Edited by Teresa de la Hera, Jeroen Jansz, Joost Raessens and Ben Schouten

Persuasive Gaming in Context

Persuasive Gaming in Context

Persuasive Gaming in Context

Edited by
Teresa de la Hera
Jeroen Jansz
Joost Raessens
Ben Schouten

Amsterdam University Press

Every effort has been made to obtain permission to use all copyrighted illustrations reproduced in this book. Nonetheless, whosoever believes to have rights to this material is advised to contact the publisher.

Table of Contents

Part III   Assessing the Effectiveness of Persuasive Games

1.   Persuasive Gaming: From Theory-Based Design to Validation and Back. An Introduction

Teresa de la Hera, Jeroen Jansz, Ruud Jacobs, Ben Schouten, Joost Raessens & Martijn Kors

Abstract

This chapter offers a multifaceted reflection on persuasive gaming divided into three pillars: persuasiveness, design, and validation. The first section on *persuasiveness* is a critical review of previous and current persuasive gaming theory and analysis. It argues that the contemporary gaming landscape needs to expand theoretically and presents a multidimensional persuasive approach as one way in which this can be done. The following section on the *design* of persuasive games looks at research on design principles, which are the defining characteristics of persuasive games. The final section on *validation* discusses existing studies on the effects of persuasive games and the case-based assessment of the impact of new games.

Keywords: procedural rhetoric; persuasive games; persuasive game design; persuasiveness; persuasive gaming effects

Situating research on persuasive gaming

The rapid developments in new communication technologies constantly create new opportunities in the media and entertainment industry. These developments have facilitated the popularization of digital games, which has translated into an exponential growth of the game industry in the last decades. Digital games have become part of our daily routines thanks to the ubiquitous presence of mobile devices, the simplification of game

interactions (for example through the use of touchscreens), and the diversification of genres that better respond to the different variety of expectations of the 2.6 billion players worldwide (Entertainment Software Association, 2018, p. 2). This is what game scholar Jesper Juul has dubbed the 'casual revolution', 'a breakthrough moment in the history of video games' (2010, p. 2). The ongoing *ludification of culture* has transformed the domain of play and games into something that is much more than a temporary and somewhat trivial escape from the seriousness of life (Raessens, 2014).

The ubiquitous presence of digital games has resulted in an expansion of the applications of these games from mere entertainment purposes to a great variety of serious purposes. Although Clark Abt published his book *Serious Games* already in 1970, it was only from the early years of the 21st century that research on the serious applications of digital games gained special relevance and attention from academics (Mateas & Chen, 2006; Ritterfeld, Cody, & Vorderer, 2009). Among serious games, defined as digital games used for purposes beyond mere entertainment (Mateas & Chen, 2006), one can find educational games, games for health, political games, advergames, ecogames, games for change, and many others. This innovative application of digital games in the past two decades has not only gained the attention of game developers and players but has also become the focus of interest of scholars. Since then, funding agencies have also invested a significant amount of resources in supporting the study of the application of serious games in many different domains.

In this edited volume, we narrow the scope of attention by focusing on what game theorist Ian Bogost (2007) has called 'persuasive games', that is, gaming practices that combine the dissemination of information with attempts to engage players in particular attitudes and behaviors. This implies a focus on the—mostly positive—effects of persuasive games as intended by their designers. As an aside, this also means that this volume does not address the negative effects often attributed to entertainment games, for example regarding violence and addiction (Elson & Ferguson, 2014; Kneer, Jacobs, & Ferguson, 2018; Raessens & Goldstein, 2005).

Bogost's *Persuasive Games: The Expressive Power of Videogames* (2007) was not the first attempt to explain the persuasive potential of digital games. While authors such as Gonzalo Frasca (2007) had already theorized on how games could be used and were being used for persuasion, Bogost's book became a landmark because it was seen as the starting point of the procedural school that often used a utopian discourse about the possibility of designing digital games to change the attitude or behavior of players, including discourses supporting the idea that digital games could change
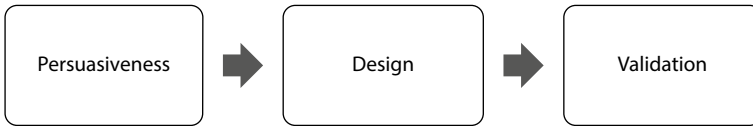
Figure 1.1: The research pillars Persuasiveness, Design, and Validation, and their subsequent relations.

the world for the better (McGonigal, 2011). Bogost's optimistic perspective on the persuasive potential of procedural rhetoric—that is, the capacity of digital games to persuade players through rule-based representations—was criticized by Sicart in his paper *Against Procedurality* (2011), which initiated a vivid academic debate about the persuasive potential of digital games.

This volume aims to contribute to this debate by offering a multifaceted reflection on persuasive *gaming*, that is, on the process of these particular games being played by players. The purpose is to better understand when and how digital games can be used for persuasion by further exploring persuasive games and some other kinds of persuasive playful interaction as well. The book critically integrates what has been accomplished in separate research traditions to offer a multidisciplinary approach to understanding persuasive gaming that is closely linked to developments in the industry by including the exploration of relevant case studies. As combining the contributions of different theoretical traditions has been rather uncommon in game studies, this volume intends to cross boundaries in research and practice.

We organized the contributions to this volume under three pillars, with each pillar amounting to an accumulation of expert knowledge (see Figure 1.1). The first pillar on *persuasiveness* critically assesses previous and recent theory and research on persuasive gaming and proposes a multidimensional persuasive approach as a theoretical extension that is needed in the contemporary gaming landscape. The second pillar, *design*, highlights research on design principles, which are understood to be the defining properties of persuasive games. The final pillar on *validation* incorporates both previous research on effects of persuasive games and the case-based evaluation of new games and their impact. The arrows in Figure 1.1 indicate the relationships between the three pillars, underlining that ideas about persuasiveness inspire design principles of games and that these games can be validated with respect to their impact. The feedback arrow shows that in the ideal case, the results of validation research are incorporated in theories about persuasiveness and in game design principles.

In the following sections we will discuss each pillar in detail.

Persuasiveness

The study of persuasive communication began in ancient Greece and has a history of more than two millennia. The ancient scholars Plato and Aristotle framed rhetoric as a technique for oral persuasion, which was followed by the notable Roman scholars Quintillian and Cicero. It was Cicero who described rhetoric as a 'speech designed to persuade' (quoted in Burke, 1969, p. 49). Many centuries later, the development of mass media facilitated the broadening of the concept of rhetoric beyond oratory.

Although the focus of the study of persuasive communication has been predominantly focused on verbal strategies, the development of film, television, and visual advertisement have favored the expansion of the term. The philosopher Kenneth Burke (1987-1993) was the first to acknowledge the persuasive potential of nonverbal domains. 'Wherever there is persuasion', he wrote, 'there is rhetoric. And wherever there is "meaning", there is "persuasion"' (Burke, 1969, p. 172). Burke's work gave rise to the study of persuasiveness in many different domains, which also increased interest in visual rhetoric, understood as the art of using imagery and visuals persuasively.

Research on how audiences are persuaded by audio-visual media content is currently dominated by Petty and Cacioppo's Elaboration Likelihood Model (1986). Although a few game scholars have used ELM in their research (Malliet & Martens, 2010), most scholars have employed a different approach by identifying the unique properties of digital games that require special attention in order to understand the way they convey meaning (e.g., Bogost, 2007; De la Hera, 2013; Ferrari, 2010; Frasca, 2007). In Bogost's classic volume (2007), procedural rhetoric was presented as the prime mechanism responsible for successful game-based persuasion.

Since the publication of Bogost's first two books (2006, 2007), procedural rhetoric has been the focus of attention of many scholars working on persuasive strategies in digital games (e.g., De la Hera, 2017; Ferrara, 2013; Ferrari, 2010; Flanagan, 2010; Heide & Nørholm, 2009; Seiffert & Nothhaft, 2015; Swain, 2007). What interests proceduralists is the way in which symbol manipulation of processes that initially appear unexpressive may result in a higher order of expression. However, some authors have identified shortcomings in these proceduralists' assertions (De la Hera, 2019; Heide & Nørholm, 2009; Nelson, 2012).

In his book, Bogost (2007) claimed that digital games are a unique medium for persuasion not comparable to traditional media. This claim was criticized

by authors such as Miguel Sicart (2011), who doubted the unique persuasive potential of procedural rhetoric taking into consideration the interactive nature of digital games and the fact that the player is required to make decisions and create a personal experience.

The section on persuasiveness in this volume starts by revisiting the debate about the value of procedural rhetoric in order to build upon the lessons learned and further develop our understanding of persuasiveness in relation to digital games. Predicting back in 2007 a near future in which games would be a primary tool for persuasion, Bogost critically reflects in Chapter 2 upon his predictions in this volume, acknowledging that not everything happened in the way he expected. Sicart also takes a different approach in his contribution (Chapter 3) in which he critically reflects on the playful design of mobile applications and the implications that this design approach has for our daily practices and routines.

This volume also delves into the middle-ground perspective of game scholars such Mark J. Nelson, who has stated that the 'proceduralism and play-centrism debate is too simple' (2012, para. 2) and that the two approaches are complementary. This approach is the starting point of Chapter 4 in which De la Hera and Raessens argue that additional perspectives are necessary to understand how persuasive games convey their intended meaning. Scholars defending this approach state that although procedural statements are useful in understanding how meaning can be authored in the rules of the game, it is important to acknowledge that other persuasive dimensions can complement procedural rhetoric in conveying meaning through digital games (see Figure 1.2) (De la Hera, 2019).

A similar approach is taken by Kaufman and his colleagues in Chapter 5 in which they defend the idea that game-based interventions are enhanced when the persuasive message of the game is not the focal point of the design but rather is interweaved within the game's content or the context of play. Moreover, if we aim to understand how persuasive games can realize the outcomes intended by their designers, it is clear that not only the context in which games are played but especially the role that players take in the process of persuasion should be taken into consideration. In an earlier publication, Raessens (2009) emphasizes this by using the concept of *dispositif* as developed within film studies to argue that the process of making meaning within digital games 'is really influenced by the ways in which configurations of technology, user positioning, desire, media text, and context take shape in specific games' (2009, p. 507).
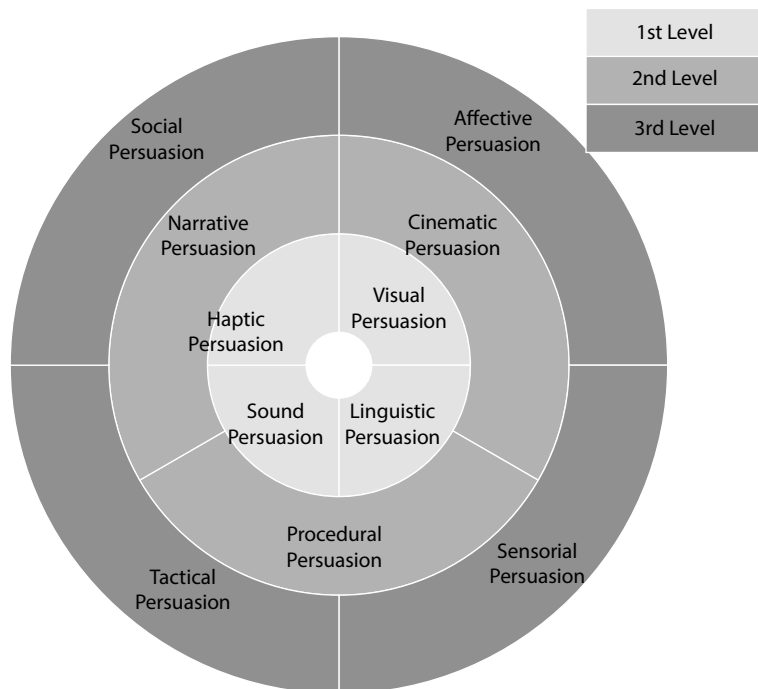
Figure 1.2: Theoretical model: persuasive communication through digital games (from De la Hera, 2019).

Design for persuasive games

In this section we will shift our focus from a descriptive to a more prescriptive perspective by discussing how we can design for persuasive gameplay. Modern game design is often guided by the influential MDA model that formalizes three distinct layers: *Mechanics, Dynamics*, and *Aesthetics* (Hunicke, Leblanc, & Zubek, 2004). The *Mechanics* are the game affordances that invite specific players' actions and behaviors and are determined by the algorithms and representation of data in the game. The *Dynamics* concern the interactive processes unfolding between the game and the player while the *Aesthetics* entail the player's experiences elicited by the game, including his or her emotional responses.

Although game design generally prioritizes the game's mechanics, the MDA model helps us to understand that designing a game does not only entail considerations on the level of mechanics: 'By moving between MDA's three levels of abstraction, we can conceptualize the dynamic behavior of game systems' (Hunicke et al., 2004, p. 5) that results in player experiences (aesthetics).

Figure 1.3: Design, using virtual reality, for empathy-arousing persuasive games (from Kors et al., 2016).

Here, we will redress the MDA balance towards a focus on the player, which is consistent with the argument developed in the previous sections of this volume. Consequently, the emphasis is on the dynamics and aesthetics, which prepares the ground for developing a design theory as well as a design practice that aim to translate player experiences into design requirements. The designer and the player each have a different perspective. The game designer takes the mechanics as the starting point, cascading to the other layers. The player's perspective focuses on the level of aesthetics, that is, designing a game that is appealing for its players. In between is the layer of dynamics where, arguably, the perspectives of designer and player meet (Ferri, Hansen, Heerden van, & Schouten, 2018).

Our focus on the active or engaged player also has consequences for game design that aims to realize persuasive goals. As research underlines, persuasive communication is a process of learning and internalization (Fogg, 2003; Ryan & Deci, 2000) rather than a process of simply transferring a message (e.g., a thought, an idea, an opinion) to an audience. When we translate this to the context of game design, we see that processes of persuasion are shaped predominantly at the level of dynamics. When we subsequently take the aesthetics into account, we must acknowledge that user experiences can be different from player to player and are often dependent on players' characteristics, while they may also be influenced by the context of play (Hansen et al., 2019). These multiple influences are taken into account

in game design practices such as profiling, user studies, play session and monitoring practices, and also lately by allowing more open design strategies (e.g., game jams), where the lines between designer and player blur. Game designers Zimmerman and Chaplin (2013) have already observed that co-design and participatory design strategies were becoming increasingly popular among designers. Designing persuasive games with the aesthetics in mind also spurs the exploration and employment of novel interactions and technologies, thus changing the persuasive game design landscape over the past decade. With the advent of mobile computing, ubiquitous computing, and immersive technologies, persuasive games are no longer bound to the computer screen. For instance, designers and researchers have a keen interest in exploring persuasive games as part of the smart home (Gamberini et al., 2012) or the use of virtual reality to have players feel and understand the struggles of another (Kors, Spek, Ferri, & Schouten, 2018).

Another example is the virtual reality (VR) game *A Breathtaking Journey* discussed in Chapter 6 (see Figure 1.3) in which players virtually inhabit the perspective of a refugee to gain a better understanding of their situation and conditions. Designer Martijn Kors and his colleagues describe how the details in the design enabled players to deeply engage with the role of people seeking refuge in Europe. It is a mixed-reality game that is meant to arouse empathy for refugees. The VR game *A Breathtaking Journey* was developed in a context of civic engagement, initiated by Amnesty International. The collaboration with Amnesty aimed to explore how interactive media could help motivate people to change or reinforce attitudes towards human rights-related issues. As a future design opportunity, the designers identify empathic relationships with one's own avatar as a still understudied possibility for persuasion.

The rapid development of game design, including its practices and principles, is reflected in the variety of methodologies used. Game designer Lindsay Grace (Chapter 7) argues that designers should go beyond the artifact of the game by taking different levels of persuasive play into account. Grace distinguishes three levels of persuasion: micro, macro, and meta-persuasion. At the first level, games and playful interactions can be seen as artifacts that aim to employ persuasive play. At the level of macro-persuasion, Grace looks at the cultural and societal impact of games and play in fostering citizen participation, for example, or supporting the formation of a community. Meta-persuasion is the least obvious of the three, originating partly as the byproduct of macro and micro-persuasion in applications of games and play in non-play contexts, such as in the construction of fake news or the application of gamification strategies in a commercial environment.

Where Grace presents different levels of game design, Menno Deen concentrates in Chapter 8 on the process of co-design. He argues that producing a phenomenological narration of the design process enables designers to reflect on design decisions, which may result in suggestions for possible strategies for designing persuasive games at the micro level. Moreover, this methodology illuminates implementation issues that can only be identified in the actual co-design practice. Using co-design is particularly helpful in designing games that deal with contemporary problems related to gender identities, LBGHT issues, and the abuse or discrimination of minorities, for example. Deen's argument is underlined by discussing the design process of VilDu?!, a game or therapeutic tool for sexually abused children that is used in clinical practice.

In the final chapter of this section on design, Sun Joo Ahn develops yet another perspective on the context of games by presenting immersive virtual environments (IVEs). She discusses the importance of three different characteristics of virtual reality for persuasion: presence, shared experiences through perspective-taking, and compressing or accelerating time under virtual conditions. The research in this chapter can be linked to the case of *A Breathtaking Journey* because it shows that the result with respect to the impact of embodied experiences in IVEs are promising.

Validating the effects of persuasive games

Persuasive games are designed with the purpose of realizing particular goals. In Bogost's classic volume (2007), procedural rhetoric was presented as the prime mechanism responsible for successful game-based persuasion. Since then, De la Hera (2019) has developed a theoretical argument in favor of a wider set of persuasive dimensions (see Figure 1.2) that were also used to disentangle the design of some games to determine their persuasive properties (Jacobs, Jansz, & De la Hera, 2017). In the past decade, a handful of validation research tracks have emerged to investigate the theoretical claims made. These tracks are concerned with the games' effects on players, aiming to answer the question: Do persuasive games actually 'work'? In other words, do persuasive games succeed in realizing their intended outcome?

Most validation researchers embedded their work in the established field of persuasion research (Perloff, 2017; Petty & Cacioppo, 1986), conceptualizing persuasion as a process of cognitive elaboration in which the game's message is reflected upon consciously to a lesser or greater degree. Research on the outcomes of persuasive games has generally focused on a change in players'
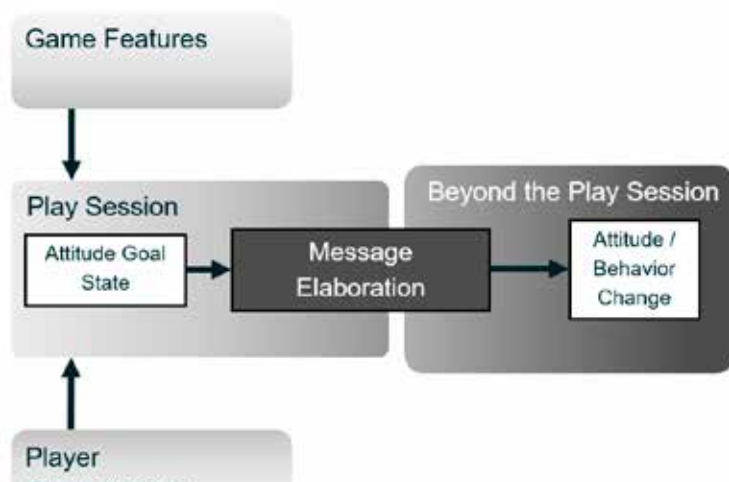
Figure 1.4: The process of persuasion from a validation perspective (adapted from Jacobs, 2017).

attitudes because attitudinal change precedes behavioral outcomes (e.g., Ajzen, 1991; O'Keefe, 2002; Petty & Wegener, 1999). The types of attitudes involved depends on what the game is about and how the argument is presented. Following Jacobs (2017), we use the game's attitude goal state (AGS) to refer to all attitudes a certain game intends to influence. The AGS can consist of one attitude (e.g., 'refugees deserve support'), but it can also be more abstract, for example when a multi-layered topic (such as climate change) is addressed. In almost all cases, game designers embed the AGS purposively in the design of the game (Siriaraya, Visch, Vermeeren, & Bas, 2018).

Figure 1.4 summarizes the key aspects of persuasive gaming in context from a validation perspective. Successful play causes players to elaborate on their perception of the AGS. This elaboration continues beyond the immediate context of play, resulting in attitude change, which may in turn lead to a change in behavior. Next, the figure shows that the occurrence of elaboration is also dependent on how the game is designed (its features) and what kind of person the player is. With respect to these characteristics, Rita Orji and her colleagues have proposed matching the gameplay and experience of persuasive games to the players' personalities. 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, Nacke, & Di Marco, 2017).

The emerging tradition of validation research gives reason for optimism. Many of the persuasive games that have been tested show small but

noticeable influences on players' attitudes. In Chapter 10, Jacobs and Jansz provide an overview of what has so far been accomplished and what earlier research teaches us about the best way to study the effects of persuasive games. Effects were observed on how players think, both in the short term (Kampf & Cuhadar, 2015; Peng, Lee, & Heeter, 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 & Oostendorp, 2015; van 't Riet, Meeuwes, van der Voorden, & Jansz, 2018). Chapters 11 and 12 of this book present the results of in-depth analyses of the effects of two individual games, *Urgent Evoke* (Wichmand, Chapter 11) and *Against All Odds* (Wertley & Soliz, Chapter 12).

It is promising that validation researchers also compared persuasive games with other media—for example, persuasive texts (Gutierrez et al., 2014; Peng et al., 2010; Ruggiero, 2015; Soekarjo & Oostendorp, 2015), videos (Jacobs, 2016, 2017), or a combination of these (Steinemann, Mekler, & Opwis, 2015; van 't Riet et al., 2018). These results confirm the persuasive potential of games but also show that in some cases, non-interactive media perform better. It is particularly timely to continue researching the effects of different media because such a comparative approach is close to the day-to-day reality of many people where they are flooded with persuasive attempts employing a rich variety of mediated sources. At the same time, it is necessary to continue research with no-treatment control conditions in order to establish whether particular persuasive games work at all.

The field of validation research would really advance if future studies would focus more on investigating the effects of specific game features. For example, the effects of either using narrative persuasion or procedural rhetoric were studied by comparing two games that aimed to convey the same message: *Power and Control* (Sain, 2011) and *Another Chance* (Another Kind, 2015), which were published by Jennifer Ann's Group, a non-profit charity whose aim is to combat teen dating violence (Jacobs, Kneer, & Jansz, 2019). Another avenue for improvement is foregrounding the context of play to determine differential effects. Previous research established the differences between playing *Poverty is Not a Game* (iMinds, 2010) at home or in school (Bleumers et al., 2012; De Grove, Van Looy, Neys, & Jansz, 2012). Lee and his colleagues focus in Chapter 13 on a specific context by analyzing the persuasive powers of games that are used in the training of employees in high-stake professions. But the contextual dependencies may even be more relevant when a specific context has far-reaching consequences, for example when the persuasive game is presented in an environment that partially

simulates the living conditions of disabled persons (Gerling, Mandryk, Birk, Miller, & Orji, 2014). One could argue that the player characteristics in Figure 1.4 are another contextual determinant because personality features co-determine the occurrence of elaboration while they simultaneously belong to a reality outside the persuasive game.

Conclusion

It is more than a decade ago that Ian Bogost published *Persuasive Games* (2007). Ever since, research on persuasive gaming has developed in multiple directions, with some researchers acknowledging Bogost's emphasis on procedural rhetoric, and others developing additional perspectives or criticizing the focus on game features. The steady growth of this research domain has enabled us to compile this volume based on the acquired theoretical insights with respect to persuasiveness (Part 1), combined with advanced notions about designing persuasive games (Part 2), and including the results from validation research (Part 3). In this introduction, we aimed to show that the three pillars are not independent silos but rather part of the same construction. Hence our emphasis on the feedback relations between all subsequent pillars (see Figure 1.1) is focused on the combination of contributions coming from different theoretical traditions, which results in a multidisciplinary approach to the understanding of persuasive gaming. We now turn to the substance of this volume, that is, the chapters in which a rich variety of scholars discuss their contributions to the blossoming field of persuasive gaming in context.

References

Abt, C. (1970). *Serious Games*. New York, NY: Viking Press.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179-211. https://doi.org/10.1016/0749-5978(91)90020-T

Another Kind. (2015). *Another Chance* [Digital Game].

Bleumers, L., All, A., Mariën, I., Schurmans, D., Van Looy, J., Jacobs, A., Willaert, K., de Grove, F. (2012). *State of Play of Digital Games for Empowerment and Inclusion: A Review of the Literature and Empirical Cases*. https://doi.org/10.2791/36295

Bogost, I. (2006). *Unit Operations: An Approach to Videogame Criticism*. Cambridge, MA: MIT Press.

———. (2007). *Persuasive Games: The Expressive Power of Videogames*. Cambridge, MA: MIT Press.

Burke, K. (1969). *A Rhetoric of Motives*. Berkeley, CA: University of California Press.

De Grove, F., Van Looy, J., Neys, J., & Jansz, J. (2012). Playing in School or at Home? An Exploration of the Effects of Context on Educational Game Experience. *Electronic Journal of E-Learning*, *10*(2), 199-208. Retrieved 10 September 2020 from https://eric.ed.gov/?id=EJ985422.

De la Hera, T. (2013). A Conceptual Model for the Study of Persuasive Games. *Proceedings of DiGRA 2013: DeFragging Game Studies*, 1-15. https://doi.org/10.2307/4448051

———. (2017). Persuasive Gaming: Identifying the Different Types of Persuasion Through Games. *International Journal of Serious Games*, *4*(1), 31-39. https://doi.org/10.17083/ijsg.v4i1.140

———. (2019). *Digital Gaming and the Advertising Landscape*. Amsterdam: Amsterdam University Press.

DeSmet, A., Bastiaensens, S., Van Cleemput, K., Poels, K., Vandebosch, H., Deboutte, G., Herrewijn, L., Malliet, S., Pabian, S., De Bourdeaudhuij, I. (2018). The Efficacy of the Friendly Attac Serious Digital Game to Promote Prosocial Bystander Behavior in Cyberbullying Among Young Adolescents: A Cluster-Randomized Controlled Trial. *Computers in Human Behavior, 78*, 336-347. https://doi.org/10.1016/j.chb.2017.10.011

Elson, M., & Ferguson, C.J. (2014). Twenty-Five Years of Research on Violence in Digital Games and Aggression: Empirical Evidence, Perspectives, and a Debate Gone Astray. *European Psychologist*, *19*(1), 33-46. https://doi.org/10.1027/1016-9040/a000147

Entertainment Software Association. (2018). *Essential Facts: About the Computer and Video Game Industry*. Retrieved 29 September 2020 from https://www.theesa.com/wp-content/uploads/2019/03/ESA_EssentialFacts_2018.pdf

Ferrara, J. (2013). Games for Persuasion: Argumentation, Procedurality, and the Lie of Gamification. *Games and Culture*, *8*(4), 289-304. https://doi.org/10.1177/1555412013496891

Ferrari, S. (2010). *The Judgment of Procedural Rhetoric* [PhD Thesis]. *School of Literature, Communication, and Culture*. Georgia Institute of Technology, Georgia. Retrieved 20 September 2020 from https://smartech.gatech.edu/handle/1853/33915

Ferri, G., Hansen, N.B., Heerden van, A., & Schouten, B.A.M. (2018). Design Concepts for Empowerment through Urban Play. In *Proceedings of the DiGRA 2018 Conference*. Turin, Italy. Retrieved 20 September 2020 from http://www.digra.org/digital-library/publications/design-concepts-for-empowerment-through-urban-play/

Flanagan, M. (2010). Creating Critical Play. In R. Catlow, M. Garrett, & C. Morgana (eds.), *Artists Re:thinking Games*, pp. 49-53. Liverpool: Liverpool University Press.

Fogg, B.J. (2003). *Persuasive Technology: Using Computers to Change What We Think and Do.* (Vol. 5). https://doi.org/10.4017/gt.2006.05.01.009.00

Frasca, G. (2007). *Play the message. Play, Game and Videogame Rhetoric* [PhD Thesis]. IT University Copenhagen. Retrieved 29 September 2020 from https://www.igdb.com/articles/play-the-message-play-game-and-videogame-rhetoric-dissertation

Gamberini, L., Spagnolli, A., Corradi, N., Jacucci, G., Tusa, G., Mikkola, T., Zamboni, L., Hoggan, E. (2012). Tailoring Feedback to Users' Actions in a Persuasive Game for Household Electricity Conservation. In: Bang M., Ragnemalm E.L. (eds.), Persuasive Technology. *Design for Health and Safety. PERSUASIVE 2012. Lecture Notes in Computer Science*, vol. 7284. Berlin/Heidelberg: Springer. https://doi.org/10.1007/978-3-642-31037-9_9.

Gerling, K.M., Mandryk, R. L., Birk, M., Miller, M., & Orji, R. (2014). The Effects of Embodied Persuasive Games on Player Attitudes Toward People Using Wheelchairs. In *Proceedings Of The 32nd Annual ACM Conference on Human Factors in Computing Systems – CHI '14*, pp. 3413-3422. https://doi.org/10.1145/2556288.2556962

Gutierrez, B., Kaatz, A., Chu, S., Ramirez, D., Samson-Samuel, C., & Carnes, M. (2014). 'fair Play': A Videogame Designed to Address Implicit Race Bias Through Active Perspective Taking. *Games for Health Journal*, *3*(6), 371-378. https://doi.org/10.1089/g4h.2013.0071

Hansen, N. B., Dindler, C., Halskov, K., Iversen, O.S., Basballe, D.A., & Schouten, B. (2019). How participatory design works: mechanisms and effects. In *Proceedings of the 31st Australian Conference on Human-Computer-Interaction*, pp. 30-41. https://doi.org/10.1145/3369457.3369460

Heide, J., & Nørholm, S. (2009). Playful Persuasion. The Rhetorical Potential of Advergames. *Nordicom Review*, *30*(2), 53-68. Retrieved 20 September 2020 from https://www.nordicom.gu.se/en/tidskrifter/nordicom-review-22009/playful-persuasion-rhetorical-potential-advergames

Hunicke, R., Leblanc, M., & Zubek, R. (2004). MDA: A Formal Approach to Game Design and Game Research. *AAAI Workshop – Technical Report* (Vol. WS-04-04). Retrieved 20 September 2020 from https://users.cs.northwestern.edu/~hunicke/MDA.pdf

Iminds. (2010). *Poverty is not a Game* [Digital Game].

Jacobs, R.S. (2016). Play to Win Over: Effects of Persuasive Games. *Psychology of Popular Media Culture*, *7*(3), 231-240. https://doi.org/10.1037/ppm0000124

————. (2017). *Playing to Win Over: Validating Persuasive Games* [PhD Thesis]. ERMeCC-Erasmus Research Center for Media Communication and Culture. Retrieved 20 September 2020 from https://repub.eur.nl/pub/102769/

————, Jansz, J., & De la Hera, T. (2017). The Key Features of Persuasive Games: A Model and Case Analysis. In Kowert, R., and T. Quandt (eds.), *New Perspectives on the Social Aspects of Digital Gaming: Multiplayer 2*. London: Routledge. https://doi.org/10.4324/9781315629308

———, Kneer, J., & Jansz, J. (2019). Playing Against Abuse: Effects of Procedural and Narrative Persuasive Games. *Journal of Games, Self, and Society*, *1*(1), 97-120. https://doi.org/10.1184/R1/7857578

Juul, J. (2010). *A Casual Revolution : Reinventing Video Games and Their Players*. Cambridge, MA: MIT Press.

Kampf, R., & Cuhadar, E. (2015). Do Computer Games Enhance Learning About Conflicts? A Cross-National Inquiry into Proximate and Distant Scenarios in Global Conflicts. *Computers in Human Behavior*, *52*(Suplement C), 541-549. https://doi.org/10.1016/j.chb.2014.08.008

Kneer, J., Jacobs, R.S., & Ferguson, C.J. (2018). You Could Have Just Asked: The Perception of Motivations to Play Violent Video Games. *Studies in Media and Communication*, *6*(2), 1. https://doi.org/10.11114/smc.v6i2.3389

Kors, M.J.L., Ferri, G., van der Spek, E.D., Ketel, C., & Schouten, B.A.M. (2016). A Breathtaking Journey: On the Design of an Empathy-Arousing Mixed-Reality Game. In *Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play – CHI PLAY '16*. https://doi.org/10.1145/2967934.2968110

———, Spek, E. Van Der, Ferri, G., & Schouten, B.A.M. (2018). You; The Observer, Partaker or Victim. Delineating Three Perspectives to Empathic Engagement in Persuasive Games Using Immersive Technologies. In *Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play Companion*, pp. 493-501. https://doi.org/10.1145/3270316

Malliet, S., & Martens, H. (2010). Persuasive Play : Extending the Elaboration Likelihood Model to a Game-Based Learning Context. In R. van Eck (ed.), *Interdisciplinary Models and Tools for Serious Games*, pp. 210-226. Hersey, PA: IGI Global.

Mateas, M., & Chen, S. (2006). *Serious Games: Games that Educate, Train and Inform*. Boston, MA: Thompson.

McGonigal, J. (2011). *Reality is broken: Why Games Make Us Better and How They Can Change the World*. New York, NY: Penguin.

Nelson, M.J. (2012). *Sicart's "Against Procedurality"*. Retrieved 23 August 2018, from http://www.kmjn.org/notes/sicart_against_proceduralism.html

O'Keefe, D.J. (2002). *Persuasion: Theory and Research.* New York, NY: SAGE Publications.

Orji, R., Nacke, L.E., & Di Marco, C. (2017). Towards Personality-Driven Persuasive Health Games and Gamified Systems. In *Conference on Human Factors in Computing Systems – Proceedings*, pp. 1017-1027. New York, NY: ACM Press. https://doi.org/10.1145/3025453.3025577

Peng, W., Lee, M., & Heeter, C. (2010). The Effects of a Serious Game on Role-Taking and Willingness to Help. *Journal of Communication*, *60*(4), 723-742. https://doi.org/10.1111/j.1460-2466.2010.01511.x

Perloff, R.M. (2017). *The Dynamics Of Persuasion: Communication and Attitudes in The 21st Century* (5th ed.). New York, NY: Routledge. https://doi.org/10.4324/9781315657714

Petty, R.E., & Cacioppo, J.T. (1986). The Elaboration Likelihood Model of Persuasion. *Advances in Experimental Social Psychology*, *19*, 123-205. https://doi.org/10.1016/S0065-2601(08)60214-2

———, & Wegener, D.T. (1999). The Elaboration Likelihood Model: Current Status and Controversies. In S. Chaiken & Y. Trope (eds.), *Dual Process Theories in Social Psychology*, pp. 37-72. New York, NY: Guilford Press. https://doi.org/10.1016/S0022-4405(97)00003-4

Raessens, J. (2009). The Gaming Dispositif: An Analysis of Serious Games from a Humanities Perspective. In *Serious Games: Mechanisms and Effects*. https://doi.org/10.4324/9780203891650

———. (2014). The Ludification of Culture. In M. Fuchs, N. Scharpe, R. Paolo, & S. Fizek (eds.), *Rethinking Gamification*, pp. 91-114. Lünenburg: Hybrid Publishing Lab.

———, & Goldstein, J.H. (2005). *Handbook of Computer Game Studies*. Cambridge, MA: MIT Press.

Ritterfeld, U., Cody, M., & Vorderer, P. (2009). *Serious Games: Mechanisms and Effects.* New York, NY: Routledge. https://doi.org/10.4324/9780203891650

Ruggiero, D. (2015). The effect of a persuasive social impact game on affective learning and attitude. *Computers in Human Behavior*, *45*, 213-221. https://doi.org/10.1016/j.chb.2014.11.062

Ryan, R.M., & Deci, E.L. (2000). Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being. *American Psychologist*, *55*(1), 67-78. https://doi.org/10.1037/0003-066X.55.1.68

Sain. (2011). *Power and Control* [Digital Game].

Seiffert, J., & Nothhaft, H. (2015). The Missing Media: The Procedural Rhetoric of Computer Games. *Public Relations Review*, *41*, 254-263. https://doi.org/10.1016/j.pubrev.2014.11.011

Sicart, M. (2011). Against Procedurality. *Game Studies*, *11*(3). Retrieved 10 October 2019 from http://gamestudies.org/1103/articles/sicart_ap

Siriaraya, P., Visch, V., Vermeeren, A., & Bas, M. (2018). A Cookbook Method for Persuasive Game Design. *International Journal of Serious Games, 5*(1). https://doi.org/10.17083/ijsg.v5i1.159

Soekarjo, M., & Oostendorp, H. van. (2015). Measuring Effectiveness of Persuasive Games Using an Informative Control Condition. *International Journal of Serious Games*, *2*(2), 37-56. https://doi.org/10.17083/ijsg.v2i2.74

Steinemann, S.T., Mekler, E.D., & Opwis, K. (2015). Increasing Donating Behavior Through a Game for Change. In *Proceedings of the 2015 Annual Symposium on*

Computer-Human Interaction in Play. New York, NY: ACM Press. https://doi. org/10.1145/2793107.2793125

Swain, C. (2007). Designing Games to Effect Social Change . *DiGRA 2007 Conference.* Digital Games Research Association. Retrieved 14 October 2019 from digra.org/ wp-content/uploads/digital-library/07311.09363.pdf

Van 't Riet, J., Meeuwes, A.C., Van der Voorden, L., & Jansz, J. (2018). Investigating the Effects of a Persuasive Digital Game on Immersion, Identification, and Willingness to Help. *Basic and Applied Social Psychology*, *40*(4), 180-194. https:// doi.org/10.1080/01973533.2018.1459301

Zimmerman, E., & Chaplin, H. (2013). Manifesto: The 21st Century Will Be Defined By Games. *Kotaku.* Retrieved 24 May 2018, from https://kotaku.com/ manifesto-the-21st-century-will-be-defined-by-games-1275355204

About the authors

Teresa de la Hera is Assistant Professor of Persuasive Gaming at Erasmus University Rotterdam, where she is a member of the Research Cluster Gaming Matters. Her expertise is focused on understanding how digital games are used as media for communication and tools for engagement, motivation, and persuasion. She is the author of *Digital Gaming and the Advertising Landscape* (2019), published by Amsterdam University Press.

Jeroen Jansz is Full Professor of Communication and Media at Erasmus University Rotterdam. He holds the Chair of Communication and Media in the Department of Media & Communication. His research aims to understand and explain the changing relations between media consumers and media producers with a specific focus on digital gaming.

Ruud Jacobs researched the validation of persuasive games at the Erasmus University Rotterdam as part of the research project *Persuasive Gaming. From Theory-Based Design to Validation and Back* (NWO). He now works as an Assistant Professor of communication and technology at the University of Twente, investigating why people play serious games.

Ben Schouten is an artist/designer as well as a full professor in playful interaction at the department of industrial design of the Eindhoven University of Technology. His research focuses on play and participatory design for social innovations and citizen empowerment through bottom-up approaches. He

has co-edited five volumes and conference proceedings and has co-authored more than 100 publications.

Joost Raessens is Chair and Full Professor of Media Theory at Utrecht University and scientific director of the Utrecht Center for Game Research. He is co-editor of the volumes *The Playful Citizen* (2019) and *Playful Identities* (2015), both published by Amsterdam University Press, and the *Handbook of Computer Game Studies* (The MIT Press, 2005).

Martijn Kors is a doctoral candidate at the Industrial Design Department of the Eindhoven University of Technology in Eindhoven, the Netherlands. His design-oriented research focuses on studying the intersections between persuasive game production, system immersion, and the employment of empathy-arousing appeals to shape how players think and feel about issues in reality.