

# *Playing Against Abuse*

## **Effects of Procedural and Narrative Persuasive Games**

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### ABSTRACT

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Persuasive games—games that intend to change attitudes in players—employ numerous types of persuasive tactics; the individual contributions of such tactics to the effectiveness of these games as a full experience have not yet been tested. In this study we examine two existing persuasive games about teen dating violence by performing a controlled experiment on effects on attitudes towards abusive relationships. We selected these games on the basis of their relative focus on narrative or procedural arguments (i.e., mirroring real-world processes through in-game systems). Participants ( $N = 262$ ) were drawn from a mixed sample of university and senior secondary school students who, with a mean age of 19 years, were slightly older than the game’s target audiences. Results indicated that the games affected some of the attitudes they were intended to, but that the effects of the narrative and procedural games were not differentiated. Character and cognitive identification (with the game’s protagonists and procedural rhetoric) differed between games, but negatively predicted attitude change. We describe conclusions about how game developers may comfortably explore multiple designs without fear of hampering effects.

### INTRODUCTION

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Games are a new frontier in persuasive media. Barring a handful of recent

efforts (e.g., Gerling, Mandryk, Birk, Miller, & Orji, 2014; Jacobs, 2018; Peng, Lee, & Heeter, 2010; Ruggiero, 2015; Soekarjo & van Oostendorp, 2015), how games may persuade players using rhetoric embedded in their design remains largely unexplained. Although a great deal of research has been performed into unintended effects of games (Elson & Ferguson, 2014) and into (adver)games that seek to improve brand or product opinions through mechanisms of affect transfer (Waiguny, Nelson, & Marko, 2013), research into the effects of games that include rhetorical arguments is lacking. However, these *persuasive games*—games that have been designed primarily to affect player attitudes or behaviors on real-world topics—do not operate the same way as other persuasive communications. Chiefly, their interactivity allows for “procedural rhetoric,” the embedding of arguments into the systems and rules governing play (Bogost, 2007). Players *playing* with a game’s (partial) simulation of real-world phenomena and testing its boundaries can enable a deeper understanding of why certain issues exist and how to deal with them.

In games, procedural rhetoric joins the abundance of persuasive dimensions found in other non-interactive media (de la Hera Conde-Pumpido, 2015); games can persuade through text, visuals, sounds, and even tactile sensations. They can also string together events into narratives that form distinct persuasive actuators (Slater, 2002). Using an experimental study design, we attempt to disentangle the persuasive impacts of procedural rhetoric and narratives in games to provide insight into the unique affordances of this medium and help determine its place in persuasive communication.

The research question guiding this study was: How do persuasive games with a focus on either narrative or procedural rhetoric lead to different persuasive outcomes? To answer this question, a controlled experiment was performed, employing two published persuasive games as stimulus material: *Another Chance* (Another Kind, 2015) and *Power and Control* (Sain, 2011). These games were developed to meet the same criteria with regards to their message; they were both entries in the annual Life.Love. Game Design Challenge issued by the Jennifer Ann’s Group, a 501(c)(3) nonprofit charity group dedicated to preventing teen dating violence (Crecente, 2014; Jennifer Ann’s Group, 2015). This article describes the differences between

two persuasive games with a shared prosocial subject, before outlining the study's methods and results.

## Narratives and Procedural Rhetoric

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The primary ways games deliver messages may be found in their procedural rhetoric or in their narratives. Games' procedural arguments focus on simulating specific real-world processes relevant to the game's topic. By engaging with game systems, players can draw their own conclusions about real-world issues. Games may take players through narratives that are either completely linear or that branch depending on player actions as they progress through the game, although both types of narrative are valid routes to persuasion. This study compares a narrative-focused game to a game utilizing procedural rhetoric related to dating violence, and a control game *not* about dating violence. Although the more procedurally-focused game in our comparison includes a series of events in a brief narrative, its persuasive heft is predicated on how it leverages the gameplay to have players *experience* facets of an abusive relationship.

Narrative and procedural persuasive elements are not mutually exclusive, however, the two are not inextricably linked either. Persuasive games such as *Nova Alea* (Molleindustria, 2016), marry procedural rhetoric to narratives, where choices cause players to directly engage with the systems at play while also feeding into longer-term goals and events for the game's protagonists. *My Cotton Picking Life* (Rawlings, 2012) on the other hand, offers players scant leeway as they embody a child laborer picking cotton in Uzbekistan, operating within the endless futility of manual slave labor (Jacobs, 2018). Conversely, *Another Chance*, included in this study, employs systems that only tangentially relate to the issue of teen dating violence. Rather, the game relies primarily on its narrative to fuel its persuasive effect. Because narrative and the interactive systems of a game can be dissociated, differences in their effects should be researched for a more complete understanding of how persuasive games persuade their players.

***Persuasive Narrative Mechanisms.*** Narratives are known to exert persuasive effects in media besides games (Slater, 2002). A theory that supports narrative persuasion is social learning (Bandura, 1986), since most game

narratives follow a human or anthropomorphized protagonist. In games where narratives follow linear paths and players' actions can only progress (rather than direct) the storyline, this protagonist could act as a model for the player by way of a parasocial relationship (Papa et al., 2000). The narrative creates an arc for this main character (Slater, 2002), showing them as starting off with the same attitudes as those *presumably* held by the player. The arc takes this character through several stages of change (Prochaska, DiClemente, & Norcross, 1992), after which they end up with the attitudes the game intends to instill in the player. In this way, attitudes may change through game-play by way of a mechanism that is related not to a game's systems but to its characters. For this reason, attitude change as a result of narrative persuasion would be predicted by the degree to which players identify with the game's protagonist, as evidenced in film and television (Slater, 2002) and interactive narratives (Steinemann et al., 2017).

*Procedural Rhetoric in Persuasive Games.* While game narratives have their counterparts in other media from which to theorize their effectiveness in persuasion, no such analogy exists for procedural rhetoric. Because it relies on the interaction of player and game systems, "Procedural Rhetoric" is a rhetorical form unique to games (Bogost, 2007). Indeed, persuasive games have not been differentiated from previous pervasive media forms in terms of influence on attitude change, based on content alone (Waiguny et al., 2013). Peng et al. (2010) however, compare the effect of interactivity with a game to its narrative by removing interactivity from the experience of two conditions of their study. In their study, participants either read a text, played a persuasive game, or watched recorded gameplay footage of the game. Their results indicated that not allowing viewers to interact with the game and work out its rules through play had a negative effect on their resulting attitude change. Game watchers did not differ significantly from text readers, though game players were affected significantly more than both other groups (Peng et al., 2010).

Because not every interaction in games is necessarily a component of their procedural rhetoric, focusing vaguely on "interactivity" does not offer conclusive insights into the impact of more intentional parts of a game. Additional insight is needed into the effects games have when procedural rhetoric is explicitly present or absent. This study gauges players'

recognition of the similarities between game systems and the real-world processes they mimic as a psychological antecedent of attitude change through procedural rhetoric. Such a measurement hews to the cognitive identification found in multiple identification theory (Williams & Williams, 2007), where players “identify the simulation with reality and see its principles as valid in real life” (p. 5).

### Combating Teen Dating Violence with Games

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Different kinds of interventions have been implemented to curb issues of physical, sexual, and emotional violence in adolescent relationships (De La Rue, Polanin, Espelage, & Pigott, 2016). This issue is educational, which requires recurring emphasis in and out of schools. The primary goal of Jennifer Ann’s group (JAG) is to spread awareness of teen dating violence and share knowledge (with victims and bystanders) about how to prevent it from happening. JAG issues the annual Life.Love. Game Design Challenge (Jennifer Ann’s Group, 2015) for games meeting the following criteria: discussing the topic of teen dating violence and the warning signs of an abusive relationship, and presenting options for bystanders and victims to take action against it, *without* allowing for violent gameplay (Crecente, 2014). Developers are given the freedom to create any kind of game within these constraints, leading to an impressively varied group of games. The games are shared digitally on the JAG game repository and include diverse genres (Jennifer Ann’s Group, n.d.). Entries to this challenge are judged by a panel of game developers and researchers actively working with the topic of teen dating violence or who have previously worked on the design of serious games. Games published on the JAG website have therefore undergone a sort of peer-review to ensure topical focus, and improve overall quality (D. Crecente, personal communication, August 12, 2015). This set presents a unique opportunity for investigating games made by a diverse group of developers but highly similar in the message they intend to convey. For the current study, two games were selected from this set based on their procedural or narrative elements.

***Narrative-led persuasive game.*** *Another Chance* is the 2015 winner of the Life.Love. Game Design Challenge. It is an action role-playing game (RPG) that is viewed from a top-down perspective. The visual style is reminiscent

of 16-bit Japanese RPGs such as *Secret of Mana*. The game's narrative involves a woman dreaming that she is in a videogame. Though she is confused at first, she soon learns from conversations with family and friends that she was being abused and ultimately realizes that she has been unconscious throughout the game. The protagonist had been hospitalized after being assaulted when she tried to break up with her partner. The gameplay consists of walking around the game world and speaking to other characters.

The protagonist's initial confusion reflects a precontemplation stage of attitude change (Prochaska et al., 1992). For the majority of the game, the character's objective is to obtain several keys to free her ex-partner from prison. After hearing others' views, she becomes convinced that her partner is not behaving correctly, resulting in her rejecting him, and no longer blaming herself for his wrongdoings. The narrative *models* the protagonist's mental journey to acknowledging and ending her abusive relationship. Action elements imbue the game with a light procedural argument: players gather courage (in the form of in-game collectibles) which they use to shout "no!" to fend off ghost-like hostile characters trying to drag the protagonist away. Apart from this gameplay dynamic, the gameplay and systems do not mimic the processes in abusive relationship, meaning the persuasive influence of the game depends primarily on its narrative elements.

***Procedural persuasive game.*** *Power and Control* is a game that deals with the topic of teen dating violence in a novel way. The game has no visual components beyond a pink background on which text is superimposed. The game's two layers of audio are a soft background score and a fully voiced young male boyfriend character. The player uses the mouse cursor to 'touch' words on screen, which may represent physical objects, actions, or the otherwise silent protagonist's thoughts and feelings. The game consists of a sequence of interactions with the boyfriend character that indicate he is acting abusively towards the protagonist. This is made clear by his efforts to control how the protagonist dresses and even by forcing her into abstractly represented sexual actions. The game is made to feel oppressive the boyfriend is constantly speaking, becoming more and more hostile as the game progresses.

*Power and Control* uses procedural rhetoric by putting players in the shoes of the victim of abuse while the abuse is taking place. The player is repeatedly asked to approach or avoid certain words, and has to maneuver (physically, by way of the mouse cursor) around the boyfriend. The only course of action available to players is to weather the storm of abuse. They are forced to comply with the abuser's demands to progress through most of the game. The protagonist's thoughts are visualized on screen independently of the voiced boyfriend character, indicating she is trying to ignore his behavior. Although this means that there is a small narrative arc in the game where the protagonist is coming to terms with her situation, the player is always in control of this process. Players can ultimately choose to stay in the relationship or to leave the abuser. The narrative is not emphasized to the degree it is in *Another Chance*.

## HYPOTHESES

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By looking at *Another Chance* and *Power and Control*, this study tests differing effects of narrative and procedural persuasive elements in games. We attempt to demonstrate antecedents of attitude change originating from both kinds of argument. The following are our hypotheses generated from previous results and literature:

**Hypothesis 1:** Both the narrative-focused game (*Another Chance*) and the procedurally-focused game (*Power and Control*) change attitudes to the issue of teen dating violence compared to a control game, *Samorost 2* (Amanita Design, 2005).

**Hypothesis 2:** There is a difference in attitude change resulting from the narrative-led and procedural game.<sup>1</sup>

Given a lack of sufficient previous data, We do not specify which of the two games will show greater effects. As stated previously, procedural rhetoric has not been empirically validated and narrative persuasion has only been investigated in other media (Slater, 2002).

**Hypothesis 3:** Attitude change as a result of the narrative-led game can be predicted from identification with the game's protagonist.

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**Hypothesis 4:** Attitude change as a result of the procedural game can be predicted from cognitive identification with the game's systems (i.e., an acknowledgment that they reflect real-world processes).

## METHODS

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### Sample

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Two samples were drawn for this study, reaching a total of 262 participants. Because the target audience of both of the persuasive games is teenagers, the first sample was drawn from the final three grades of three Dutch secondary schools. This first sample yielded 147 participants aged 15 to 19 ( $M = 16.3$ ,  $SD = .74$ ), with 68.7% of the participants identifying as male. The schools communicated the topic of the study as "serious gaming." The second sample was drawn from the mixed Dutch and international student body from a Dutch university. The call for participants for this sample was described as being about "interactive experiences of pro-social topics." The 115 university students were comparatively older than those in the initial sample, ranging between 18 and 32 years of age ( $M: 22.5$ ,  $SD: 22.87$ ), with 60.9% participants identifying as female. The average age across all participants was 19.0 years ( $SD: 3.67$ ), with a slight majority identifying as male (55.7%).

Participants were randomly assigned to play *Power and Control* ( $n = 99$ ), *Another Chance* ( $n = 102$ ), or the control game ( $n = 61$ ) that was unrelated to dating violence. To ensure sufficient statistical power for a comparison between the two persuasive games (rather than between all groups), the randomization procedure was weighted towards the persuasive game groups with a ratio of 2 (narrative): 2 (procedural): 1 (control). Since the two treatment conditions were expected to differ more from the control condition than each other, the uneven distribution was planned to enable the experiment to test for moderate differences to the control while discerning smaller effects between treatment conditions. The small deviation of the final sample from the intended 2:2:1 distribution was due to a group-based testing protocol detailed below. The distribution of



participants of both genders was equal across conditions ( $\chi^2(2) = .50, p = .778$ ).

Although the games were only playable in English, the instructions for participants and measurements were all available in English and Dutch. All secondary school students except for one completed the study in Dutch, while 32.2% of university students preferred Dutch over English, reflective of the international make-up of the university's student body. All participants from the university sample were financially compensated. One of three groups (40.1% of the full sample) of secondary school students received a similar reward upon completion of the study, while the others participated during school hours and were not compensated.

## Stimuli

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*Another Chance* served as the narrative-oriented game stimulus and *Power and Control* as the procedural game stimulus. The freely available first chapter of *Samorost 2*—an online Flash-based point and click game—was used for the study's control condition. In *Samorost 2*, players guide a small anthropomorphic creature to rescue its pet from a pair of alien abductors. This game was chosen for the control condition because its presentation, gameplay, and storyline were unrelated to the topic of teen dating violence and its gameplay was accessible enough that participants could proceed through it without getting stuck. The game did however serve to engage all players, keeping them focused on play for the game's duration. In debriefing sessions, many participants described actively considering the game's link to the survey, for instance by suggesting the protagonist's mission to save its pet as a metaphor for abusive relationships. Few respondents rejected this idea initially, which serves as an indicator that participants were looking for meaning in the game. The game therefore could be said to have acted as a placebo for many respondents who felt the game did attempt to discuss this topic in some obscure way.

The games differed in the time it took participants to complete them: *Power and Control* had, on average, the shortest play time ( $M = 13.1$  minutes,  $SD = 4.01$ ). *Another Chance* took the most time to finish ( $M = 39.5$  minutes,  $SD = 7.60$ ), with *Samorost 2* in between ( $M = 33.8$  minutes,  $SD = 7.13$ ). All play time

differences between groups were significant and large ( $F(2, 255) = 450.5, p < .001, \text{partial-}\eta^2 = .78$ ).

## Procedure

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Although the procedure differed slightly for the two samples drawn for this study, all participants followed one of three paths through the same online digital questionnaire. Participants were seated in front of a computer with headphones. A short introduction on the procedure of the study was given by the experimenter before the survey was started. After participants provided informed consent, they put on the headphones, clicked a link to go to a game page, and began playing until they completed the game or until they were asked to stop. The games are hosted on their respective publishers' websites. Upon starting the game, participants were given a paper sheet with instructions on how to play the games. The contents of these sheets were based on issues encountered in informal pre-testing. For *Another Chance*, this included the game's controls—with emphasis on how to check the current in-game objective and tips on how to fend off the ghost-like enemies. For *Power and Control*, the sheet explained how the mouse cursor interacted with words and discussed how to complete one specific scene in the game that many players struggle with. The sheet for *Samorost 2* simply explained the way a cursor changes appearance if an object can be interacted with. To avoid issues with difficulty, participants were told during the introduction that they could also ask the experimenter for assistance during play. All sessions were monitored by the same experimenter.

To limit the experiment's time while allowing the greatest number of participants to finish the games, participants were asked to stop playing after 45 minutes if they were not yet close to completion, or they were allowed to continue for slightly longer if they were close to completion. This time-limit allowed 98.0% of players to finish *Power and Control*, 86.3% to finish *Another Chance*, and 68.9% to finish *Samorost 2* during the study.

After completing their game, or the 45-minute time limit elapsed, respondents continued to the online questionnaire, filling in the items comprising the study's measurements. These included questions on game

completion and comprehension, two attitude scales on dating violence, character and cognitive identification scales, game enjoyment questions, a short scale on obtrusiveness of persuasive intent, and demographic items (in this order). The survey closed with an open-ended question allowing for candid comments on the study or the games. After completing the questionnaire, respondents entered a debriefing stage.

The university student participants were tested in a laboratory setting in pairs, separated by a cubicle wall. Debriefing took place individually or in pairs, starting as soon as participants completed the study. Secondary school student participants were tested in different settings. The majority (61.9%) were tested in a classroom with between 12 and 25 participants per session. Within the classrooms, participants were divided across conditions, though care was taken to position them so they could not see other games being played. The remaining 38.1% of secondary school students were tested in groups of four students that were assigned to the same condition.

Debriefing sessions followed a loose structure, though each session started with the experimenter explaining he was not involved with the design of the games in the study and asking for honest opinions. From there, participants' interests were followed in the discussion. Afterwards, the study's design and goals were briefly explained, and the participants were thanked for their participation.

## Analysis

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All measurement scales used in this study were subjected to principal component analysis with oblique (oblimin) rotation and tested for reliability using Cronbach's alpha before being averaged into scale variables. Hypotheses were tested with multivariate analyses of response variance using planned comparisons and Dunnett or Tukey post-hoc tests (Seltman, 2015) and linear regressions. Indicators of effect size were selected, computed, and interpreted in accordance with Lakens (2013). Power analyses were performed using G\*Power version 3.1.9.2. All other analyses were performed using IBM SPSS Statistics version 23.

## Measurements

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All measurements in this study were taken after the play session. The main measurements consisted of two attitude scales on dating violence and two scales separately gauging character and cognitive identification. These items are listed in Table 1.

***Teen dating violence attitudes.*** To measure attitudes toward the issue of teen dating violence, the Justification of Verbal/Coercive Tactics (JVCT) scale was adapted (Slep, Cascardi, Avery-Leaf, & O'Leary, 2001). This scale consisted of 11 items describing behaviors in relationships. Participants rated behaviors on a five-point scale as admissible or inadmissible separately for both male and female actors. Four items were added, relating to texting and social media, to keep pace with techno-social developments. In total, this created 30 items measuring acceptability of behaviors for men and women. Factor analysis called for the separation of the scale into three subscales. The first measured justification of controlling behaviors on a social level (social control, 12 items, Cronbach's  $\alpha = .90$ ). The second was concerned with justification of jealous behaviors (jealous behavior, 12 items,  $\alpha = .89$ ). The final grouping combined items on angry and violent behaviors (angry behavior, six items,  $\alpha = .85$ ). Higher values on these scales indicate less justification and less acceptance of abusive behaviors.

Table 1: Item list of the scales used in this study.

	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
	( <i>M</i> )	( <i>M</i> )	( <i>F</i> )	( <i>F</i> )
<b>Justification of Verbal/Coercive Tactics scale</b>				
<b>Social Control subscale (12 items, <math>\alpha = .90</math>)</b>				
Keeping him/her from seeing or talking to his/her family	4.69	.64	4.69	.61
Turning his/her family and friends against him/her	4.81	.59	4.82	.48
Keeping him/her from doing things to help himself/herself	4.64	.68	4.62	.75
Using a second phone that the partner does not know about *	4.61	.74	4.62	.71
Demanding to know his/her passwords to social media, e-mail, and other accounts *	4.60	.70	4.60	.72
Sharing or threatening to share sexually explicit pictures of him/her with others *	4.89	.54	4.90	.52
<b>Jealous Behavior subscale (12 items, <math>\alpha = .89</math>)</b>				
Interfering in his/her relationship with family members	3.88	.98	3.88	.98
Being jealous and suspicious of his/her friends	3.76	.90	3.71	.92
Being jealous of other girls/boys	3.28	1.02	3.23	1.03
Checking up on him/her, making him/her say where he/she was	3.63	1.11	3.63	1.08
Accusing him/her of seeing another girl/boy	3.90	.79	3.90	.80
Texting constantly to check up on him/her *	4.21	.80	4.20	.83
<b>Angry Behavior subscale (6 items, <math>\alpha = .85</math>)</b>				
Insulting or swearing at boyfriend/girlfriend	4.07	.88	4.03	.86
Stomping out of the room or house	3.42	.98	3.38	.98
Doing or saying something to spite him/her	3.80	1.13	3.76	1.15
<b>Other attitude and identification scales</b>				
<b>Victim Blaming scale (3 items, <math>\alpha = .82</math>)</b>				
Most physical violence in dating occurs because a partner asked for it			<i>M</i>	<i>SD</i>
If you did something wrong, it is your fault if you get hit			1.50	.91
If you make up after being abused, it won't happen again			1.39	.81
			1.44	.86
<b>Self-Efficacy in dealing with abusive relationships scale (3 items, <math>\alpha = .72</math>)</b>				
I know how to tell if someone I know is in an abusive relationship *			2.98	1.04
As an outsider I can help if someone I know is in an abusive relationship *			3.47	1.02
I know what to do if someone I know is in an abusive relationship *			3.08	1.08
<b>Recognition of abusive situations/relationships (5 items, <math>\alpha = .68</math>)</b>				
A dating partner who wants to be in charge and make all decisions might become abusive			3.11	1.12
Slamming a door or driving recklessly in a car to scare someone is abusive			3.60	1.17
It can be abusive to yell at someone even if you don't hit them			3.87	1.19
It is possible to be angry or even argue with your dating partner without being abusive			4.35	1.03
People can strongly deny being in an abusive relationship even when they realize that something is not right *			4.18	1.04
<b>Character Identification scale (6 items, <math>\alpha = .85</math>)</b>				
I agreed with the main character's thoughts and what she said *			2.91	1.17
The way the main character reasoned was similar to how I thought about this topic *			2.41	1.09
I recognize myself in the main character			1.87	1.04
The main character is an example to me			1.97	1.09
The main character has characteristics that I would like to have			2.20	1.10
The main character is like me in many ways			1.96	1.01
<b>Cognitive Identification scale (6 items, <math>\alpha = .86</math>)</b>				
This game lets players experience abuse in a safe way *			3.50	1.19
The gameplay in this game shows what it is like to be abused *			2.89	1.26
The way this game works reflects what abuse is like in the real world *			2.77	1.20
This game is meant to be played for its message, not just for fun *			4.00	1.20
The way this game is played makes me think of what it is like to be abused *			2.92	1.39
The way this game is played shows how abusive relationships can work *			3.15	1.32

Note: Means and standard deviations are shown for each item and scale, and Cronbach's  $\alpha$  is shown for relevant scales. Items for the JVCT are posed twice (*M* for male/*F* for female perpetrator). \*Item developed and included specifically for this study.

Table 1: Item list of the scales used in this study.

Separately, wider attitudes towards dating violence were measured using a nine-item, five-point Likert scale developed by Macgowan (1997). These

questions were also complemented with seven new items. Factor analysis again supported a division into three subscales. The first related to victim agency and culpability in abusive relationships (victim blaming, three items,  $\alpha = .82$ ), while the second was about self-efficacy with regards to handling abusive situations for oneself and friends (self-efficacy,  $\alpha =$  three items,  $.72$ ), and the third gauged the self-reported ability of respondents to recognize abusive relationships (recognition, five items,  $\alpha = .68$ ). Higher values on these scales indicate more compassion with victims, higher self-efficacy, and greater sensitivity in abuse recognition, respectively.

***Character and cognitive identification.*** To support the contention that the games' relative emphasis on either narrative or procedural persuasion may cause differences in attitude found, two indicator scales were used. Identification with the games' protagonists was used as an indicator for narrative persuasion; those who feel closer to their character will be engaged in a game's story more strongly. This nine-item scale is a combination of character identification measures in previous literature (Van Looy, Courtois, De Vocht, & De Marez, 2012; van Reijmersdal, Jansz, Peters, & van Noort, 2013). Items were adapted to fit the games used in our conditions. Because no known previous measure existed for the perceived similarity of game- and real-world processes, six items were developed to measure this construct. The items were informed by the concept of cognitive identification described by Williams and Williams (2007). Factor and reliability analyses supported the division of the two types of identification, leading to two scales: six items for character identification ( $\alpha = .85$ ) and six items for cognitive identification ( $\alpha = .86$ ).

## RESULTS

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Hypothesis 1 predicted that both types of persuasive game would affect attitudes about the issue of teen dating violence more than the control game. This hypothesis was tested using a multivariate ANOVA with the six dating violence attitude scales with planned contrasts between both of the persuasive game conditions and the control condition, ending with post-hoc Dunnett's tests. The overall ANOVA result was significant with a medium effect size (Wilk's  $\Lambda = .88$ ,  $F(12,508) = 2.78$ ,  $p = .001$ ,  $partial-\eta^2 = .06$ ). Looking at the individual attitude scales, the conditions were found

to differ significantly (though with small effects) on justification of angry and violent behaviors ( $F(2,259) = 5.40, p = .005, \text{partial-}\eta^2 = .04$ ) and on self-efficacy with regards to dealing with abusive relationships ( $F(2,259) = 4.17, p = .017, \text{partial-}\eta^2 = .03$ ). The other four attitude scales did not show significant overall differences (justification of social control:  $F(2,259) = 0.37$ , justification of jealous behavior:  $F(2,259) = 2.31$ , victim blaming:  $F(2,259) = 1.45$ , and recognition of abusive behaviors:  $F(2,259) = 1.10, ps > .05$ ). Planned comparisons were drawn for justification of angry behavior and self-efficacy in dealing with abusive relationships. *Another Chance's* (AC) players held different attitudes from those who played *Samorost 2* (S2) for both justification of angry behavior (AC:  $M = 3.82, SD = .78, S2: M = 3.47, SD = .78, p = .004, \text{Hedges' } G_s = .45$ ) and self-efficacy (AC:  $M = 3.14, SD = .80, S2: M = 3.43, SD = .80, p = .029, \text{Hedges' } G_s = .36$ ). *Power and Control* (P&C) fared similarly, yielding different attitudes from the control condition on justification of angry behavior (P&C:  $M = 3.84, SD = .68, p = .003, \text{Hedges' } G_s = .51$ ) as well as self-efficacy (P&C:  $M = 3.05, SD = .87, p = .005, \text{Hedges' } G_s = .45$ ). Apart from these effects, the post-hoc comparison between *Another Chance* and the control group also returned a significant difference on attitudes on the justification of jealous behaviors (AC:  $M = 3.87, SD = .66, S2: M = 3.66, SD = .61, p = .039, \text{Hedges' } G_s = .33$ ). Closer inspections of the average attitude scores of the groups, however, show that players in the control group held the highest scores on self-efficacy in dealing with abusive relationships, compared to both treatment groups. The scaling of these items indicates that players of either persuasive game felt *less* sure of their ability to deal with abusive relationships. Because the attitudes for two scales were different from the control condition for both persuasive games and *Another Chance* also affected attitudes on a third scale, the first hypothesis is tentatively accepted. Though effects are small and not ubiquitous, the games can be said to reduce acceptance of angry behaviors as well as the self-efficacy of dealing with abusive situations.

Hypothesis 2 predicted attitude change to be different for both persuasive games because of the differences in their design. A multivariate ANOVA was performed on the two persuasive game conditions (excluding the control group) with the six dating violence scales as dependent variables. The overall result was not significant (Wilk's  $\Lambda = .95, F(6,194) = 1.81$ ), with none of the individual variables showing significant differences (social

control:  $F(1,199) = .57$ , jealous behavior:  $F(1,199) = 2.28$ , angry behavior:  $F(1,199) = .03$ , victim blaming:  $F(1,199) = .29$ , self-efficacy:  $F(1,199) = .54$ , recognition:  $F(1,199) = 2.08$ ;  $ps > .05$ ). Hypothesis 2 was therefore rejected; there were no differences in the effects *Another Chance* and *Power and Control* had on attitudes towards dating violence. The power this study achieved in discerning the current analysis' very small effect ( $f^2(V) = .06$ ) was .68.

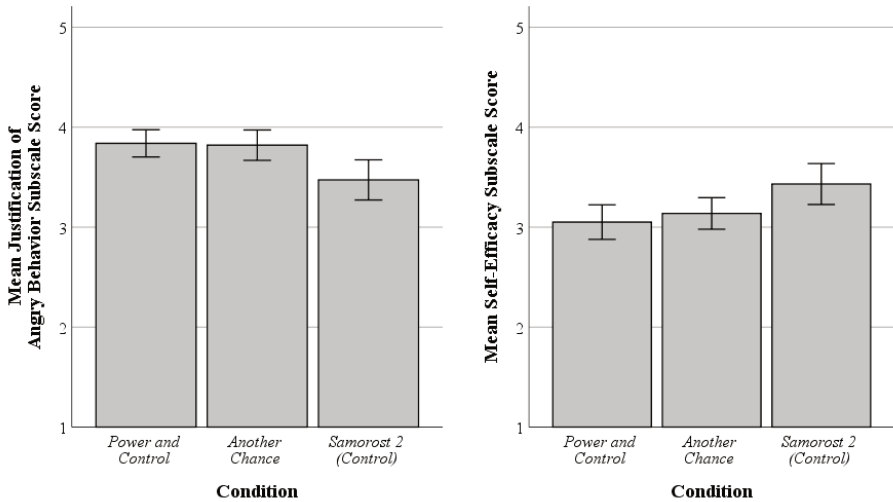


Figure 1: The differences in means between the three conditions for the justification of angry behavior subscale and the self-efficacy subscale tested for hypotheses 1 and 2. Both scales had five-point likert-type response options. 95% CIs are included for each condition.

The third hypothesis predicted that attitude change as a result of the narrative of *Another Chance* would be the result of identification with the game's protagonist (character identification). While AC did show higher character identification in a one-way ANOVA than P&C with a large effect size ( $F(2,259) = 40.52$ ,  $p < .001$ ,  $partial-\eta^2 = .24$ ), the relationship of this identification with attitude change was the inverse of that expected: in separate linear regressions, three of the six outcome scales were negatively predicted by character identification for AC players. These were social control ( $F(1,100) = 11.07$ ,  $p = .001$ ,  $\beta = -.32$ ,  $R^2 = .10$ ), jealous behavior ( $F(1,100) = 6.44$ ,  $p = .013$ ,  $\beta = -.25$ ,  $R^2 = .06$ ), and victim blaming ( $F(1,100)$



= 4.78,  $p = .031$ ,  $\beta = -.21$ ,  $R^2 = .05$ ). This effect was not found for angry behavior ( $F(1,100) = 1.32$ ), self-efficacy ( $F(1,100) = 0.86$ ), or recognition ( $F(1,100) = .35$ ). Although effects on justification of behaviors were limited to AC, character identification also negatively predicted victim blaming among P&C players ( $F(1, 97) = 9.76$ ,  $p = .002$ ,  $\beta = -.30$ ,  $R^2 = .09$ ). This means that despite the positive influence of AC and P&C on justification of jealous behavior, players who identified more with the protagonists of either game subsequently reported greater justification of abusive behaviors (in AC) and increased victim blaming. Because this effect runs counter to expectations, H3 is rejected.

Finally, hypothesis 4 predicted a positive influence of likening P&C's gameplay to real-world abuse processes (cognitive identification) on subsequent attitudes. A one-way ANOVA showed cognitive identification was higher for P&C than for S2 ( $F(2,259) = 94.64$ ,  $p < .001$ ,  $partial-\eta^2 = .42$ ,  $M_{diff} = 1.50$ ,  $p < .001$ ), though P&C and AC did not differ ( $M_{diff} = .01$ ,  $p = .995$ ). Four of the six attitude scale scores were unrelated to cognitive identification among P&C players; social control ( $F(1,97) = .13$ ), jealous behavior ( $F(1,97) = .82$ ), angry behavior ( $F(1,97) = 0.37$ ), and victim blaming ( $F(1,97) = 0.32$ ). Self-efficacy, however, was *positively* predicted for these players ( $F(1,97) = 4.99$ ,  $p = .028$ ,  $\beta = .22$ ,  $R^2 = .05$ ). Recognition of abusive relationships was also positively predicted ( $F(1,97) = 26.33$ ,  $p < .001$ ,  $\beta = .46$ ,  $R^2 = .21$ ). Cognitive identification was not related to attitudes for the other two groups, although AC's players show a borderline significant positive prediction ( $p = .073$ ,  $\beta = .18$ ) of self-efficacy similar to P&C's. Across both persuasive games, character and cognitive identification were positively (though weakly) correlated ( $r = .23$ ,  $N = 201$ ,  $p = .001$ ). Again, these results run counter to the difference in attitudes between players of P&C and the control group, as that comparison showed lower self-efficacy among P&C's players. This pattern does not allow us to conclude cognitive identification was responsible for the effects of P&C, and so we reject H4.

## DISCUSSION

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Although not all attitudes were affected, both persuasive games showed a clear difference with the control game in the attitudes their respective players held afterwards. Primarily, players of both *Another Chance* and

*Power and Control* reported being less accepting of angry behaviors in relationships, while *Another Chance* also reduced justification of jealous behaviors. These results show a small but significant effect in strengthening attitudes of players against relationship abuse. Although the results found on the self-efficacy in dealing with relationship abuse seem counter-intuitive—as the persuasive games lowered rather than increased self-efficacy relative to those in the control condition—they could indicate increased awareness of the issue of dating violence. Participants had an increased sense that they would not know what to do if they or someone they knew found themselves in an abusive relationship. It could be beneficial for players if this realization spurred them on to educate and train themselves to prevent abusive situations from occurring. On the other hand, it could also indicate a sense of helplessness. In this case the games' effect would be negative, reducing players' confidence and increasing apprehension towards relationships in general. Determining the precise significance of this reduced self-efficacy to players of these games is beyond the scope of this current study. These uncertain effects could be because neither game was designed by making use of an evidence-based design strategy (e.g., like DeSmet et al., 2016), making it difficult to ground specific design choices in validated persuasive strategies. Although evidence-based persuasive games are rare, future research should continue to strive to link game dynamics and texts to previously successful strategies found in other media.

The sizes of effects found while testing the first hypothesis offer a possible explanation why the second hypothesis, predicting a difference in attitude change as a result of either narrative or procedural elements, was not retained. Because the impact on attitudes directly after play was small, it is likely that further differentiating two successful persuasive games would require greater granularity in effect measures than observed in this study. The difference between the games' persuasive power in the short term could therefore be said to be trivial despite their divergent designs. The current findings do show that persuasive games do not necessarily have to be long to be immediately effective; the two games did not differ in effects despite *Power and Control's* mean playtime being a third of that of *Another Chance*. There can of course be more to the impact of a persuasive game

than its immediate attitudinal influence, such as the sleeper effect noted by Ruggiero (2015), but this is beyond the scope of this study.

In testing the third hypothesis, we found negative predictive effects of character identification on justification of controlling and jealous behaviors as well as victim blaming. This effect was opposite to the expected effect, and intent, of *Another Chance* as a condition. Even though the same effect on victim blaming attitudes was found for *Power and Control*, those who played through the narrative of *Another Chance* who also reported feeling a stronger connection to its protagonist subsequently reported more negative attitudes on exactly the issues facing that protagonist. Because this effect was found in a regression within one condition, causality has not been established; it is not clear whether the identification influenced attitudes or whether these were simply correlated. In previous research, perceived similarity to a victim of sexual abuse (a measure overlapping our identification scale) had coincided with less lenience towards abusive behavior and reduced victim blaming (Bell, Kuriloff, & Lottes, 1994). Though the effect we observed seems to counter this, a third factor may have influenced our results. As one possible explanation, previous research has also shown that lenient attitudes on violence towards women can be found among individuals who have experienced this kind of violence in their lives (Crome & McCabe, 2001; Markowitz, 2001). In our sample, it is therefore possible that the negative relationship between character identification and attitudes towards abuse was caused by experience with abusive relationships similar to how experience with homelessness has been found to reduce readiness to donate to relevant charities (Steinemann et al., 2017). Those who had this experience would then have potentially identified more with the two protagonists of *AC* and *P&C* who were actively going through it during the game. Since the current study did not include measures of personal experience with abuse because of the ethical issues involved in posing such sensitive questions in a group-based experimental setting, this is only one possible speculative explanation.

Finally, results showed a weakly positive influence of cognitive identification (i.e., seeing the game as mirroring the real-world process of abuse) on subsequent attitudes held. The direction of this change was opposite to that of the game condition as a whole. It therefore does not

appear that the procedural rhetoric embedded in *Power and Control* is responsible for the game's effects. Similar to the results of character identification, it is possible a third variable influenced certain respondents to both report the similarities of the gameplay with abusive relationships and to report increased self-efficacy in recognizing and dealing with abusive situations. Since the total effect of the game was to *lower* self-efficacy, it is worth investigating whether experience with this issue could be causing the relationship between identification and self-efficacy. The positive correlation between the two identification measures used in this study provide an indication into the direction of such an effect, though no hard conclusions can be drawn here.

## CONCLUSION

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This study was to our knowledge the first effort to disentangle the attitudinal influences of emphasizing either a persuasive game's narrative or its procedural elements. Although the games did prove to have mild effects on players' attitudes towards dating violence, their relative influences could not be meaningfully differentiated from each other. This may be because both games were vetted by a jury on their intent to persuade players on the same topic, making them of roughly equal quality. Antecedents of attitude change as a result of narrative and procedural elements could not be reliably established in this study, since both measurements used had effects that ran counter to those the games were supposed to invoke. These results paint the picture of persuasive games as offering a similar persuasive influence as long as they were developed with the goal of attitude change in mind. Although further research is definitely needed in this area, persuasive games do seem to abide by the adage that 'all roads lead to Rome', and that emphasizing certain persuasive mechanisms over others might not necessarily lead to demonstrably different outcomes on player attitudes in the short term. This is not a negative result; it could be seen as evidence that persuasive games do not need to offer one specific type of experience, or even that lengthier games are inherently more persuasive. Apparently, game designers have some freedom in how they persuade players, opening the doors to games that discuss many different topics from equally varied perspectives.

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