

Journal of  
• Virtual Worlds Research

jvwresearch.org ISSN: 1941-8477

**Real Virtual Relationships**  
August 2017 Volume 10 No. 2



# Volume 10, Number 2

## Real Virtual Relationships

### August 2017

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**Volume 10, Number 2**  
**Real Virtual Relationships**  
**August, 2017**

# **Not Playing the Game: Negative Opinions about Online Dating and Video Gaming among Non-Participants**

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## **Abstract**

Per prior research, both online dating and video gaming are strongly associated with real and virtual relationship formation among participants. Yet this exploratory research study finds that eighty five percent of internet users have never participated in online dating and fifty percent of survey respondents have never participated in video gaming. This study uses data from a large nationally representative survey on online dating and video gaming in the U.S.

The study employs the sociotechnical and the uses-and-gratifications theoretical perspectives to emphasize the role of information technology in shaping and framing relationships, and the importance of understanding individual context in the use of such technologies. The study investigates the characteristics of individuals who harbor negative opinions about online dating and video gaming despite having never participated in these activities. Opinions include: “Online dating is more dangerous than other ways of meeting people”, “People who use online dating sites are desperate”, “Video games are a waste of time,” and “Video games portray women poorly.”

This research finds that among those who have never participated in online dating, more negative opinions about online dating are associated with a higher frequency of internet usage, a more conservative political orientation and lower educational and income levels. Here, current relationship status did not have a significant association with negative opinions among non-participants. With respect to video gaming, among those who have never participated in video gaming, more negative opinions about video gaming are associated with higher age and a more conservative political orientation. Additionally, among non-participants, the opinion that people who play violent video games are more likely to be violent themselves is associated with higher age, lower income level, and being female.

The large body of work that has focused on online dating and video games as drivers of relationships has focused on participants in these activities. There is scarce research on non-participants even though non-participants comprise at least half the population. By focusing on these ignored groups, this study advances broader understanding of the individual and societal contexts under which individuals choose to not participate in these activities that are known to be associated with relationship outcomes. Non-participation is related to technophobia and the findings from this study will help broaden understanding of that phenomenon.

## 1. Introduction

A substantial body of research has reported on the significance, to relationships, of the activities of online dating and video gaming (playing video games). In such studies, researchers typically examine the characteristics of individuals who participate in these activities and investigate, among other things, how these activities relate to subjects' virtual and real life relationships.

This research study turns its gaze toward *non-participants*. That is, individuals who have never participated in online dating or in playing video games. As will be seen later, a large proportion of the population consists of non-participants. It is peculiar that even though online dating and video gaming are strongly associated with relationship outcomes for participants, a large proportion of the population does not partake in online dating or video games. Moreover, despite being non-participants, they often have strong negative or positive opinions about online dating and video gaming.

This study seeks to explore and understand the characteristics of non-participants who harbor negative opinions about online dating and video gaming. There are several reasons why this is a potentially useful endeavor. There is currently scarce knowledge about non-participation in these culturally significant activities. These non-participants have largely been ignored and not much is known about them. Before a situation can be addressed, it must be understood. Given that participation in these activities is significant from the point of view of relationship outcomes, it would be worth understanding the characteristics of individuals who choose not to participate, and moreover, harbor negative opinions about these activities despite not having participated in them. For instance, might it have something to do with their current relationship status?

Non-participants have been largely ignored in prior research on online dating and video gaming. For researchers it becomes a duty to pay special attention to ignored groups in order to advance a broader understanding of individual and societal contexts in which modes of participation and non-participation are elicited. From a more instrumental standpoint, industry would benefit from learning more about the people who don't participate in online dating and video gaming, and nevertheless have negative opinions about these activities. An understanding of the demographics and opinions of non-participants can help with the design of industry strategies intended to encourage increased participation, and to influence the opinions of non-participants towards a positive direction. Non-participation is related to technophobia (Brosnan, 2002). The findings from this study will offer clues about technophobia in the context of online dating and video gaming, and help broaden the understanding of that phenomenon.

## 2. Background

### 2.1. Online Dating and Relationships

A large emerging body of research has investigated the phenomenon of online dating. This research has focused on *participants* in online dating. Intuitively, online dating offers efficiency and a modern modality for engaging in relationship seeking. The research finds that online dating presents an opportunity to strategically enhance one's self presentation, and such enhancements,

often slightly deceptive, are ubiquitous (Toma, Hancock, & Ellison, 2008). Higher age is associated with increased involvement in online dating (Stephure, Boon, MacKinnon, & Deveau, 2009). On online dating profiles, individuals usually seek relationships with others who share their political beliefs (Klofstad, McDermott, & Hatemi, 2013). In terms of actual usage behavior, online dating participants look for people with characteristics similar to their own in many, but not all, aspects (Hitsch, Hortaçsu, & Ariely, 2010). Contrary to the “social compensation” hypothesis that individuals with real world social anxiety are more likely to favor online dating, support has been found for the “rich get richer” hypothesis showing that individuals who are low in real world dating anxiety are more active at online dating (Valkenburg & Peter, 2007).

Online dating is an important avenue for seeking and forming relationships, and the population of individuals who don't participate in online dating for whatever reason should draw attention of researchers seeking to understand more about online dating. Moreover, if individuals harbor negative opinions about online dating, that too should pique researchers' interest.

## 2.2. Video Gaming and Relationships

Whereas the relevance of online dating to real and virtual relationships is readily apparent, the relevance is not as apparent in the case of video gaming. Nevertheless, prior research has found that video gaming has strong real and virtual relationship aspects to it. Among the principal motivations for playing video games is a social component which includes the “desire to form long-term meaningful relationships with others,” “having an interest in helping and chatting with other players,” and “deriving satisfaction from being part of a group effort” (Yee, 2006, p. 773). Electronic friendship formation (virtual relationship formation) is one of the needs met by video game play (Colwell & Kato, 2003). Individuals use media (including video games) as a means to form relationships with peers. Such media usage becomes the basis for common topics for discussion and play, and a basis for forming identification with particular groups (Suess et al., 1998).

The emergence of multiplayer online computer games has enabled adolescents to use them as communication tools to “reinforce existing relationships” with members of their social group (Subrahmanyam & Greenfield, 2008). For teens, gaming is often a social experience and they may play with others who are in the room with them, or with people with whom they connect via the internet (Lenhart et al., 2008). Video gaming is a healthy source of socialization for college-aged men (Wack & Tantleff-Dunn, 2009).

Even when video games “didn't facilitate direct social interaction,” gamers felt that indirect interaction “was useful in maintaining and even enhancing relationships” (Wohn, Lampe, Wash, Ellison, & Vitak, 2011). Video gaming generated a feeling of “relatedness” which is “when a person feels connected with others” (Ryan, Rigby, & Przybylski, 2006). Video gamers commonly played games cooperatively or competitively with friends, and rapidly learned “social skills and prosocial behavior that might generalize to their peer and family relations outside the gaming environment” (Granic, Lobel, & Engels, 2014).

Video games can also have less positive associations with real life relationships. Individuals with poorer interpersonal relationships tend higher in addiction to online video games because they can engage in games and internet use as an “alternative to relationships in real life” (Kim, Namkoong, Ku, & Kim, 2008). Addiction or excessive video game play may deter real life relationships, “the quality of interpersonal relationships decreased and the amount of social anxiety increased as the amount of time spent playing online games increased” (Lo, Wang, & Fang, 2005).

While the connection between video gaming and relationships may not be intuitively as strong as that between online dating and relationships, relationship-building and relationship-maintenance are nevertheless some of the major reasons why individuals play video games. Video games are often

social activities, involving multiple people experiencing a group activity together. Despite the potential for gains in forming relationships with others, a large proportion of individuals choose not to participate. For researchers, this represents an intriguing group of individuals who are ‘opting out,’ and researchers should be drawn to learn more about these individuals, especially those individuals who harbor negative opinions about the activity despite a lack of participation in it.

### **2.3. Theory**

A number of theoretical perspectives have been used in studies of online dating and video gaming. Common among these are the sociotechnical theoretical perspective (Ortiz, 2010), and the uses-and-gratifications perspective (Greenberg, Sherry, Lachlan, Lucas, & Holmstrom, 2010). Both are relevant to this study.

Among some key ideas of the sociotechnical perspective are that information technologies are not neutral. They embody the values of their designers or their users depending on who has the power in a given context. They are subject to power relations and these relationships are not static. Technologies shape human-to-human and human-to-machine interactions and relationships, and they themselves are recursively shaped by these interactions and relationships (Ortiz, 2010).

Among some key ideas of the uses-and-gratifications perspective are that individuals are active seekers and users of solutions for their gratification needs. These needs include relationships, learning, entertainment, and emotional sensation (Greenberg et al., 2010). Various contextual factors, individual and otherwise, combine to create different needs, solutions and usage outcomes for different individuals.

A key idea relating the two perspectives is that technologies have the power to shape and frame users’ relationships. These relationships include those that users have with technologies themselves, as well as those they have with other users. The relationships users have with technologies are driven not only by the design intents embedded in technologies by creators and designers, but also by the kinds of uses they are put to by users, and the kinds of gratifications users derive from them.

Another key idea relating the two theoretical perspectives is that individuals’ needs, motivations, actions and outcomes are embedded in context, and need to be understood in context. Understanding the context is the key to understanding individual orientations. For instance, a person’s marital status should be expected to influence what the person thinks of the concept of online dating. A person’s sex should be expected to have an association with how the person perceives male-dominated violence in video games (Anderson & Bushman, 2001). A person’s political orientation, that is whether she is liberal or conservative, should have a bearing on what the person thinks of gratuitous violence in video games or about the perceived promiscuity of online dating (Klofstad et al., 2013). Other factors such as age, education level, income level, internet usage should also provide additional context. For this research study, understanding how such demographic variables relate to non-participants’ opinions is key to understanding the context of non-participation. Sections 5 and 6 take the reader through the process of relating a number of such demographic variables to non-participants’ opinions about online dating and video gaming.

## **3. Data**

### **3.1. Data Source**

This study uses data from the Pew Research Center’s survey on Gaming, Jobs and Broadband (2015). The survey has a sample size of 2,001 cases, and all surveyees are 18 years old or over at the time of the survey. The survey was conducted via telephone using a random digit sample of landline and cellphone numbers in the continental United States. This sampling method is known as random

digit dialing or RDD. Pew describes the process as probability (also called random) sampling, so-called because nearly every person in the population of interest has a known, and non-zero chance of being selected for the sample. The survey was designed to represent the entire adult population of the U.S. According to Pew, the advantage of probability sampling is that if the RDD process is unbiased, it allows for estimating whether the sample differs from the population on any question of interest, and by how much (via calculation of the margin of sampling error and the confidence level). A weighting variable was later included to adjust for sampling issues, so that members in various groups are weighted to their actual proportion in the population; this allows for the overall survey results to represent the national population.

The Pew Research Center describes itself as a nonpartisan fact tank that informs the public about the issues, attitudes and trends shaping America and the world. It conducts public opinion polling and demographic research among other activities. It does not take policy positions and is a subsidiary of The Pew Charitable Trusts, its primary funder.

### 3.2. Weighting, Software, Significance Level

Pew data have a weighting component. All statistics in this study were calculated after weighting the raw data using the “stdweights” variable in the dataset. Data analyses were conducted using SPSS v23 32-bit for Windows.

In testing for statistical significance, a norm for p-value is to utilize an alpha threshold level that is less than or equal to 0.05. This study uses that norm.

## 4. Descriptive Statistics

The full Pew survey questionnaire is available online at Pew Research Center (2015). This study only uses a few questions from that questionnaire. Appendix 1 contains the portion of the questionnaire used in this research. The original questionnaire labels and coding schemes are preserved in Appendix 1 to permit for cross-checking with the original questionnaire.

Table 4-1 to Table 4-4 contain descriptive statistics for the overall survey sample on the basis of age, sex, participation in online dating and participation in playing video games.

**Table 4-1: AGE. What is your age?**

	N	Minimum	Maximum	Mean	Std. Deviation
Valid	1967	18	97	46.77	17.930
Don't know	5				
Refused	29				
Total	2001				

**Table 4-2: SEX. Respondent's sex**

	Frequency	Valid Percent
Male	971	49
Female	1030	51
Total	2001	100

**Table 4-3: DATE1a. Have YOU, personally, ever used an online dating site such as Match.com, eHarmony, or OK Cupid?**

		Frequency	Valid Percent (internet users only)
Valid	Yes	250	14.4
	No	1481	85.4
	Don't know	1	.1
	Refused	2	.1
	Total	1733	100.0
	NA*	268	
Total		2001	

\*NA: These surveyees were not asked this question because they indicated that they don't use the internet in the earlier question 'EMINUSE'.

**Table 4-4: GAME1. Do you ever play video games on a computer, TV, game console, or portable device like a cell phone?**

	Frequency	Valid Percent
Yes	983	49.1
No	1015	50.7
Don't know	1	0.1
Refused	2	0.1
Total	2001	100

Fully 85% of internet users have never participated in online dating, and 50% of survey respondents have never participated in playing video games. The question 'Date1a' regarding participation in online dating was only asked to surveyees who had answered in affirmative to an earlier question about whether they were users of the internet (the 'EMINUSE' question in Appendix 1). In Table 4-3 the "NA" number of 268 consists of respondents who indicated in the negative for the 'EMINUSE' question. Hence, the effective sample size for 'Date1a' is 1,733. The 'Game1' question in Table 4-4 was asked to all because even non-users of the internet could have used a TV or console to play video games.

Of the 2,001 respondents (weighted), the sexes are evenly split (Table 4-2). The average age of respondents was 46.77, with a minimum of 18 and a maximum of 97. There are 1,967 valid responses to the age question, with 34 respondents saying they didn't know or refusing to answer the question.

The focus of inquiry in this research study is non-participants. That is individuals who have never participated in online dating, or in playing video games. Hence, further analyses are conducted using the subsamples that answered "No" in Table 4-3 consisting of a subsample of 1,481 respondents who have never participated in online dating, and that answered "No" in Table 4-4 consisting of a subsample 1,015 respondents who have never participated in playing video games. The two activities (online dating and video gaming) are addressed in sections 5 and 6, separately. For each activity, this study explores a range of characteristics of the non-participants who harbor negative opinions about the activity.

## 5. Non-Participants and Online Dating

Analyses in this section are conducted on the subsample consisting of individuals who have never participated in online dating. Given that online dating is an activity that is designed to promote

relationship seeking and formation, we want to understand the characteristics of users who choose to not participate.

### 5.1. Dependent Variable

The survey includes six questions about respondents’ opinions about online dating. The questions are available under ‘Date4’ in the questionnaire in Appendix 1. For convenience, the questions are repeated in Figure 5-1.

Date4: Respondents were asked if they “Agree” or “Disagree” with the following statements. Other possibilities were “Don’t Know” and “Refused”.

- a. Online dating is a good way to meet people
- b. Online dating allows people to find a better match for themselves because they can get to know a lot more people
- c. People who use online dating sites are desperate
- d. Online dating keeps people from settling down because they always have options for people to date
- e. Online dating is easier and more efficient than other ways of meeting people
- f. Online dating is more dangerous than other ways of meeting people

**Figure 5-1: (Date4 from Appendix 1) Questionnaire - opinions about online dating**

The results for non-participants are tabulated in Table 5-1. The responses for “Don’t Know” and “Refused” are coded as missing values.

**Table 5-1: Results for non-participants in online dating, to questions in Figure 5-1**

		DATE4a	DATE4b	DATE4c	DATE4d	DATE4e	DATE4f
Valid	Agree	861	757	303	445	679	862
	Disagree	513	613	1078	904	681	534
Missing		106	111	100	132	121	85
Total		1481	1481	1481	1481	1481	1481
Missing %		7%	7%	7%	9%	8%	6%

There are six questions, detailed in Figure 5-1 (‘Date4a’ to ‘Date4f’), about respondents’ positive or negative opinions on online dating. For our analysis, these six questions need to be consolidated such that they produce a single dependent variable containing the consolidated opinion of non-participants. To form this single dependent variable, a new consolidated ‘Date4’ variable was created. This was done in several steps. From Figure 5-1 it can be observed that ‘Date4c’, ‘Date4d’ and ‘Date4f’ are reverse-coded compared to the other questions. First, the results for these questions were recoded to make all the questions coded in a similar direction. Next, the consolidated ‘Date4’ variable was computed as the mean of each respondent’s score from this partially recoded set of six questions. The consolidated ‘Date4’ variable is now the sole dependent variable.

To clarify this further, for ‘Date4a’ to ‘Date4f’, “Yes” responses were coded as 1 and “No” responses were coded as 2. Let’s say a certain respondent’s responses to the six questions in ‘Date4a’ to ‘Date4f’ were: 2, 1, 1, 2, 1, 2. We know that ‘Date4c’, ‘Date4d’ and ‘Date4f’ are reverse-coded, so those responses need to be recoded for our hypothetical respondent. So, the partially recoded set of

six responses for our hypothetical respondent would now be: 2, 1, 2, 1, 1, 1 (we have recoded 'Date4c' from 1 to 2, 'Date4d' from 2 to 1, and 'Date4f' from 2 to 1). And this respondent's consolidated 'Date4' score will be the average of the scores in this partially recoded set of six responses; that is, the average of 2, 1, 2, 1, 1, and 1; that is, 8/6 or 1.33.

## 5.2. Independent Variables

A number of demographic variables for each individual respondent have been measured and are available in the dataset. The variables that are potential independent variables are sex, age, community rating, frequency of internet usage, parental status, education level, political ideology, income level and marital status. All of these are potentially interesting because the goal is to understand the context for why non-participants may harbor negative opinions about online dating, and these variables provide some of the context.

Age is potentially interesting as it has been found to be associated with involvement in online dating (Stephure et al., 2009). Local community rating is potentially interesting because impressions about a local community shape impressions about online interactions with people in the community (Hitsch et al., 2010; Mislove, Viswanath, Gummadi, & Druschel, 2010). Frequency of internet usage is potentially interesting because it has been found to be associated with a greater sense of belonging in an online community (Sum, Mathews, Pourghasem, & Hughes, 2009). Sex, parental status, education, income level and marital status are potentially interesting because they affect how participants present themselves in online dating profiles (Toma et al., 2008). Marital status is also interesting because a person's status should be expected to be associated with participation in online dating. Political ideology is potentially interesting because has an association with online dating preferences (Klofstad et al., 2013). These variables are especially interesting because the prior studies have examined them from the perspective of participation in online dating, and this study focuses on examining these variables from the perspective of non-participation in online dating. It will be instructive to understand how the same variables relate to negative opinions about online dating among non-participants.

## 5.3. Model and Statistical Technique

The dependent variable (the consolidated 'Date4') is continuous, and one of the independent variables (marital status, listed as 'marital' in Appendix 1) is categorical. The dependent variable's distribution was tested for normality, and the histogram and Q-Q plots indicated that it was approximately normally distributed. Given this situation with a single continuous approximately normally distributed dependent variable, and multiple independent variables one of which is categorical, the General Linear Model procedure in SPSS is appropriate for analyzing the relationship between dependent and independent variables.

All responses for "Don't Know" and "Refused" are coded as missing values. There are less than 10% missing values for each of the variables. Analyses were conducted using list wise exclusion for missing values. Marital status was recoded so that other categories could be compared to the married group. Figure 5-2 depicts the model with the dependent variable and the independent variables. Table 5-2 contains results from the General Linear Model analysis.

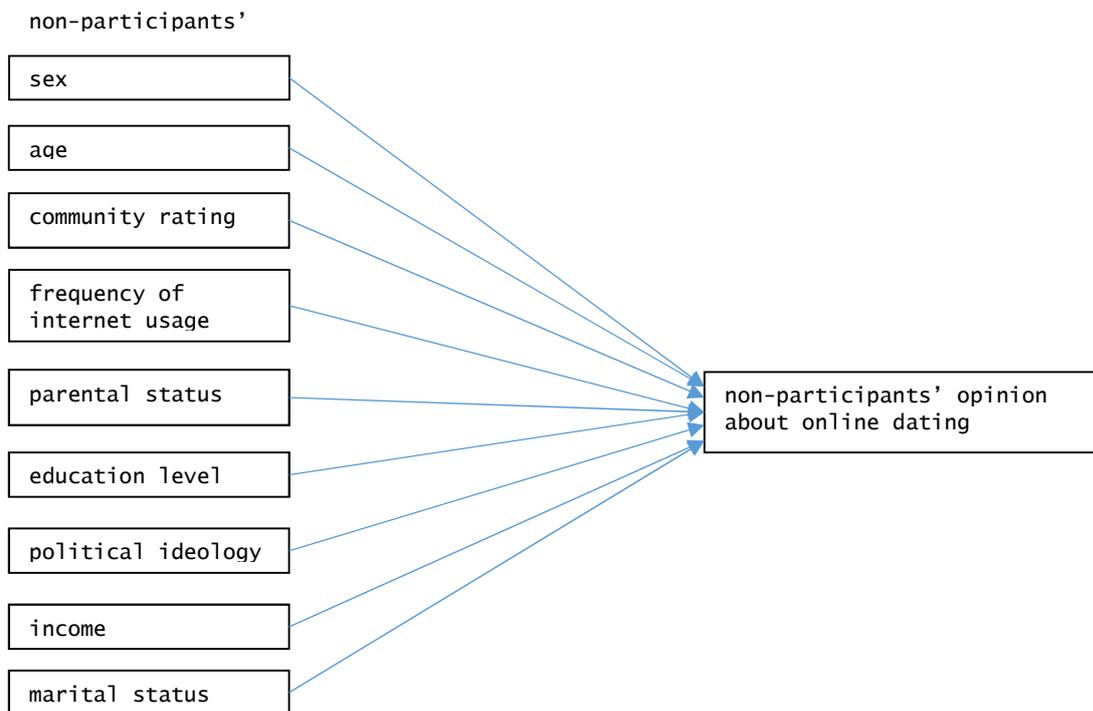


Figure 5-2: The GLM (general linear model) for non-participants in online dating

### 5.4. Results

Table 5-2: Results of the GLM (general linear model) in Figure 5-2

Parameter	B	Sig.
Intercept	1.450	0.000
sex	0.022	0.202
community rating	0.017	0.127
frequency of internet usage	0.028	0.001
age	0.001	0.064
parental status	-0.021	0.284
education level	-0.016	0.001
political ideology	-0.023	0.005
income	-0.011	0.008
marital status [Zmarital]	0.161	0.842
[Zmarital=2.00]	0.030	0.347
[Zmarital=3.00]	-0.031	0.380
[Zmarital=4.00]	0.014	0.800
[Zmarital=5.00]	-0.004	0.931
[Zmarital=6.00]	0.004	0.874
[Zmarital=7.00]	0 <sup>a</sup>	.

<sup>a</sup> This parameter is set to zero because it is redundant.

Overall model significance: The Tests of Between-Subjects Effects returned model F-statistic at 7.34, with a df of 13, and resulting Sig of 0.000. R Squared = .078 (Adjusted R Squared = .068)

The results in Table 5-2 indicate that for non-participants in online dating, frequency of internet usage, education level, political ideology and income level are significant predictors ( $p \leq 0.05$ ) of opinions about online dating. For non-participants, more negative opinions about online dating are associated with a higher frequency of internet usage, a lower education level, a more conservative political orientation and a lower income level.

## 6. Non-Participants and Video Games

Analyses in this section are conducted on the subsample consisting of individuals who have never participated in playing video games. Given that video games are found to be strongly associated with relationship and social network formation amongst participants, we want to understand the characteristics of users who choose to not participate.

### 6.1. Dependent Variables

The survey includes seven questions about respondents' opinions about video games. The questions are available under 'Game2' and 'Game3b' in the questionnaire in Appendix 1. For convenience, the questions are repeated in Figure 6-1. The results for non-participants for 'Game2a' to 'Game2f' and for 'Game3b' are tabulated in Table 6-1. The responses for "Don't Know" and "Refused" are coded as missing values.

Game2: Respondents were asked to indicate their opinions on whether the following statements were generally "True for MOST games," "True for some but not others" or "NOT true for most games." Other possibilities were "Not Sure" and "Refused".

- a. Video games help develop good problem solving and strategic thinking skills
- b. Video games are a waste of time
- c. Video games portray women poorly
- d. Video games promote teamwork and communication
- e. Video games portray minority groups poorly
- f. Video games are a better form of entertainment than watching TV

Game3: Respondents were asked if they "Agree" or "Disagree" with the following statements. Other possibilities were "Don't Know" and "Refused".

- b. People who play violent video games are more likely to be violent themselves

Figure 6-1: (Game2 and Game3b from Appendix 1) Questionnaire - opinions about online dating

**Table 6-1: Results for non-participants in video games, to questions in Figure 6-1**

		GAME2a	GAME2b	GAME2c	GAME2d	GAME2e	GAME2f	GAME3b
Valid	True for MOST games	83	336	119	59	93	53	
	True for some but not others	389	291	213	272	142	242	
	NOT true for most games	217	132	109	261	140	350	
	Agree							476
	Disagree							430
Missing		327	256	574	423	640	370	110
Total		1016	1015	1015	1015	1015	1015	1016
Missing %		32%	25%	57%	42%	63%	36%	11%

All seven questions in Table 6-1 (‘Game2a’ to ‘Game2f’, and ‘Game3b’) are about respondents’ positive or negative opinions on video games. The first six are scored by respondents on a 3-level scale of agreement (“True for MOST games,” “True for some but not others” or “NOT true for most games”) and the last one is scored on a 2-level scale of agreement (“Agree” or “Disagree”). Because the two sets of questions operate on different scales, they cannot all be directly consolidated into a single dependent variable. However, the first six questions can be directly consolidated into a single dependent variable as they share the same scale. In order to form a single dependent variable about non-participants’ opinion from the first six questions, a new, consolidated ‘Game2’ variable was created. This was done in several steps. From Table 6-1 it can be observed that ‘Game2b’, ‘Game2c’ and ‘Game2e’ are reverse coded compared to the other questions. First, the results for these questions were recoded so as to make all the questions coded in a similar direction. Next, the consolidated ‘Game2’ variable was computed as the mean of each respondent’s score from the six questions.

To clarify this further, for ‘Game2a’ to ‘Game2f’, “True for MOST games” responses were coded as 1, “True for some but not others” responses were coded as 2, and “NOT true for most games” responses were coded as 3. Let’s say a certain respondent’s responses to the six questions in ‘Game2a’ to ‘Game2f’ were: 2, 1, 2, 2, 3, 2. We know that ‘Game2b’, ‘Game2c’ and ‘Game2e’ are reverse-coded, so those responses need to be recoded for our hypothetical respondent. So, the partially recoded set of six responses for our hypothetical respondent would now be: 2, 3, 2, 2, 1, 2 (we have recoded ‘Game2b’ from 1 to 3, and ‘Game2e’ from 3 to 1; ‘Game2c’ stays unchanged from 2 to 2). And this respondent’s consolidated ‘Game2’ score will be the average of the scores in this partially recoded set of six responses; that is, the average of 2, 1, 2, 2, 3, and 2; that is, 12/6 or 2.

The consolidated ‘Game2’ variable is one of the two dependent variables. The other is ‘Game3b’.

## 6.2. Independent Variables

Various demographic variables for each individual respondent have been measured and are available in the dataset. The variables that are potential independent variables are sex, age, community rating, frequency of internet usage, parental status, education level, political ideology and income level. These are potentially interesting because the goal is to understand the context for why non-participants may harbor negative opinions about video games, and these variables provide some of the context.

Sex and age are potentially interesting as they have been found to be associated with involvement in video gaming (Greenberg et al., 2010). Local community rating is potentially interesting because feelings about local community have been found to have an association with feelings about online video gaming communities (Williams, Caplan, & Xiong, 2007). Frequency of internet usage is potentially interesting because it has been found to be associated with video gaming (Morahan-Martin & Schumacher, 2000). Parental status, education, income level and ideological leanings are potentially interesting because they affect outcomes related to playing video games (Anderson & Bushman, 2001; Ferguson, 2007). These variables are especially interesting because the prior studies examined them from the perspective of participation in video gaming, and this study focuses on examining these variables from the perspective of non-participation in video gaming. It will be instructive to understand how the same variables relate to negative opinions about video gaming among non-participants.

### 6.3. Model and Statistical Technique

The dependent variable ‘Game2’ is continuous and the dependent variable ‘Game3b’ is dichotomous. There are several dichotomous and continuous independent variables. The ‘Game2’ variable’s distribution was tested for normality, and the histogram and Q-Q plots indicated that it was approximately normally distributed. Given this situation with a continuous approximately normally distributed dependent variable, a dichotomous dependent variable, and multiple dichotomous and continuous independent variables, the General Linear Model procedure in SPSS is appropriate for analyzing the relationship between dependent and independent variables.

All responses for “Not Sure,” “Don’t Know” and “Refused” are coded as missing values. In Table 6-1 it can be seen that the percentage of missing values for the ‘Game2a’ to ‘Game2f’ questions is quite high. This is owing to the “Not Sure” option in that question, which a large number of respondents chose. Despite the large number of missing values for this question, there is still a large sample size to work with. For all the other variables used in the model, there are less than 10% missing values for each of the variables. Analyses were conducted using list wise exclusion for missing values. Figure 6-2 depicts the model with the dependent and independent variables. Table 6-2 contains results from the General Linear Model analysis.

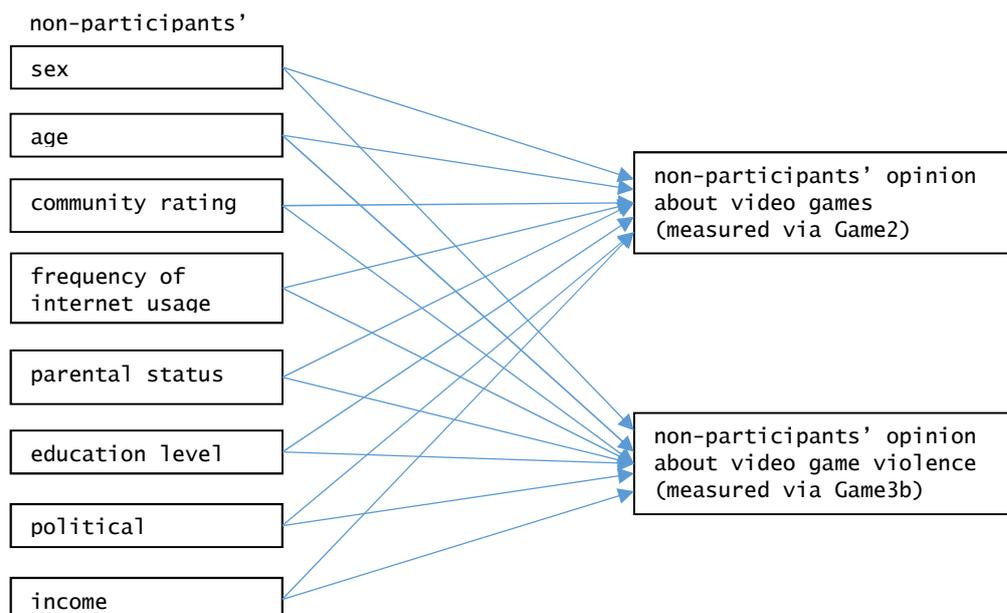


Figure 6-2: The GLM (general linear model) for non-participants in video gaming

## 6.4. Results

**Table 6-2: Results of the GLM (general linear model) in Figure 6-2**

Dependent Variable	Parameter	B	Sig.
Game2	Intercept	2.284	0.000
	sex	-0.009	0.810
	community rating	-0.037	0.136
	frequency of internet usage	0.003	0.871
	age	0.005	0.001
	parental status	-0.034	0.419
	education level	0.006	0.571
	political ideology	-0.045	0.018
	income	-0.009	0.311
GAME3b	Intercept	1.865	0.000
	sex	-0.125	0.003
	community rating	0.014	0.618
	frequency of internet usage	-0.023	0.251
	age	-0.007	0.000
	parental status	0.042	0.363
	education level	0.012	0.314
	political ideology	-0.011	0.577
	income	0.021	0.033

Overall model significance: Game2: the Tests of Between-Subjects Effects returned model F-statistic at 3.617, with a df of 0, and resulting Sig of 0.000. R Squared = .053 (Adjusted R Squared = .038)

Game3b: the Tests of Between-Subjects Effects returned model F-statistic at 6.290, with a df of 0, and resulting Sig of 0.000. R Squared = .089 (Adjusted R Squared = .074)

The results in Table 6-2 indicate that for non-participants in video gaming, age and political ideology are significant predictors ( $p \leq 0.05$ ) of opinions about video gaming as measured by the ‘Game2’ variable. For non-participants, more negative opinions about video gaming are associated with a higher age and a more conservative political orientation. Additionally, sex, age and income are significant predictors ( $p \leq 0.05$ ) of opinions about video gaming as measured by the ‘Game3b’ variable. A reminder here that responses in ‘Game3b’ are coded in the opposite orientation to ‘Game2’ (lower response scores in ‘Game3b’ indicate a more negative opinion associated with video gaming). Hence, for non-participants, a belief that people who play violent video games are more likely to be violent themselves is associated with higher age, lower income level, and being female.

## 7. Discussion

Among individuals who have never participated in online dating, why would a higher frequency of internet usage, a lower education level, a more conservative political orientation and a lower income level be associated with more negative opinions about online dating? Definitive answers will require formal research in the future. However, as this is exploratory research, some speculation is in order. For heavier users of the internet to resist participation in online dating, it can be argued that they would *need* to be more negatively opinionated about the concept of online dating. For those with more conservative political leanings, the logic may have to do with their preference for the status quo (Klofstad et al., 2013). Online dating represents a change in traditional norms, and hence resistance to participation can easily be seen as associated with negative opinions about the

change in the status quo. Lower education and income levels represent lower socioeconomic status, and for those with lower socioeconomic status it may have to do with the existence of a “sour grapes” effect, the idea that “preferences underlying a choice may be shaped by the constraints” (Elster, 2016, p. ix). That is, these individuals may not be able to participate in online dating for some reason such as to do with affordability or a belief that they won’t perform well in that market, and may subsequently develop negative opinions to justify non-participation.

Among individuals who have never participated in video gaming, why would a higher age and a more conservative political orientation be associated with more negative opinions about video gaming? Once again, definitive answers will require formal research in the future. And once again, as this is exploratory research, some speculation is in order. In prior research on participants, in participants with higher age a general association has been found with more negative opinions about video gaming (Greenberg et al., 2010). This seems to have persisted for non-participants. Finally, among individuals who have never participated in video gaming, why would those with higher age, lower income level, and who are female, be more likely to believe that people who play violent video games are more likely to be violent themselves? The gender association is easy to speculate about. Male-dominated violence in video games, and associated spillover effects into real life have been well documented in the media and in research (Anderson & Bushman, 2001; Ferguson, 2007). Females are disproportionately affected by gender violence, and for them the association between violent video games and violence among people who play them may thus evoke stronger feelings and agreement. For the higher age association, it may have to do with the earlier speculation about the general association between higher age and more negative opinions about video gaming. For the lower income association, it may have to do with the quality of information that is available and accessible at lower socioeconomic strata.

There are also dark sides to technology usage. Addictions, over-dependence, anti-social behavior, and shallow experiences are some of them. Non-participation is not necessarily a questionable choice. Instead of being technophobic, non-participants may simply have better self-control, or be more cautious or better adjusted to technology usage, and choose to avoid certain types of usage experiences in order to avoid the accompanying drawbacks and hazards that come with these experiences. All of this speculation lays out the groundwork for worthwhile future research endeavors.

## 8. Conclusion

The theme of this special issue is ‘relationships’. Given that online dating and video gaming have strong implications for real world and virtual relationships, we ask: “What are the characteristics of individuals who not only opt out altogether, but also express negative opinions about these information technology related activities?” This study of these individual characteristics, as suggested by the sociotechnical and uses-and-gratifications theoretical perspectives, allows us to uncover the context from which such opinions emerge. Significant relationships were found between certain demographic characteristics and negative opinions among non-participants, and these are described and discussed in the previous section.

A limitation of this study is that the results of the General Linear Models have low R-square values (Table 5-2 and Table 6-2). This implies that the various independent variables identified as having significant associations with the dependent variables nevertheless explain only a small amount of the variation in the dependent variables. Of the antecedents associated with non-participants’ opinions towards online dating and video gaming, this research has only identified a small slice.

Another limitation of this study is that the questionnaire comes up short in how it measures respondents’ relationship status. In the relationship status question, the questionnaire asks

respondents if they are married, or living with a partner, or one of various categories of 'single'. It does not measure if respondents are in a relationship but not living with a partner. It is possible that the reason why relationship status did not produce a significant association in this study had to do with this shortcoming in the data collection.

There are several implications for research, practice, individuals and society. These, and the limitations mentioned earlier point to directions for future research. When individuals who have never participated in using a technology nevertheless harbor negative opinions about it, this may be an issue related to technophobia (Brosnan, 2002). This is an opportunity for researchers to investigate underlying theoretical reasons for the negative opinions, and the extent to which these opinions extend to 1) other technologies, 2) sociotechnical aspects of subjects' experiences, and 3) broader aspects of subjects' lives.

It needs to be emphasized that non-participants are not a homogenous block. Whereas some may exhibit non-participation due to technophobia, others may do so because they have a high level of understanding of the dark side of information technology - the addictions and shallow experiences it can foster - and choose to avoid participating in certain domains for that reason, while still being quite capable of using information technology in other domains for more productive purposes. If true, this would signal the emergence of a new kind of digital elite, one that is very cognizant of the pros and cons of various domains of information technology, and exhibits the self-control to use technology sparingly, for productive ends. For researchers, this presents a potential topic of exploration. Technophobia, too, is not an all-encompassing, single-use label. There are hints here of the various nuances to technophobia. In this study, a massive proportion of internet users had not participated in online dating. Because these were internet users we can surmise that they were not under the spell of some overarching form of technophobia. Instead, there may have been a more nuanced form of technophobia, one that doesn't deter them from being internet-users, but does deter them from using certain specific applications, such as online-dating. For future research the implication is that this nuanced concept of technophobia may be something worth investigating.

Individuals need to consider how their personality and opinions affect their experience of the world, particularly their ability to take advantage of new modalities and opportunities for forming relationships that are afforded by advances in information technological applications. By not participating in online dating or video gaming, individuals are missing out on opportunities to form new relationships based on convergent interests and new kinds of social networks. We saw here that individuals could develop strong negative or positive opinions about activities without having participated in them. There is a substantial body of research in psychology related to 'priming', 'anchoring' and the 'halo effect', that points to how individuals sometimes have a tendency to be influenced into strong opinions, before experiencing whatever they are opinionated about. In this study, we see an example of this phenomenon. Individuals will be well-advised to be aware of the phenomenon, and would benefit from having opinions that are informed by experience and participation.

The socio-technical perspective's focus on power relations between designers, users and technologies has various implications here. Video gaming has an image problem concerning its depictions of women and violence. The designers and creators of video games have inserted their values into the designs of these games. That was their expression of power directed towards the technology and its future users. However, by opting out en masse, users are manifesting their power to choose to not participate. Online dating too has an image problem. Surveyees opined that it made users look desperate and was a potentially more dangerous way of meeting people. Once again, in affording certain kinds of interactions and disclosures, the designers and creators of online dating experiences inserted their own values into the design. However, in a free society, potential users can express their power to choose not to participate. When designs and products violate the sensibilities

of users, for example by using poor depictions of women or gratuitous violence to promote bonding and relationships between users, these actions come with potentially adverse outcomes such as this situation where even people who've never participated in interacting with an information technology application can have strong negative opinions about it.

The online dating and video game industries need to focus on the kinds of affordances they make available to potential users and the kinds of constraints they intentionally or inadvertently impose on the usage of their product offerings. Non-participants with negative opinions are significantly more likely to be conservative in political orientation. This is an opportunity for the online dating industry to create offerings that cater especially to conservatives and their concerns. Non-participants with lower incomes and education attainment levels tend to have more negative opinions about online dating. The online dating industry needs to reflect on what it may have intentionally or unintentionally projected to promote such opinions in these groups that are likely to be more vulnerable to marginalization. Likewise, there is a need for the video gaming industry to reflect on why the image it projects causes older and more conservative non-participants to have more negative opinions about the industry, and why there are more significant concerns about video game violence among non-participants who are older, have lower income, and are female. Given that video games can serve to foster relationships, there is an opportunity for the video game industry to cater to older, more conservative, lower income, or female non-participants with offerings that serve their concerns and needs, and appeal to their relationship goals.

The study of non-participants in any activity should give rise to better industry strategies for serving the needs of these groups. Researchers of online dating and video gaming have focused overwhelmingly on the experiences of participants in these activities. However, in many other areas of information technology research, such as in digital divide research, it is customary to study non-participants to try to understand issues faced by potential users. An implication of this study is that it serves as a call to researchers to incorporate the study of non-participants in more contexts.

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## Appendix 1

### Questionnaire

Note: Here, (VOL.) refers to responses that the questioner doesn't offer to the responder, but are voluntarily offered by the responder.

SEX RECORD RESPONDENT SEX

- 1 Male
- 2 Female

AGE What is your age?  
\_\_\_\_\_ years [RECORD EXACT AGE 18-96]

- 97 97 or older
- 98 Don't know
- 99 Refused

Q1 Overall, how would you rate your community as a place to live? Would you say it is... [READ]  
{PIAL trend, Library User Typology Survey Aug-Sept '13}

- 1 Excellent
- 2 Good
- 3 Only fair, OR
- 4 Poor?
- 8 (VOL.) Don't know
- 9 (VOL.) Refused

EMINUSE Do you use the internet or email, at least occasionally? {PIAL Teen Trend; PIAL May 2013, Library Typology July-Sept. 2013}

- 1 Yes
- 2 No
- 8 (VOL.) Don't know
- 9 (VOL.) Refused

INTFREQ About how often do you use the internet? [READ] {Modified Teens Relationships}

- 1 Almost constantly
- 2 Several times a day
- 3 About once a day
- 4 Several times a week, OR
- 5 Less often?
- 8 (VOL.) Don't know
- 9 (VOL.) Refused

ASK ALL INTERNET USERS (EMINUSE=1 OR INTMOB=1):

DATE1a Have YOU, personally, ever used an online dating site such as Match.com, eHarmony, or OK Cupid? {PIAL Trend, May 2013}

- 1 Yes
- 2 No
- 8 (VOL.) Don't know

9 (VOL.) Refused

DATE4 Many people have different opinions about online dating. Please tell me if you AGREE or DISAGREE with the following statements about online dating. [INSERT ITEMS; RANDOMIZE; ALWAYS ASK a-b TOGETHER, ALWAYS ASK c-d TOGETHER]. [READ FOR FIRST ITEM, THEN AS NECESSARY: Do you agree or disagree with this statement?] {PIAL Trend, May 2013 unless otherwise noted}

- a. Online dating is a good way to meet people
- b. Online dating allows people to find a better match for themselves because they can get to know a lot more people
- c. People who use online dating sites are desperate
- d. Online dating keeps people from settling down because they always have options for people to date
- e. Online dating is easier and more efficient than other ways of meeting people
- f. Online dating is more dangerous than other ways of meeting people

CATEGORIES

- 1 Agree
- 2 Disagree
- 8 (VOL.) Don't know
- 9 (VOL.) Refused

ASK ALL:

GAME1 Do you ever play video games on a computer, TV, game console, or portable device like a cell phone?

- 1 Yes
- 2 No
- 8 (VOL.) Don't know
- 9 (VOL.) Refused

ASK ALL:

GAME2 Many people have different opinions about video and online games. For each of the following statements about video games, please tell me if you think it's generally true for MOST games, true for some games but not others, generally NOT true for most games, or if you are not sure. (First,/Next,) [INSERT ITEMS; RANDOMIZE]. [READ FOR FIRST ITEM THEN AS NECESSARY: Do you think this is true for most video games, true for some games but not others, NOT true for most video games, or are you not sure?]

- a. Video games help develop good problem solving and strategic thinking skills
- b. Video games are a waste of time
- c. Video games portray women poorly
- d. Video games promote teamwork and communication
- e. Video games portray minority groups poorly
- f. Video games are a better form of entertainment than watching TV

CATEGORIES

- 1 True for MOST games
- 2 True for some but not others

- 3 NOT true for most games
- 8 Not sure
- 9 (VOL.) Refused

ASK ALL:

GAME3 Next, based on what you know about video games, please tell me if you agree or disagree with the following statements. (First,/Next,) [INSERT ITEMS; RANDOMIZE]. Do you agree or disagree?

- b. People who play violent video games are more likely to be violent themselves

CATEGORIES

- 1 Agree
- 2 Disagree
- 8 (VOL.) Don't know
- 9 (VOL.) Refused

MARITAL Are you currently married, living with a partner, divorced, separated, widowed, or have you never been married? [IF R SAYS "SINGLE" PROBE TO DETERMINE APPROPRIATE

CATEGORY]

- 1 Married
- 2 Living with a partner
- 3 Divorced
- 4 Separated
- 5 Widowed
- 6 Never been married
- 8 (VOL.) Don't know
- 9 (VOL.) Refused

PAR Are you the parent or guardian of any children under age 18 now living in your household?

- 1 Yes
- 2 No
- 8 (VOL.) Don't know
- 9 (VOL.) Refused

EDUC2 What is the highest level of school you have completed or the highest degree you have received? [DO NOT READ] [INTERVIEWER NOTE: Enter code 3-HS grad if R completed training that did NOT count toward a degree]

- 1 Less than high school (Grades 1-8 or no formal schooling)
- 2 High school incomplete (Grades 9-11 or Grade 12 with NO diploma)
- 3 High school graduate (Grade 12 with diploma or GED certificate)
- 4 Some college, no degree (includes some community college)
- 5 Two year associate degree from a college or university
- 6 Four year college or university degree/Bachelor's degree (e.g., BS, BA, AB)
- 7 Some postgraduate or professional schooling, no postgraduate degree

8 Postgraduate or professional degree, including master's, doctorate, medical or law degree (e.g., MA, MS, PhD, MD, JD)

98 Don't know

99 Refused

IDEO In general, would you describe your political views as... [READ]

1 Very conservative

2 Conservative

3 Moderate

4 Liberal, OR

5 Very liberal?

8 (VOL.) Don't know

9 (VOL.) Refused

INC Last year -- that is in 2014 -- what was your total family income from all sources, before taxes? Just stop me when I get to the right category... [READ] {Master INC2}

1 Less than \$10,000

2 10 to under \$20,000

3 20 to under \$30,000

4 30 to under \$40,000

5 40 to under \$50,000

6 50 to under \$75,000

7 75 to under \$100,000

8 100 to under \$150,000

9 \$150,000 or more

98 (VOL.) Don't know

99 (VOL.) Refused