10. The Present of Persuasion: Escalating Research into Persuasive Game Effects

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Abstract

The process of validating persuasive games involves demonstrating that such games are changing or reinforcing specific sets of attitudes in their players. The first wave of validation efforts consisted of simple effect studies in which a full game was compared to other persuasive media or straightforward control conditions. While this led to the conclusion that some persuasive games did indeed 'work', it did not afford generalizations on the viability of gaming as a persuasive medium. We describe these first efforts before showing how subsequent studies are evolving from determining the effects of individual games to testing player-oriented experiential models accounting for multiple persuasive mechanisms. Our conclusions draw on psychological and media-psychological theories of persuasion to offer a roadmap to validating persuasive games.

Keywords: validation; effects; attitudes; persuasion; players

Many types of persuasive games have been discussed in the chapters of this volume. Some of these digital games are small and text-based and played in a browser window, while others are multisensory immersive simulations designed to envelop the player completely. Despite their differences, they share a common goal of intending to change *attitudes* in players: The idea behind their development has been to affect players' beliefs, opinions, and knowledge on topics that are separate from the game itself (De la Hera, 2017; Jacobs, 2016). Naturally, this has led to research (e.g., Gerling, Mandryk, Birk, Miller, & Orji, 2014; Gustafsson, Bång, & Svahn, 2009; Peng, Lee, & Heeter, 2010; Ruggiero, 2015) aiming to establish if these games actually achieve this goal: Do persuasive games really change players' attitudes? Results so far

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bode well for the medium; with a few exceptions, many of the persuasive games that have been tested have small but noticeable influences on how players think about an assortment of topics. These changes are mostly tested in the short term (e.g., Peng et al., 2010), showing that players think differently directly after playing than they did before doing so, although some investigators also examined changes in the longer term (e.g., Ruggiero, 2015). Despite the promising start, there is a long way to go before the viability of games as a persuasive medium can be established conclusively. In this chapter, we will summarize the advances made in persuasive game effect studies thus far and describe the direction that research is—and should be—heading in the near future. We will start by introducing the concept of an effect study and how this has been applied to persuasive games.

Beggars can be choosers: total effects of persuasive games

Digital games are different from books in terms of how they are perceived by the general public. As an abstract concept, a book is thought to stimulate the imagination, improve language skills, or even support coping in times of tragedy (Koopman, 2011). Digital games, however, are generally seen as playful devices offering nothing but entertainment. What is more, digital entertainment games have been accused of making their players violent (Ivory & Kalyanaraman, 2009), presumably in the same way that television was thought to 'rot the brain'. Currently, this negative perception is weakening, probably because of the growing familiarity with different game genres, including non-violent ones, and the penetration of all kinds of digital games in all levels of society (Bourgonjon, Valcke, Soetaert, de Wever, & Schellens, 2011; Kneer, Jacobs, & Ferguson, 2018). Thankfully, interest in the effects of games beyond their promotion of violent behaviors has grown steadily over the years, and a budding knowledge base has been formed for effects ranging from positive and general (Granic, Lobel, & Engels, 2013) to title- and topic-specific learning outcomes (DeSmet et al., 2014).

Despite being about as old as games themselves, persuasive games have until recently received comparatively little attention. Indeed, many of the classic games of yesteryear have messages that are simply not acknowledged by many of their players (Flanagan, 2009). This is perhaps why testing the effects of such games is a relatively new phenomenon; the first published forays into the attitudinal effects of persuasive games are less than a decade old at the time of writing (Alhabash & Wise, 2012; Barthel, 2013; Peng et al., 2010, among others). These studies attempt to answer a very basic question

that spawned from the early resentment and trivialization of digital games: Do persuasive games even work? As newcomers to (mediated) interventions that require complex design decisions and can, in some instances, demand exponential budgets, persuasive games, much like other serious games, needed to be proven to work to be taken seriously (Siriaraya, Visch, Vermeeren, & Bas, 2018). The first wave of effect studies therefore had the mission to identify the effects of games *in toto*, often by running participants through the game as a whole or several key moments in it (Van 't Riet, Meeuwes, Van der Voorden, & Jansz, 2018), or by letting them play for as long as they wanted (Jacobs, 2016). In such studies, the games were off-the-shelf or ready-made experiences, such as *Darfur is Dying* (Ruiz, York, Stein, Keating, & Santiago, 2006) and *My Cotton Picking Life* (Rawlings, 2012). The results of these studies indicate that, in most cases, persuasive games really do affect the way their players think, both in the short term (Kampf & Cuhadar, 2015; Peng et al., 2010) and weeks after play has finished (DeSmet et al., 2018; Ruggiero, 2015). As with any kind of mediated intervention, other studies reported a lack of effects or effects confined to specific game elements (Soekarjo & Van Oostendorp, 2015; Van 't Riet et al., 2018).

The researchers studying whether persuasive games 'worked' based their claims on empirical, quantitative testing of the *attitudes* held by players. In most cases, this involved asking players to agree or disagree with written statements that indicate a specific stance toward an issue. This kind of self-reported attitude testing is highly flexible when compared to more objective measures like the implicit association test (used by Gerling, Birk, & Mandryk, 2014; Gutierrez et al., 2014; and Shaw, Crosby, & Porter, 2014), as it allows the researcher to match the measurement to the specific topic. Persuasive games deal with diverse topics and even vary greatly in what they focus on within a topic area (Jacobs, Jansz, & De la Hera, 2017); indeed, in all but a few cases, it is not particularly fruitful to try to gauge the effects of games with more general measurements. In cases where there is not already a testable criterion or an attitudinal benchmark that the game is meant to achieve, we encourage researchers planning to test a game to determine what its *attitude goal state* is (Jacobs, 2017). The attitude goal state is linked to the game's design, describing the attitudes that a game is built to convey to its players. While a game could theoretically have widespread attitudinal and broader effects, a persuasive game can only be validated in terms of how its *intended* attitudinal effects are actually realized in players. If the attitude goal state cannot be obtained from the game's designers, it can be reverse-engineered through play-tests. This involves exploring the game, analyzing what it shows and tells the player, and also determining

the kind of decisions it enables the player to make and how it responds to those decisions. In addition, expert testing with designers can contribute to understanding some of the more complex features of the game's design, although such testing is not necessary to approximate the attitude goal state in relation to its realization in actual play.

After the attitude goal state is established, researchers can try to match existing attitude scales to this state, as was done with the 'Attitudes toward the Homeless Inventory' in the game *Spent* (Ruggiero, 2015) and the 'Justification of Verbal and Coercive Tactics' scale (Slep, Cascardi, Avery-Leaf, & O'Leary, 2001) for games on dating violence in our own work (Jacobs, 2017, Chapter 6). In many other cases, however, the game's message is idiosyncratic, making it difficult for it to be reliably covered by any one attitude scale. In cases like this, it is best to design a proprietary scale with several subscales, deriving items from other validated scales whenever possible. In the case of *My Cotton Picking Life* (Rawlings, 2012), the attitude goal state consisted of attitudes with regard to modern-day slavery and how players can be empowered to curb it, as well as harsh working conditions among cotton pickers in Uzbekistan (Jacobs et al., 2017). Testing the game's effects in comparison to a YouTube video on the same topic, we found that the game and video proffered roughly the same message when it came to slavery and empowerment but that the game was better at conveying the intensity, severity, and endless nature of the actual labor involved in picking cotton. If a unidimensional scale had been used, this effect might have been overlooked. Of course, proprietary scales are generally less reliable than validated scales, which makes it necessary to enforce rigorous standards (Ruggiero, 2015). Scales should be factor-analyzed, tested for reliability, and shared whenever the study is reported to enable other researchers to replicate the study or simply to see whether the scale does indeed match the attitude goal state.

The conscious and targeted application of games as persuasive experiences is part of an emerging tradition of using digital games for purposes beyond entertainment (De la Hera, 2017). Given the novelty of this approach, many persuasive games compete with interventions that make use of older, more established media. This can be seen in the design of effect studies: persuasive games are often compared with persuasive texts (Gutierrez et al., 2014; Peng et al., 2010; Ruggiero, 2015; Soekarjo & van Oostendorp, 2015), videos (Jacobs, 2016), or a combination of these (Steinemann, Mekler, & Opwis, 2015; Van 't Riet et al., 2018). Studies that replace the traditional no-treatment control group with this kind of alternative stimuli can only determine the discriminant validity of such games, meaning that they can only prove

whether a game works better than other media rather than establishing the absolute effect of a game by itself. Moreover, the aforementioned unique messages that are expressed through the full experience of a persuasive game are more often than not different from those found in other media, warranting a careful matching of competing stimuli for any effect study (Jacobs, 2016). Studies with a no-treatment control (e.g., Barthel, 2013; DeSmet et al., 2018), or those that employ both separately (Jacobs, 2017, Chapter 6; Ruggiero, 2015) are arguably better suited to answering the question of whether persuasive games work, while studies with alternative interventions present a more realistic picture of the added benefit that using a game might have in a world where individuals are flooded with persuasive attempts daily throughout their lives.

The results of studies into games as complete experiences have so far yielded important insights, though their primary contribution has been to provide varying levels of proof that games do indeed work as tools of deliberate persuasion. Apart from supporting conclusions to use or not use games in specific campaigns, this research serves the purposes of those making games in general by conferring legitimacy to the medium as a whole. Unfortunately, basic effect studies do not necessarily help designers make more persuasive games—results on a game as a whole are not generalizable to other games with different designs, nor do they allow researchers to find the underlying mechanisms of the persuasive impact of games. This is why researchers have started identifying elements within games that determine their impact.

Inspecting the gift horse: comparing the effects of persuasive games

Knowing that some games persuade while others do not is not productive for individual designers or other stakeholders of games that have not yet been validated. As demonstrated by Van 't Riet et al. (2018) and in Chapter 12 of this volume, *Against All Odds* (UNHCR, 2006) failed to produce lasting change when compared to reading a text or watching a video. This could mean any of three things: 1) that the game was not persuasive because of flaws in its design; 2) that each of the studies performed only let participants play small parts of the game and so the persuasive effect was diluted; or 3) that the players in different settings did not appreciate the use of games to discuss this highly contentious issue. While there will always be confounds even in the most rigorous designs, meaning that the second and third possibilities

can never be wholly discounted, a few researchers have worked to determine the first possibility more conclusively by comparing different versions of a persuasive game.

One of the more comprehensively explored avenues within differentiated designs of persuasive games was charted by Rita Orji and colleagues (Orji, Mandryk, Vassileva, & Gerling, 2013; Orji, Nacke, & Di Marco, 2017; Orji, Vassileva, & Mandryk, 2014). Espousing a view of human-centered design, she proposed matching the gameplay and experience of persuasive games to the personalities of their players; for example, players scoring high on an extraversion scale would enjoy games that allow them to personalize their experience more than those scoring high on a neuroticism scale (Orji et al., 2017). In cases where a target group shares a definable personality trait, this kind of knowledge can be a boon. However, most persuasive games are meant to communicate an issue to an audience that is as wide as possible (i.e., with varied personalities and interests). In this case, the personality-oriented approach might end up needlessly constricting the player base. Moreover, the evidence provided in these studies is based on self-reported perceptions of the impact of persuasive mechanisms. The insights delivered by Orji et al. (2017) are therefore most interesting for designers hoping to cast a wide net, appealing to the largest number of players, although more tangible evidence is needed to determine which kind of game is most effective. Moreover, any relationships need to be established on a causal level. Rogers and Weber's investigation (2018) of the effect of controversy in persuasive games on a willingness to donate, for example, could not determine whether the controversial aspects of the games played were actually causing changes in behavior.

We applied a model to categorize the persuasive mechanisms employed in games (De la Hera, 2019) to a selection of freely available online persuasive games (Jacobs et al., 2017). The findings helped constrain the search for which broad-stroke design decisions we should compare; although persuasive games are unique and deal with a wide range of issues in their own unique ways, they tend to rely on narratives or procedural rhetoric (Bogost, 2007; see also this volume) to bear most—though certainly not all—of the persuasive heft. Following up on this distinction, we sought out two persuasive games that offered the same message but focused either on narrative persuasion or procedural rhetoric (Jacobs, 2017, Chapter 6). The two games were *Power and Control* (Sain, 2011) and *Another Chance* (Another Kind, 2015), which were published by Jennifer Ann's Group (Jennifer Ann's Group, n.d.) to combat teen dating violence. Both games were judged on the same criteria and so dealt with the same topic. Whereas *Power and Control* focused on

reflecting the issue of abuse in relationships through its approach-and-avoid gameplay, *Another Chance* played much like a 16-bit adventure game and instead tried to persuade players with its narrative of a girl realizing that her boyfriend's behaviors are abusive. Interestingly, despite the fact that *Another Chance* took around three times as long to play as *Power and Control*, the two games were equally effective in changing attitudes when compared to a control game. This study was not an attempt to control for every aspect of a game but a first comparison of different games with the same message. Supported by scales that measured whether players felt persuaded by the storyline and whether the gameplay reflected the real-world situation it depicted—a linking process termed cognitive identification by Williams and Williams (2007)—we concluded that, when properly implemented, narrative and procedural forms of persuasion might end up having effects that are so similar as to be considered equal.

More direct effect studies that tweak certain aspects of a game while controlling all others have been published, although they are rare. In these cases, researchers would need to either cooperate with designers who are working iteratively (as explained by Van Broeckhoven, Vlieghe, & De Troyer, 2015) or simply design and manipulate the games themselves. One of the first instances of the latter was the game *Birthday Party* (Gerling, Mandryk, et al., 2014), which was developed to change attitudes toward people with disabilities. By asking participants to play with either a special wheelchair-based control system or a traditional controller, Gerling and colleagues found that the way players interact with a game—outside of the gameplay itself—can moderate the game's attitudinal effects. A very recent study examined whether news games—those that are concerned with a current event that often have strong persuasive elements—would benefit from a certain graphical style over others (Lin & Wu, 2018). When comparing a more cartoonish presentation to a style that is considered to be more adult, no differences emerged in the knowledge gained by participants. However, the more professional presentation style led to a greater appreciation of the game, which in turn affected behavior (in particular, donation behavior). Clearly, individual aspects of a game experience can influence elements of the experience in such a way as to add to or detract from a game's persuasiveness.

One of the principal factors of persuasive games that is perhaps most worthy of study is the procedural rhetoric that they offer (Bogost, 2007). This concept is, however, hard to conceptualize, let alone operationalize. As it amounts to letting the system and rule-sets in a game speak for themselves, procedural rhetoric is dependent on games' interactivity. Seeing interactivity as vital to games, Peng et al. (2010) manipulated it in their early study.

They found that playing the game *Darfur is Dying*—as opposed to simply watching pre-recorded footage of it—led players to be more willing to help refugees. Surprisingly, though, they also found that levels of enjoyment were greater for non-interactive conditions than interactive ones. Another study on the same game by Steinemann et al. (2015) also found a difference between interactive and non-interactive conditions, with the interactivity making players more appreciative of the game's story. Clearly, then, the manipulation of interactivity has knock-on effects on players' experiences apart from procedural rhetoric.

Working with game researcher Stefan Werning, we sought to alter the procedural rhetoric of a game without affecting its interactivity (Jacobs, 2017, Chapter 7). This was done in a way that was similar to how more traditional persuasion research is performed, namely by presenting weaker or stronger arguments. The game *My Cotton Picking Life* (Rawlings, 2012) amounts to a scripted representation of picking cotton in a field as a boring, endless task. It was redesigned to allow players to finish their daily picking quota in a manner of seconds. Care was taken to hold the game's story constant—the game would just go to a new day once players finished their quota—and retain its original atmosphere, visuals, and sense of tactility. The change in feedback whenever the pick buttons were clicked was, in this sense, solely responsible for the strongly diminished attitude change among players of the new 'easy' mode. Since procedural rhetoric is the main element that sets games apart from other types of intervention, this conclusion can be quite informative for anyone planning to develop their intervention as a persuasive game. These experiences persuade players in a way that no other medium or interpersonal interaction does. At the same time, much work is left to be done before we can say that procedural rhetoric is stronger than other types of persuasion, as such a conclusion would imply a systematic comparison of different rhetorical strategies within the same persuasive game.

Tearing open the black box: the mechanics of game-based persuasion

We now know that games do have a persuasive impact in plenty of instances, and some work has been published to determine what elements in a game's design can cause it to be effective. However, persuasive games are such rich, multimodal experiences that theoretical arguments for *how* these games work on an individual level are quite scarce. Thankfully,

with the benefit of an established field of persuasion research (Perloff, 2014), investigators did not need to reinvent the wheel when it came to predicting the mechanisms of attitude change from persuasive games. The theory of planned behavior (Ajzen, 1991) made it possible to focus on attitude change over behavioral change, which is comparatively harder to gauge (DeSmet et al., 2018). More specific theories, such as stages of change (Slater, 1999), identification (Walz, 2004), and perspective taking (Gutierrez et al., 2014), have already been applied to game-based interventions. However, the current body of research on the effects of persuasive games is lacking support from psychological mechanisms, as many of the attempts to apply such mechanisms to games thus far have not involved adapting them to the unique experience of playing a game. So, even though games do indeed have narratives, they are not always linear storylines with spots of gameplay in between. Their interactive nature often causes these narratives to have to be able to bend to the will of the player, leading to different outcomes. In *Depression Quest* (Quinn, 2013), the narrative is even intertwined with the procedural rhetoric, as narrative options are diminished as the protagonist's depressive state worsens. Steinemann et al. (2017) have shown the importance of linking narratives to interactivity, but their study results in new questions such as: How would players react when their agency in narratives is threatened? Or: How would they respond to being presented with a situation that has no positive endings (see also Ruggiero & Becker, 2015)?

Researchers need to identify how advances in game studies can help connect the effects of games with theories of attitude change. In our research, we have attempted to link the elaboration likelihood model (Petty & Cacioppo, 1986)—which describes how our ability and motivation to consider a persuasive message can influence how we are persuaded by arguments and other elements of a message—to the changes in procedural rhetoric described in the previous section (Jacobs, 2017, Chapter 7). Aside from changing the gameplay, two further conditions were created. In the first, players were exposed to much the same version of *My Cotton Picking Life* as originally created (Rawlings, 2012), although diegetic music was added in the form of a radio playing a local song. In the second condition, several additional aural and visual stimuli were added, which were carefully selected to not interfere with the messaging of the game: flocks of birds flew over the play area; white noise was overlaid on the game screen; the on-screen buttons were animated; and the music was played at a higher volume with more distortion. These changes were meant to increase the players' cognitive load (Vyvey & Núñez Castellar, 2016) which, according

to the elaboration likelihood model, should have caused them to be able to focus less on the central arguments presented by the game. This study was intended to shed light on how players elaborate on non-verbal, gameplay-based messages, hypothesizing that this type of argument is as reliant on elaboration as traditional, verbally delivered arguments. Unfortunately, the manipulation did not make the players report higher cognitive loads. This meant that, in our case, there were virtually no differences between conditions with a low and high cognitive load. We hope that this study can be replicated with a different game, while improving on the manipulation of the cognitive load. The possibilities for such a manipulation abound (e.g., presenting time-limits, increasing the difficulty, further increasing the visual and aural effects, forcing players to do a secondary task at the same time), although each manipulation can introduce confounds to the concurrent procedural rhetoric manipulation. Meeting this challenge and finding evidence to support either a traditional mechanism of elaboration or even that the procedural rhetoric is absorbed on a different level than the verbal rhetoric would certainly underline the validity of games as a persuasive medium.

There are more open questions when it comes to the mechanisms of persuasive games' effects. Principally, we believe that there is a near-universal misconception, both in industry and academia, that the most important thing for any serious game to be is fun to play (Jacobs, 2017, Chapter 8). This is a non-sequitur that does not exist in any other medium and is likely the result of the position that games are for children—and worse, for children who can only be tempted with the promise of vacuous entertainment. Seen in this way, the primacy of enjoyment is a vestigial element in the perception of games—much like external perceptions of why we play violent games (Kneer et al., 2018)—that is set to wane over time. In our research, we found that there are other elements to the experience of a persuasive game that are measurable and offer far better predictive validity of the appreciation of these games. Just as we would not watch *Schindler's List* (Spielberg, 1993) to have a fun time, we would not experience abuse in a game by the Jennifer Ann's Group (Crecente, 2014) with the expectation that the gameplay would make us smile. Instead, these experiences offer us the chance to experience meta-emotions like eudaimonia and promote our intellectual, virtuous growth as individuals (Oliver & Bartsch, 2010). Translating this into a short scale for persuasive games, we found that eudaimonic appreciation was related to the attitudinal effects of different persuasive games, while the relationship with hedonic enjoyment was much more sporadic (Jacobs, 2017, Chapter 8).

Conclusion

Over the past few years, researchers have taken the first steps toward validating persuasive games. This chapter aimed to present the results of this emerging tradition. It also showed that much is still unknown about how players relate to persuasive games, why they play them, and how such games change players' attitudes. Researchers need to escalate their investigations beyond direct comparisons of full persuasive games to control stimuli. This is a daunting task, as persuasive games offer an even wider variety than non-interactive audiovisual stimuli, let alone text. There is a deep psychological entanglement of the players, the game, and the context in which they play that is rife with insights waiting to be uncovered. Future investigations should include personality characteristics that directly relate to persuasion—such as the need for cognition (Cacioppo & Petty, 1982)—and link them to the effects of different persuasive dimensions (De la Hera, 2015) as well as where and in what company a game is played (De Grove, van Looy, Neys, & Jansz, 2012). The full picture that such studies would generate can help tie models of persuasion into what makes games unique. Most importantly, however, it can help game designers make more involving games that allow players to reach their own well-supported conclusions on any relevant issue.

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