figure</td>
</tr>
</tbody>
</table>

An Emphasis on Usability and Credibility

In addition to drawing upon the Functional Triad, this research investigates the inherent usability and perceived credibility of *Fake It to Make It*. Just as a credible person can influence other people, credible computer products also have the power to persuade. (Fogg, 2007, p. 141) Interactive systems often use what Fogg calls “microsuasion,” subtle advice to help users solve a problem, such as successfully navigating a system; as such, an interface layout and menu options can be a form of advice. (Fogg, 2007, p.141) If *Fake It to Make It*’s interface is a hindrance in performing certain actions, such as completing in-game tasks, its perceived credibility diminishes.

Methodology

To determine the efficacy of the game’s motivational affordances and its effect on procedural knowledge with social media posts, the researchers used (1) demographic surveys (2) a pre-test media literacy assessments, (3) exposure to the intervention, (4) post-test media literacy assessments, and (5) short semi-structured interviews with retrospective think-alouds.

Participants

There were seven participants in this study, all of whom completed the demographic survey. This survey included questions to reveal their familiarity with video games and perceived proximity to disinformation. Questions related to disinformation were adapted from the Pew Research Center (2016). This survey also asked participants to disclose their age, gender, the platform on which they play video games (console and/or mobile), and genre of video games they play. The researchers requested the participants’ self-reported proximity to gaming and disinformation to gain insight into their in-game choices during the intervention, attitudes toward the intervention, and procedural knowledge of verifying claims on social media.

Participant Demographics

Participant age ranged between 19 and 42 years of age (mean = 28.57, SD =8.17). Four participants identified as male and three identified as female. There were four participants that play video games regularly (three played both console and mobile, one played only mobile) and three participants reported that they do not generally play video games. Of the four participants that play video games, there was an assortment of genres, the most popular being first-person shooter, action/adventure, educational and real-time strategy. Regarding disinformation,
all seven participants reported that they come across news stories about politics and government that are not fully accurate. Four participants said they share articles they see on their social media feed without checking the source that produced it (three said sometimes, one said hardly ever); three participants said they never share posts before verifying. All seven participants said they were confident in their abilities to recognize made-up news stories (two said very confident, five said somewhat confident).

Data Collection and Analysis

Pre-Test / Post-Test Assessment of News Literacy on Social Media

This study used an instrument created by the Stanford History Education Group to measure college students’ abilities to assess claims on social media; specifically, participants read a tweet and explain in two short essays why it might or might not be a useful source information. (Wineburg, 2016) Upon receiving the participants’ answers, the researchers labeled their assessments—according to the Stanford rubric—as showing mastery, emerging, or beginning in verification skill.

Although this research on Fake It to Make It was primarily concerned with the HCI elements of persuasive design, it was nonetheless important to determine if the game, as it stands, impacts procedural knowledge. As such, a similar post-test assessment was completed by participants, albeit with a different tweet.

Exposure to the Intervention

Participants were then asked to play the intervention while their in-game actions were recorded using Morae screen-capturing software. These recordings were gathered to aid in retrospective think-alouds. The researchers chose this technique to correlate (1) patterns of use and user intentions throughout the game and (2) flaws in usability due to interface design.

Patterns of use are especially important in investigating the game as a persuasive media; as a persuasive media, a computer can convey either symbolic content (i.e., text, data graphs, icons) or sensory content (i.e., real-time video, virtual worlds, simulation) (Fogg, 2007, p. 137). Connecting the retrospective think-alouds with the time spent viewing specific symbols garnered valuable inferences on the game’s effectiveness as a persuasive media and actor.

As noted earlier, the perceived credibility of the game is especially important in determining its persuasive qualities. Observing participants’ patterns while playing Fake It to Make It allowed the researchers to pinpoint exact moments/features that hinder interface usability. Additionally, the retrospective think-aloud garnered information on the perceived attractiveness of the visual design—an other, often the first, indicator of perceived credibility. (Fogg, 2007, p. 143)

The retrospective think-alouds occurred in conjunction with the post-gameplay semi-structured interview. Independent variables were limited by placing individual participants in the same controlled environment with the same exposure time (30 minutes) to the intervention.

Post-Gameplay Semi-Structured Interview and Retrospective Think-Aloud

This semi-structured interview drew upon BJ Fogg’s Functional Triad and the different roles of persuasive technologies. Participants were asked questions meant to determine which elements of the game could be considered forms of persuasive media or persuasive social actors, and then determine if/which elements succeeded in their respective roles. In addition to interview questions, the researchers conducted retrospective think-alouds, asking participants about their gameplay choices and any perceived usability issues. Lastly, this interview was used to gain further information on participant emotional response to the intervention and to validate that the game experience triggered the necessary qualities of a serious game, such as presence, flow, fun, and engagement. Without these elements, the motivation may be limited and the attractiveness of the intervention is diminished. (Deterding, Dixon, Khaled, & Nacke, 2011, p.79)
With this qualitative data, the researchers conducted a thematic analysis, a method for identifying, analyzing and reporting patterns (themes) within data (Braun & Clarke, 2006). The researchers used the aforementioned roles of persuasive media and social actors (Tables 1 & 2) as themes for analysis including sub-themes for each role: positive response, negative response, and indifferent response. An additional code, usability issue, pinpointed moments that causes gameplay hindrances.

Limitations

With only seven participants, the findings of this study may not be generalizable. The relatively wide range in age and level of education of the participants may also impact the usability for the Stanford tweet assessments. With regard to usability, the researchers did not make use of captured Morae data such as exact time spent on specific scenes or the amount and location of clicks. Lastly, although players were told that the researchers were analyzing the system and not player behaviors, it is possible that the Hawthorne effect may have influenced in-game decisions.

Research Findings

RQ1: Does Fake It to Make It effectively utilize persuasive design elements to motivate sustained gameplay?

Coding Results

The thematic analysis was conducted over 2 hours, 8 minutes, and 22 seconds of recorded audio. Each interviewed averaged a time of 18 minutes and 20 seconds. After conducting the thematic analysis of interviews and retrospective think-alouds, it became apparent that attitudes toward the game varied greatly. In total, there were 58 positive codes, 69 negative codes, and 11 indifferent codes in response to aspects of computers as persuasive media and persuasive social actors. Based on the frequency of these codes, Fake It to Make It’s ability to act as a persuasive media warranted inspection to fully utilize captology in its gameplay. See Tables 3 & 4 for a breakdown of these reactions.

Of course, the demographics of the seven participants—and their reported video game use—could have heavily influenced their positive or negative responses to the game. Just as having more experience engaging in exercise may make the motivational features of the fitness devices more salient, exposure to video games may have influenced user perceptions. (Rupp, 2018, p.83) For instance, the researchers found that non-game players, on average, were likely to have 4.7 more negative codes in their transcripts. Although this study was limited to a small sample size, these findings highlight the importance of ensuring that gameplay features are designed for target audiences. With Warner’s goal of changing player actions and attitudes, redesigning the tutorial aspects of the simulation may aid her non-gamer visitors. (Warner, n.d.)

Table 3: Computers as Persuasive Media

<table>
<thead>
<tr>
<th>Role</th>
<th>Positive Response</th>
<th>Negative Response</th>
<th>Indifferent Response</th>
<th>Total Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cause-and-Effect Simulation</td>
<td>20 (44.4%)</td>
<td>23 (51.1%)</td>
<td>2 (4.4%)</td>
<td>45</td>
</tr>
<tr>
<td>Environmental Simulation</td>
<td>18 (45%)</td>
<td>19 (47.5%)</td>
<td>3 (7.5%)</td>
<td>40</td>
</tr>
<tr>
<td>Object Simulation</td>
<td>12 (41.4%)</td>
<td>15 (51.7%)</td>
<td>2 (6.8%)</td>
<td>29</td>
</tr>
</tbody>
</table>

Table 4: Computers as Persuasive Social Actors

<table>
<thead>
<tr>
<th>Role</th>
<th>Positive Response</th>
<th>Negative Response</th>
<th>Indifferent Response</th>
<th>Total Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language Cues</td>
<td>4 (50%)</td>
<td>4 (50%)</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Physical Cues</td>
<td>4 (25%)</td>
<td>8 (50%)</td>
<td>4 (25%)</td>
<td>16</td>
</tr>
</tbody>
</table>
Psychological cues, social interaction, and social roles did not emerge as significant themes. This is most likely due to simulation not being overly didactic or emphasizing its moral intentions or authority.

Analysis of Fake It to Make It as a Form of Persuasive Media

Cause-and-Effect Simulation.

Cause-and-effect simulations have the ability to allow users to explore and experiment as well as show cause-and-effect relationships quickly (Fogg, 2007, p. 139). Some users responded positively to the exploratory aspect of the game, mentioning the freedom to choose where and how they spread disinformation and exploring just how inflammatory they could be in their gameplay. Many participants, however, described feeling constrained by the sequenced goals presented in the game. As one participant put it, “I didn’t really feel like I was actually in too much control of my own destiny because the goals were so specific…. I just felt like I was following directions.”

With regard to Fake It to Make It’s ability to show cause-and-effect relationships quickly, the animated social media reactions to planted articles received the most positive reactions. There were comments such as, “It's satisfying to see that you're getting the reaction you wanted and it's satisfying to know that you're playing people successfully.”

Despite the positive responses to the social media animation, there were a number of negative codes associated with the quickness of showing cause-and-effect relationships. Many participants reported issues understanding cause-and-effect with in-game elements, such as “not fully understanding how to meet the objectives.” The first and most apparent indication that a player was unable to meet their goal comes right after the social media impact animation, but it does not indicate why the player was unable to reach their goal. Likewise, one participant reported not understanding why their articles were successful: “[I] don’t really get any reason why people click on [my] site.” The animation simply says that the player was successful without indicating why. Although there is the option to view Additional result details located on the right-hand side of the page, not a single participant selected this drop-down feature. They, instead, focused on the language cues from the simulated guide.

Environmental Simulation.

Simulated environments immerse users with sound and images in order to (1) create situations that reward and motivate people for a target behavior, (2) allow rehearsal for a target behavior, and (3) facilitate role-playing or adopting another person’s perspective (Fogg, 2007, p. 139).
An interesting finding of researching this game as an environmental simulation surrounds the in-game motivations. Participants are introduced to the game by creating an avatar and selecting a specific goal to strive for. As different players had different proximities to gaming, the researchers prompted the player to choose the hardest goal in the game—raising $2000 for a car. By choosing one of the less challenging goals, the exposure to the intervention could have ended before 30 mins. During the interviews, the majority of players mentioned rarely thinking of this goal as it seemed unattainable and one mentioned not even realizing there was a larger goal. There are two potential explanations for this. First, asking users to choose the most difficult goal restricted participant agency and, thus, demotivated them. Secondly, diminished prominence of the goal on the user dashboard and the lack of language cues to motivate users toward that goal may have influenced their reactions. Instead, users tended to focus on “getting the likes and money.”

Object Simulation.

According to Fogg, object simulations have the key advantages of (1) fitting into the context of a person’s normal life, (2) being less dependent on imagination or suspension of disbelief, and (3) making clear the impact on normal life.

Conceptually, participants stated that the game was representative of normal life on many different levels. Some mentioned the realism of the article headlines. Others noted the techniques used by disseminators. Two participants gameplay also represented their perspectives to bias and race in the U.S.: “Personally, I chose a white male each time I purchased a bot. Who are they going to listen to the most? This game represents America.”

Although the game, as a concept, may have fit into the context of the participants’ normal lives, there were aspects of the game that participants felt were overwhelming dependent on imagination or suspension of belief. Four out of the seven participants specifically mentioned that it would have been helpful or entertaining to see “what the actual articles look like.” As one participant stated, “I never felt in any real way that I was making a website.” Another mentioned, “I expect to know what [my] ‘news’ site looks like currently.”

RQ2: How does Fake It to Make It’s usability influence its perceived credibility as a persuasive media literacy tool?

Although the majority of players expressed their enjoyment with the game, there were usability issues that frustrated some players. After observing 3.5 hours of participant gameplay and comparing interview data—specifically 24 coded responses related to usability issues—the researchers suggest that Fake It to Make It may have usability issues causing cognitive overload. For the purposes of this study, the researchers adhere to Mayer & Moreno description of cognitive overload—the processing demands evoked by the learning task exceeds the processing capacity of the cognitive system. (2010, p. 45) Although the researchers can only infer based on observation and thematic analysis, cognitive overload may potentially occur in this game due to (1) split-attention effect and (2) an overabundance of text and crowding of information.

It is important to note that out of the 24 usability issue codes noted during interview analysis, 21 came from players who reported that they do not regularly play video games. Although the researchers cannot verify the information seeking skills of the participants, it is important to consider as those regular game players may perform more efficiently at information search and information retrieval. (Deza, 2016, p. 28)

Split-Attention Effect

Split-attention effect refers to the increase of cognitive load due to two or more sources of information that must be processed simultaneously in order to derive meaning. (Sweller, Van Merrienboer, & Paas, 1998) Although this effect was proposed in relation to instructional design principles, it applies to the experiences of the participants in this study; it occurred most frequently when participants were still learning the gameplay mechanics, specifically during the fourth goal of the game: Have an article that has earned at least $10. Players are required to complete four out of the five in-game steps for planting disinformation, which occurs down a series of drop-down panels on the left-hand side. While players do this, their disinformation submission information populates on the right.
During observation, it was noted that the “Review and Submit” drop-down panel was often clicked more
than once; the player may have expected to be able to submit their article from the final drop-down panel. According
to one participant, “I would lose track of where I was. Like, I would go through these steps on the left-hand side and
then, oh, actually to plant, I had to go to the right-hand part of the screen. [And] that part was lower on the screen so
I had to scroll down. I guess I was confused by the arrangement.” The remaining two participants with limited
gaming experience noted this issues between the left and right sides of the screen as well: “It took me a little while
to figure out you could join other groups. I was just stuck on the left-hand side.” “I never got all the way to the third
button [to create a new profile, on the right]. So I don’t know why I didn’t notice that.”

Figure 6: The current design of the game forces players to process information simultaneously on two separate
sections of the interface.

Overabundance of Text

Four out of the seven participants mentioned that the interface of the game was either “too busy” or
contained too much text. The amount of text seems to be specifically related to the prompts or instructions between
gameplay goals: “And then I realized I didn’t read the instructions too much because… [it was] just too much text.”
“I just make assumptions about what’ll be there. So maybe I didn’t take the time to slow down and read it.” In
addition to the amount of text mentioned, there were also general sentiments about navigating the screen and the
number of options available. As one participant put it, “The screen was a little busy. It wasn’t super intuitive.”

RQ3: Does Fake It to Make It’s current design promote procedural knowledge with claims on social
media, i.e. verifying a post’s sources and motivations?

The researchers did not find any substantial changes between pre- and post-test literacy assessments
following the rubrics provided by the Stanford Education Group. Additionally, correlations between demographic
data and test results did not emerge. The pre- and post-test questions asked the participants to review a tweet’s
credibility based on the source and the intended audience. In order to achieve mastery on the Stanford rubric, the
respondents must identify the political motivations behind the source and evaluate the validity of the data—such as
that the data presented in the tweets come from politically motivated polling firms. However, the game-play did not
appear nuanced enough to support such refined views of disinformation and social media. The pre-test revealed five
participants were already at the emerging level according to the rubric. Additionally, one participant was at the
beginning level and one participant’s response was already at the mastery level. After taking the post-test, four
participants remained at emerging and the beginning participant’s response did not change. The participant with a
mastery score, however, dropped to emerging, and one emerging score dropped to beginning. Although, the
researchers can provide conjectures as to why these scores dropped—fatigue after using the simulation, less readily
apparent political motivations in the second tweet, feeling rushed for time—they cannot currently verify why these
scores dropped.
Design Recommendations

Recommendations for Increasing Persuasive Features

In order to motivate users to continue to play Fake It to Make It and, thus, perhaps, influence player attitudes and behaviors, the researchers suggest the following design recommendations.

Cause-and-Effect Simulation Recommendations

To accelerate understanding of in-game actions, the researchers recommend that future versions make greater use of language cues and clearer indications of results after an article plant. For example, the player’s chosen avatar could explain why they succeeded or failed: “Nice work. You matched incendiary language the article with the rhetoric used by Orange Party supporters in this group!” or “Snooze! This is a Purple Party social media group. Why are you posting articles about cats?” This may aid in guiding novice players through initial gameplay.

Although participants mentioned the anticipation of seeing social media reactions, the effects of their in-game disinformation campaign could be emphasized. First, the reaction animations may become redundant. As one participant put it, “I stopped paying attention to them and just clicked out of the reaction space and quickly started making more articles. That was more fun because you could just see your money totals going up.” The player, in this instance, is seeing their in-game money growing, but they are not seeing the societal impact of their activities. According to Fogg, cause-and-effect simulation allow the user to vicariously experience the effects of their decisions. (2007, p. 66) Future iterations of the game could increase the visual elements and show impact beyond the reaction comments. For instance, if an article goes viral, the player may accrue more ad revenues, but it comes at a real-life cost for others: an outburst of political violence, the tearing apart of a family, etc. Via text the game does show some consequences (such as an individual losing their job due to citing a player’s viral article), but the lack of physical cues—such as an animation—limits its impact. Witnessing the visceral effect of gameplay actions in this safe simulation may bolster the importance of verifying claims or news spread via social media.

Environmental Simulation Recommendations

Future iterations of this game should consider applying greater prominence to the goals of the game (e.g. purchasing a car) and situating it within context. Examples could include animated cut-scenes between tasks that include language that emphasize the importance of reaching a certain amount of money. These cut-scenes could use psychological social cues such as humor, personality, feelings, or empathy to try to motivate players to continue spreading disinformation (Fogg, 2003 p.91). For example, is this car needed to so the main character can drive their kids to school rather than them walking through a hostile neighborhood? Is it for the wild summer vacation on the coast of the Mediterranean? Additionally, the more visually attractive the cut-scenes are to the target audience, the more likely it is to be persuasive. (Fogg, 2003 p.94) These scenarios could be based on the player’s chosen avatar and, thus, increase the role-playing element of the game.

Object Simulation Recommendations

One way to increase the likelihood of transferring virtual behavior to the real world is to incorporate a virtual component into a real-world situation. (Fogg, 2003, p. 77) The game’s current design allows users to create or generate a site name, choose a logo, and then determine the amount of in-game money they would like to invest in making the site more credible. Adding the ability to see the front-end aspects—such as the websites the user creates and the profiles they purchase—may increase the realism of the game and thus advance Fake It to Make It as an object simulation. This could also situate it within the context of the player’s life as a social media consumer.
Recommendations for Increasing Usability

Design Recommendations to Reduce Split-Attention Effect
As the left-to-right navigation to plant articles may have increased extraneous cognitive load, the researchers suggest that future iterations of Fake It to Make It apply the gestalt principle of continuation. This should be applied to the drop-down panels that use four of the five functions for submitting an article. In fact, as one participant said, “Instead of having all this information on the right side, you could have just one smooth scrolling type screen.” This idea of one “smooth scrolling screen” is representative of player expectations of the gestalt principle of continuation; we follow and “flow with” lines (Interaction Design Foundation, n.d.).

Design Recommendations to Reduce Overabundance of Text and Additional Navigation Issues
For remaining extraneous cognitive load issues, the researchers recommend applying Mayer’s Cognitive Principles of Multimedia Learning (2017). Although the game does follow the cognitive principle of pre-training before each goal, providing the option to view information on key terms or features before having to work with them, the dual processing of large amounts of text and visuals is a hindrance. Following the modality principle, future iterations of the game could present information or instructions about a graphic verbally rather than as text so that learners can listen and refer to the graphical interface. (Mayer, 2017)

Applying the signalling principle, also purported by Mayor, would benefit players. Signalling includes vocal cues and/or visual cues to aid the selection and organization of important information, especially for learners with low prior knowledge. (Mayer, 2017) Currently, the only signalling principles readily apparent is the prompt for users to select the Help icon for more information about copying articles. Signalling could include animations, even something as simple as marquee effect highlighting a certain feature of the interface. For example, this would help players realize that each goal on the right-hand side of the screen may be clicked for even greater information.

Figure 8: Currently, the text in Goals box seems static with no indication of interactive capabilities.

Recommendations for Procedural Knowledge

Increasing Manipulation during Article Writing
After the player achieves certain goals in Fake It to Make It, they unlock the option to “write” articles to plant on social media. The simulation prompts users to write hyperbolic headlines and attach tags to make the story more believable, dramatic, or in-sync with a trending topic (e.g. veterans are being mistreated, a certain celebrity has died, etc.). The game allows players to add tags for increased believability (such as citing a verified resource), but it does not allow direct handling of, let alone show, concrete examples of manipulated information. The game should give the player actual statistical data about a topic and allow the player to alter it to fit a story they are about to share. With this additional game-play option, players may surpass the emerging level of the Stanford assessment and reach the mastery level.

Manipulation for Profit vs Manipulation for a Cause
The game situates the player as someone who profits from spreading targeted disinformation in the U.S. As the introduction screen reads, “You might not care about American politics, but you can still use its drama to profit.” Limiting the goal to be strictly monetary, however, may not aid individuals to be better equipped for verifying politically motivated information manipulation. In addition to the in-game goals that already exist, other game-play options could have players focus on a particular political purpose such as shifting the political leanings of a county during an election. This added level of detail has more real-world implications of how news is manipulated to push a specific narrative for a specific cause. This contextualized goal, if combined with the aforementioned object simulation recommendations, will provide more nuanced examples of disinformation, thus, potentially, increasing the procedural knowledge of the player.
Implications for Functional Triad and Human-Computer Interaction

In 1996, BJ Fogg coined the term captology, and, in 2003, he expounded on the Functional Triad in his book *Persuasive Technology: Using Computers to Change What We Think and Do*. Since its inception, the Triad has received sharp criticism, ranging from ethical concerns to the incorporation of ‘categorical’ or definitional errors that do not stand up to theoretical scrutiny. (Atkinson, 2006, p. 173) First, although it is true that conscious as well as unconscious biases can seep into the product design, Warner undoubtedly makes her intentions clear at a time when media literacy is sorely needed. Second, the Functional Triad may have categorical errors—such as the term medium needing to be replaced with simulation—but these considerations do little to impact the use of the Triad as an examination tool in this study. In fact, its flexibility has led to its resiliency. The Triad allowed the researchers in this study to examine two forms of persuasion in the game: (1) *Fake It to Make It*’s motivational affordances to promote continued gameplay and (2) the impact of the game’s procedural rhetoric—its ability to “represent process with process,” which “only procedural systems like computer software” can accomplish. (Bogost, 2007, p.14)

Conclusions

*Fake It to Make It*’s Warner’s hope is that “by making players more aware of how and why fake news is written and distributed, that they will be more skeptical of what they encounter in the future.” (n.d.) A video game, with its ability to simulate an environment and show cause-and-effect relations, is an appropriate medium to consider for this goal. This study has shown that although *Fake It to Make It* provides an environment for some exploration and entertainment, there is room for improvement as a cause-and-effect, environmental, and object simulator. The researchers suggest providing quicker, more poignant feedback, greater emphasis on in-game goals, and including more realistic elements. Additionally, by drawing upon the cognitive principles of multimedia learning and reducing split-attention effect with gestalt guidelines, the usability—and thus credibility—of the game will increase. Lastly, although *Fake It to Make It* provides a glimpse at disinformation as a means for wealth, it does not expound upon the motivations and minute techniques used by politically motivated actors. By doing so, procedural knowledge with social media claims may increase as well. With these recommendations, *Fake It to Make It* may become a useful—and fun—persuasive game.

References


