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# The Effects of Fantasy Role-Play on Bravery, Motivation, and Physiological Fear Responses While Playing Horror Video Games

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THE EFFECTS OF FANTASY ROLE-PLAY ON BRAVERY, MOTIVATION, AND  
PHYSIOLOGICAL FEAR RESPONSES WHILE PLAYING HORROR VIDEO GAMES

by

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Submitted in partial fulfillment

of the requirements for the degree of

Bachelor of Arts

in

Honours Psychology

Faculty of Arts and Social Science

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HURON UNIVERSITY COLLEGE

FASCIMILE OF CERTIFICATE OF EXAMINATION

(The original with signatures is on file in the Department)

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The Effects of Fantasy Role-Play on Bravery, Motivation, and Physiological Fear Responses  
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## Abstract

A prior study found that role-playing exercises might have the capacity to reduce people's fear (Giulietti, 2017). The present experiment was designed to replicate, improve upon, and extend the results of the prior study. Participants were randomly assigned to role-play either as a brave and powerful wizard or an ordinary accountant before playing the computer horror game, *Slender: The Eight Pages*. While participants played, they imagined themselves as their respective role-play character, were observed for their bravery and motivation to complete the game's objective, and had their skin conductance measured. No significant differences were found between conditions and the prior study's results were not replicated. Recommendations for future research involving role-playing, computer games, and skin conductance are provided.

*Keywords:* role-playing games, fear, motivation, bravery, galvanic skin response

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## Introduction

Over 8-million Americans played *Dungeons & Dragons* in 2017 (Weiss, 2018). Despite its popularity, there exists insufficient empirical research on the effects of playing *Dungeons & Dragons* or similar role-playing games. Unfortunately, the main research on these games exists as case studies from the 1980s and 1990s (e.g. Hughes, 1988; Blackmon, 1994). Although the capacity for role-playing games to have psychological and physiological effects is understudied, there are compelling reasons to believe that they might have these influences on a person. One such reason is that organizations like The Bodhana Group and Game to Grow use role-playing games as an attempt to improve social and educational skills, to modify behaviour, as well as to help treat addiction, anxiety, depression, grief, and trauma. Although these organizations claim to be successful in their attempts, there is an unfortunate lack of empirical research supporting their findings in comparison to a control group. Another reason to believe that role-playing games might have psychological and physiological effects on a person is because case studies have reported the benefits of these games for individuals with clinical depression (Hughes, 1988) and individuals with schizoid personality disorder (Blackmon, 1994). Because of the alleged benefits of these games, the present experiment empirically studied role-playing to determine if it can be used to increase bravery and motivation, and reduce physiological responses to fear.

Role-playing games (RPGs) are a broad genre of computer and tabletop games in which the players assume a role to be acted out from a first-person perspective. These games are often cooperative – rather than competitive – and are acted out in a fashion similar to improvisational theatre (Hawkes-Robinson, 2011). Among the games in the fantasy subgenre of RPGs, *Dungeons & Dragons* is perhaps the most popular. *Dungeons & Dragons* is considered an RPG because each player (except for one) portrays a single character from a first-person perspective

across numerous adventures throughout the entirety of the game. The remaining player is known as the *Dungeon Master* and it is her role to act as both a narrator and a referee to communicate the story and setting to the other players, and to resolve conflicts that arise between them.

*Dungeons & Dragons* belongs in the fantasy subgenre of RPGs because the characters in the game include fantastical beings such as elves, dwarves, wizards, and dragons. Since playing a fantasy RPG involves imagining yourself as a fantastical being who is brave and powerful, it is theorized that engaging in fantasy role-playing exercises might increase bravery and motivation, and reduce physiological responses to fear.

One of the earliest studies of role-playing games was conducted by Hughes (1988). Hughes published the results of a case study of one of his clients, Malori. The client was a 27-year-old, married, university graduate suffering with debilitating depression for at least 12 months, which prevented her from being able to work for more than a few hours a day. Despite treatment attempts by psychiatrists, physical specialists, mental health counsellors, physiotherapists, dieticians, and a naturopath, Malori reported that RPGs had been the most effective method to treat her depression. Hughes proposed that role-playing can be used as a healing process and included quotations from Malori to demonstrate this capacity. Malori claimed:

I noticed that when my illness was first diagnosed that when I role-played, I had no symptoms! I wasn't depressed, I wasn't physically ill. I was happy, I was strong. The difference between when I was role-playing (especially when I was playing [my character]) and when I wasn't was really quite strange. On one hand I was extremely ill, and on the other I was bouncy and energetic and having fun.



Hughes explains this phenomenon by suggesting that Malori's role-played character was an idealized version of herself. He explains that in role-playing an idealization of herself, Malori was able to examine her conflicts about social roles and expectations and see the positive aspects of her self-image and personality that she was neglecting. This case infers that RPGs might be able to be used more generally in psychotherapeutic treatment, the characters that players role-play may be idealizations of themselves, and there may be a distinction between feelings experienced during role-play and feelings experienced outside of role-playing.

Another case study implementing RPGs in psychotherapeutic treatment was reported by Blackmon (1994). The client in this study was Fred, a 19-year-old college student with schizoid personality disorder who had attempted suicide prior to being treated. Initially, Fred was reluctant to share his experiences and emotions while being treated by Blackmon. The treatment only began to work after Fred expressed an interest in the game *Dungeons & Dragons*. Inspired by Fred's interest, Blackmon adapted the role-playing and fantasy aspects of *Dungeons & Dragons* into the therapy sessions. As a result, Fred was able to acknowledge and express himself "in a safe and guided way". Blackmon treated Fred for six months using *Dungeons & Dragons* before he decided that the game was no longer necessary for Fred to be able to communicate effectively with him. Blackmon concluded that RPGs can be used as an adjunct to psychotherapy to allow clients to explore their experiences and emotions, and to build rapport between the client and therapist. This case further demonstrated the possibility of RPGs being used effectively in psychotherapeutic treatment, and that role-playing may allow people to act in ways that are otherwise uncomfortable for them.

The cases outlined above should demonstrate that RPGs can be used for a variety of therapeutic purposes. However, not all research involving RPGs produced such benign results.

For example, Ascherman (1993) found that introducing *Dungeons & Dragons* to an adolescent inpatient unit led to an increase in maladaptive behaviours including resistance to treatment, reinforcement of character pathology, and the normalization of violence. Additionally, the game was found to disrupt the inpatients' treatment. Ascherman suggests that the unstructured nature of the game is what induced these maladaptive behaviours and negative outcomes. This finding suggests that researchers should exercise caution and should consider their population when including RPGs as an adjunct to psychotherapy.

A recent study was conducted to determine psychiatrists' opinion of RPGs (Lis, Chiniara, Biskin, & Montoro, 2015). The researchers hypothesized that psychiatrists might believe there was an association between engaging with RPGs and psychopathology because the stereotypes for those who engage with RPGs include that they are socially inept and they often suffer from psychiatric disorders. The hypothesis was not supported as only 22% of psychiatrists surveyed indicated that they believed there to be an association between psychopathology and engagement with RPGs; in comparison, 37% of psychiatrists surveyed believed there to be an association between use of social networking sites and psychopathology. Another interesting finding of this study was that 23% of psychiatrists surveyed indicated that they had played an RPG in their life. Given these findings, it seems that psychiatrists believe that players of RPGs are not any more likely to have a mental disorder than other populations.

These aforementioned studies provide some support for the use of RPGs to benefit a variety of populations. In addition to these discussed populations, it has been hypothesized that RPGs can be used to help patients suffering from traumatic brain injuries through stimulating neuroplasticity and recovery via imagining, problem-solving, communicating, comprehending, and decision-making in a recreational manner (Hawkes-Robinson, 2013). Unfortunately,

however, there does not seem to be previous research on whether RPGs can be used to reduce fear. Although not a role-playing game, recent research has found that play therapy can be used to alleviate fear of medical treatment (Duffin & Walker, 2012). A case study was conducted on a 14-year-old girl, named Victoria, with Down's syndrome who was diagnosed with dilated cardiomyopathy (a potentially fatal heart condition). Victoria's fear of medical procedures was a barrier to her treatment because she cried and screamed and had to be restrained during the procedures. These reactions were also extremely distressing and devastating for Victoria's parents. For these reasons, Victoria was administered play therapy treatment which included puppets who allegedly were also undergoing medical treatments alongside her. The puppets asked Victoria how the medical treatment would feel, and what they could do if they were feeling scared. According to the researcher, this process allowed for Victoria to address and manage her fears. Also, the researcher suggested that this procedure helped Victoria understand the medical procedure better and thus, gave her more perceived control. The result of this treatment was that Victoria became calmer during medical procedures, and her sociability, outgoingness, and confidence increased. This study supports the argument that imagination can be used as a tool to alleviate fear. Since imagination is a component of fantasy RPGs, it might be possible for them to alleviate fear in the same way that this case study reported play therapy can.

These studies were used to develop a prior study for the current research (Giulietti, 2017). The prior study was designed to determine whether fantasy role-playing alleviated fear experienced while playing a horror computer game. Participants ( $N = 16$ ) were randomly assigned to role-play either a powerful, fearless wizard or an ordinary accountant across a series of scenarios in a fashion similar to *Dungeons & Dragons*. Participants were then observed to

determine what fear behaviours they demonstrated as they played the computer horror game, *Slender: The Eight Pages*. Fear was measured in three ways: an overt measure denoting the number of times the participant gasped and jolted while playing the computer game, a covert measure denoting the brave actions committed by the player's computer game character, and a self-reported measure about how scary the computer game was found to be. Results showed that participants assigned to role-play the wizard demonstrated significantly less overt and covert fear than participants assigned to the accountant character. The prior study introduced the role-play characters and series of scenarios, as well as the fear behaviours to be used in the present experiment.

The present experiment aimed to replicate, improve upon, and extend the findings of the prior study. The ways in which the present experiment improved upon the prior study include the operationalization of variables more specifically, the employment of a second observer to record participants alongside the researcher to achieve interrater reliability, and the increased sample size of participants. The way in which the present experiment extended the findings of the prior study include the addition of a physiological measure of fear via measuring participants' skin conductance using a galvanic skin response (GSR) while they played *Slender: The Eight Pages*. The hypotheses for the study are that participants role-playing the wizard will demonstrate more bravery as measured by the inhibition of gasps and jolts during computer gameplay (H1), will be more motivated to complete the game's objective as measured by participants' willingness to compromise their chances of being frightened (H2), will self-report less fear experienced (H3), and generate a skin conductance with higher stability than those role-playing the accountant (H4).

## **Method**

### **Participants**

Participants ( $N = 29$ ; 16 women) were undergraduate students from a small, liberal arts university in Southwestern Ontario who were blind to the purpose of the study. Exclusionary criteria for the study included being unable to play a computer horror game for medical reasons or having knowledge of the researcher's hypotheses. No participants were excluded from the study. Participants were recruited using the researcher's university's database for research participation powered by SONA. Participants were randomly assigned to role-play either as a wizard ( $n = 14$ ) or as an accountant ( $n = 15$ ).

### **Procedure**

The study was conducted in a small psychology lab at the researcher's university. The researcher was present for all sessions and was accompanied by a research assistant for the first five sessions; after the first five sessions, the researcher was no longer accompanied by the assistant. Participants were seated at a table with a computer and all the necessary materials. Many of the materials for this study were adapted from the prior study (Giulietti, 2017). Participants were briefed of the study's procedure and were given a letter of information and consent form to complete prior to participating. Upon consenting, participants sanitized and dried their hands, and were fastened to the NeuLog Galvanic Skin Response (GSR) Logger Sensor NUL-217. The GSR sensor was fastened to participants' pinky and ring fingers of their left hands via a Velcro strap. The straps were fastened around the first joint from the top of the fingers.

Participants then received a page describing the character they were randomly assigned to role-play and asked to read to themselves the short character description. In the wizard condition, participants read about how they are a brave and fearless hero known throughout a magical, fantastic world. In the accountant condition, participants read about how they are an ordinary person who exists in the ordinary world. The complete descriptions are included in Appendix A.

Next, participants were given a page describing four role-play scenarios. These scenarios served as a manipulation check to determine whether participants were successful in assuming the role of their character. Additionally, these scenarios served to allow the participant to actively engage in role-playing, rather than merely reading an imagination exercise. The scenarios were written in second person and described confrontational situations between the role-player and other characters. Participants were then read aloud the four role-play scenarios (one at a time) by the observer and they were asked to respond as though they were the character about which they read. The scenarios created a step-by-step dialogue between the observer and the participant as the participant described her courses of action and the observer described the results of her actions in an RPG-fashion. If the participant responded to the scenario in a way that was considered in-character by the observer, the participant was informed of the positive outcome of her choice (for example, “you avoid harm”), congratulated, and assured that she chose the correct course of action. If the participant responded to the scenario in a way that was considered out-of-character by the observer, the observer would attempt to persuade the participant to change her response by informing her of the possible consequences of her actions and reminding her to respond in-character. If the participant changed her response to a course of action that was in-character, she would be informed of the positive outcome of her choice, congratulated, and assured of her choice. If the participant refused to change her response, the

observer would describe the negative outcome of her choice (for example, “you are robbed of your wallet”). The complete scenarios are included in Appendix B.

Upon completion of the role-play scenarios, participants were given a sheet of a 100-element set of the letters W, A, S, and D. The letters were presented in a randomized order and organized into four rows of 25. The sheet of letters is included in Appendix C. Participants were asked to type out the rows of the letters onto a word processor with their left hands. Participants were informed that they could type out the letters onto the word processor in whatever order they liked. Typing out the letters on the sheet served to establish a baseline measure of the GSR of participants while using a keyboard. The observer began recording the GSR data when participants began to type.

After completing the typing task, the observer explained to participants the objective and controls for *Slender: The Eight Pages*. Participants were shown the map of all the possible locations of the pages to collect in the game to complete its objective. The observer explained how to read the map and encouraged participants to read the hints included below the map for completing the game’s objective. Participants were then asked questions relating to the character they were assigned to role-play. Additionally, participants were asked to reiterate exactly how they responded to the role-play scenarios that were presented to them. Participants then played the game while the researcher observed.

The horror computer game, *Slender: The Eight Pages* was used in the study. The game was developed and published by Parsec Productions and designed by Mark J. Hadley. It was released 26 June 2012. The game’s setting was a dense forest during the night and was played from a first-person perspective. The player's objective was to collect eight pages located in various areas of the forest. The player was equipped with only a flashlight. The game’s

antagonist was a monster depicted as a tall man wearing a black suit with white skin and no facial features and was given the name, The Slender Man. The Slender Man occasionally appeared in the player's field of vision which was sometimes accompanied with a loud piano slamming noise. The game ended when The Slender Man found the player (which resulted in a “game over” screen) or when the player collected all eight pages. (Description adapted from Giuliatti, 2017).

Participants were provided with a printed-out map of all the possible locations of the pages in *Slender: The Eight Pages* as well as a recommended route for gathering the eight pages. The map was an overhead drawing of the game’s setting which was drawn to scale and was visible during gameplay. The map was labelled with the game’s 10 locations and below the map were hints for completing the game’s objective. The map was taped to a free-standing support so that it faced the participant and was orthogonal to the computer monitor. (The map is hosted on this webpage: [http://theslenderman.wikia.com/wiki/File:Slender\\_Game\\_Map\\_and\\_Guide.png](http://theslenderman.wikia.com/wiki/File:Slender_Game_Map_and_Guide.png).)

During gameplay, the following behaviours were assessed by the observer: the number of times participants checked the map and turned off their character’s flashlight, the character’s quality of navigation, the number of fear responses demonstrated by the participants, and the number of fear stimuli which elicited a fear response to the participants. Gameplay ended when the participant was caught by The Slender Man or if the participant reached 15 minutes of gameplay and desired to quit playing.

After playing *Slender: The Eight Pages*, participants completed an online questionnaire hosted on Qualtrics. The completion of the questionnaire concluded the study. Participants were then debriefed of the study’s hypotheses and were given a debriefing form with the contact information of the researcher and his advisor.



## Measures

**Role-Play Scenario Manipulation Check.** The observer recorded the number of scenarios to which participants responded in-character (the four scenarios are included as Appendix B). A score of 4 was considered successful, while a score of 3 or less was considered unsuccessful.

**Participant Characteristics.** In the online questionnaire, participants were asked to report their gender identity and whether or not they had prior experience with playing *Slender: The Eight Pages*.

**Bravery.** An observed bravery score was the number of concealed fear responses minus the number of fear responses demonstrated while playing *Slender: The Eight Pages*. A concealed fear response was operationally defined as refraining from audibly responding and physical jolting in response to a frightening visual stimulus accompanied by a shocking noise (i.e. a jump scare). A demonstrated fear response was operationally defined as the combination of an audible response with physical jolting in response to any stimuli presented in the game. The two observers coincided entirely in their coding of these responses.

**Motivation.** An observed motivation score was calculated as the number of times that the participant checked the map per 100s during gameplay, plus the number of times the participant turned the flashlight off per 100s during gameplay multiplied by three, plus the ordinal scale rating of the participant's navigation attributed by the observer from 1 denoting poor navigation to 5 denoting excellent navigation. In both conditions, flashlight-distinguishing occurred approximately one-third as much as map-checking, and flashlight scores were also approximately one-third of navigation scores. Flashlight distinguishing was multiplied by three

to allow each addend to be equally represented. The observers achieved interrater reliability for map-checking ( $r(3) = .99, p = .001$ ), flashlight-distinguishing ( $r(3) = .79, p = .11$ ), and navigation ( $r(2) = .78, p = .22$ ).

**Self-Reported Fear.** Self-reported fear was collected via the online questionnaire. Participants were asked, “On a scale from 1 (absolutely no fear) to 10 (a great deal of fear), how much fear did you experience while playing *Slender: The Eight Pages*?”

**Physiological Fear Response.** Skin conductance was measured using the NeuLog Galvanic Skin Response (GSR) Logger Sensor. The highest and lowest GSR values of participants’ skin conductance (measured in microsiemens or arbitrary units) were recorded during the typing task and during gameplay. The mathematical difference of the range was found for both the typing task and gameplay by subtracting the respective lowest GSR value from the highest GSR value. This operation created a measure of GSR stability for both the typing task and gameplay. The GSR stability for gameplay was divided by the GSR stability during the typing task. This quotient created a ratio of how much less stable participants’ GSRs were during gameplay than during the typing task. Higher ratio scores indicate a more unstable GSR during gameplay which was interpreted to denote greater physiological fear.

## Results

On a scale from 1 (absolutely no fear) to 10 (a great deal of fear), participants indicated an average of 4.34 of fear being experienced during gameplay of *Slender: The Eight Pages*.

A multivariate analysis of variance (MANOVA) was conducted to determine if there would be significant differences between conditions regarding their bravery, motivation to complete the game’s objective, self-reported fear, and skin conductance stability. No significant

differences were found between conditions. Participants in the wizard condition ( $M = 0.00$ ,  $SD = 1.66$ ) did not demonstrate significantly more bravery than those in the accountant condition ( $M = -.07$ ,  $SD = 1.53$ ),  $F(1, 27) = .01$ ,  $p = .91$ . Participants in the wizard condition ( $M = 10.78$ ,  $SD = 6.75$ ) did not demonstrate significantly more motivation to complete the game's objective than those in the accountant condition ( $M = 9.02$ ,  $SD = 5.40$ ),  $F(1, 27) = -.61$ ,  $p = .44$ . Participants in the wizard condition ( $M = 4.07$ ,  $SD = 2.37$ ) did not self-report significantly less fear than those in the accountant condition ( $M = 4.60$ ,  $SD = 2.20$ ),  $F(1, 27) = .39$ ,  $p = .54$ . Participants in the wizard condition ( $M = 2.60$ ,  $SD = 2.89$ ) did not generate a significantly more stable skin conductance than those in the accountant condition ( $M = 3.74$ ,  $SD = 3.22$ ),  $F(1, 27) = 1.00$ ,  $p = .33$ . Differences between the means of dependent measures were not found between conditions, Wilks'  $\lambda = .91$ ,  $F(4, 24) = .59$ ,  $p = .68$ . Figure 1 illustrates the similarities between conditions.

Exploratory results found differences between gender identities. Female participants ( $M = -.63$ ,  $SD = 1.78$ ) demonstrated less bravery than males ( $M = .67$ ,  $SD = .89$ ),  $F(1, 26) = 5.27$ ,  $p = .03$ . Female participants ( $M = 6.77$ ,  $SD = 3.70$ ) demonstrated significantly less motivation to complete the game's objective than males ( $M = 13.93$ ,  $SD = 6.50$ ),  $F(1, 26) = 13.65$ ,  $p = .001$ . Female participants ( $M = 5.06$ ,  $SD = 2.14$ ) did not self-report significantly more or less fear than males ( $M = 3.58$ ,  $SD = 2.19$ ),  $F(1, 26) = 3.20$ ,  $p = .09$ . Female participants ( $M = 2.86$ ,  $SD = 3.09$ ) did not generate a significantly more or less stable skin conductance than males ( $M = 3.85$ ,  $SD = 3.11$ ),  $F(1, 26) = .70$ ,  $p = .41$ . Differences between the means of dependent measures were found between gender identities, Wilks'  $\lambda = .54$ ,  $F(4, 23) = 4.90$ ,  $p = .005$ . To determine if the differences found between gender identities were due to experience or exposure to the game, bravery and motivation were analyzed between participants who had not heard of *Slender: The*

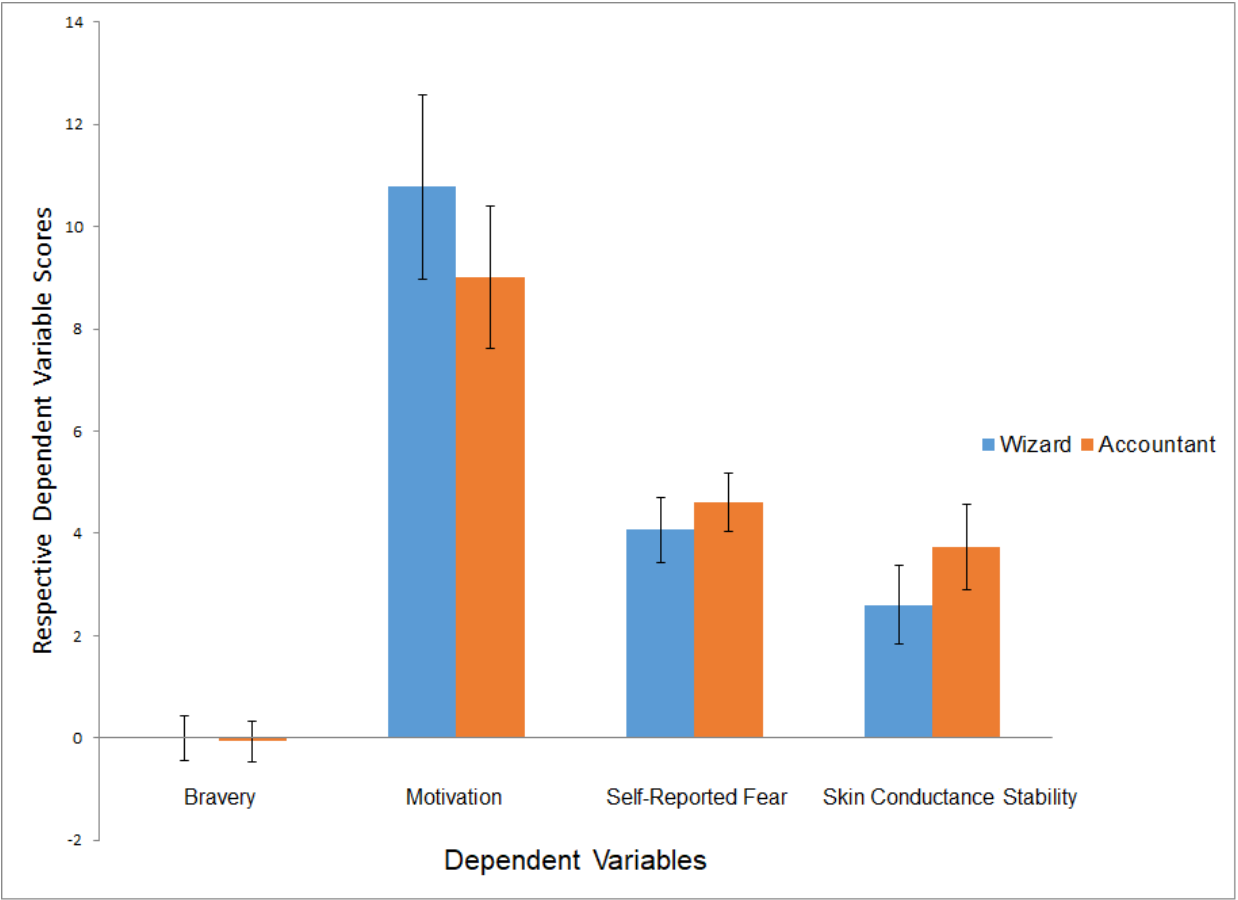


Figure 1. Respective mean scores for each of the four dependent variables measured in the experiment for both the wizard and accountant conditions.

*Eight Pages* and participants who had seen, heard of, or played the game before. No significant differences were found for bravery,  $t(27) = -.38, p = .71$ , or motivation  $t(27) = -.87, p = .39$ .

Further exploratory results found a significant difference in motivation between participants who were successful in responding in-character to all role-play scenarios ( $M = 12.12, SD = 5.93$ ) and participants who were unsuccessful ( $M = 5.59, SD = 3.49$ ),  $t(27) = 3.19, p = .004$ . No other significant differences were found between those who were successful and unsuccessful.

A series of bivariate correlations were conducted to determine if mean scores for the four dependent variables were correlated. No correlations between mean scores were found to be significant: Bravery was not found to be significantly correlated with motivation,  $r(27) = .26, p = .17$ , self-reported fear,  $r(27) = -.34, p = .07$ , nor skin conductance stability,  $r(27) = -.28, p = .14$ . Motivation was not found to be significantly correlated with self-reported fear,  $r(27) = -.20, p = .30$ , nor skin conductance stability,  $r(27) = .19, p = .32$ . And self-reported fear was not found to be significantly correlated with skin conductance stability,  $r(27) = .11, p = .58$ . Figure 2 illustrates the non-significant correlations between the dependent variables, as well as their means and standard deviations.

## **Discussion**

None of the study's hypotheses were supported by the results; role-playing a brave and powerful wizard did not incite more bravery, more motivation, less self-reported fear, or less stability in skin conductance than role-playing an ordinary accountant. These results are inconsistent with those from the prior study which found that role-playing a wizard led to more bravery and motivation demonstrated than role-playing an accountant (Giulietti, 2017). It is

	Bravery	Motivation	Self-Reported Fear	Skin Conductance Stability
Bravery	-	.261	-.339	-.277
Motivation	.261	-	-.199	.190
Self-Reported Fear	-.339	-.199	-	.108
Skin Conductance Stability	-.277	.190	.108	-
<i>M</i>	-.03	9.87	4.34	3.19
<i>SD</i>	1.57	6.04	2.26	3.06

*Figure 2.* Non-significant correlations between dependent measures.

possible that the significant results of the prior study are due to a Type I error caused by a small sample size, vague operational definitions, or observer bias.

An explanation for why the role-play manipulation in the present experiment failed to produce a significant difference between conditions could be that participants spent an insufficient time role-playing. Whereas the role-playing case studies by Blackmon (1994) and Hughes (1988) lasted over a series of months, participants in the present experiment only role-played through four scenarios over the course of only a few minutes. Perhaps it is necessary for role-playing to be carried out over the course of several weeks or months to allow the role-player to immerse herself in the character. Once the role-player has immersed herself in the character, it may be possible to increase bravery and motivation, and decrease fear and stability of skin conductance between ordinary and frightening activities. This research question can be tested in future studies by having participants role-play a brave character over an extended period of time, and then by having participants face a fear-arousing situation. Three conditions could be created from this procedure: participants who face the fear-arousing situation in-character, participants who face the fear-arousing situation out-of-character, and participants who do not have experience role-playing. These conditions would allow for a researcher to make comparisons between those who immerse themselves into the roles of their characters while facing a fear-arousing situation and those who do not, as well as those who have experience role-playing and those who do not.

A further issue with the present experiment is that it did not have a control condition. It may have been the case that a significant difference was not found between the wizard and the accountant conditions because participants in both conditions engaged in role-playing. Perhaps the act of role-playing leads to more bravery and motivation, and less fear and stability in skin

conductance. If this is true, then it makes sense that there were no differences found between conditions. Furthermore, this hypothesis would be consistent with the research findings by Lis et al. (2015), which found that role-play led to greater adherence to frightening medical protocol. This hypothesis can be evaluated by modifying the present experiment's methodology such that a control condition is added in which participants do not engage in any role-playing. This hypothesis is partially supported by the finding from the present experiment that participants who were successful in responding in-character to all role-play scenarios demonstrated more motivation than those who were unsuccessful. A study comparing those who score high versus low on empathy could be designed to test whether those who score high demonstrate more motivation when acting as a highly motivated person than those who score low. This research would be important to conduct because it can provide insight about whether a certain degree of talent in acting or empathy is necessary to be able to benefit from role-playing.

The difference of bravery found between gender identities is peculiar. Since bravery was the number of fear responses concealed minus the number of fear responses demonstrated, it might be the case that females are more willing to allow themselves to demonstrate fear than males. What makes this finding particularly interesting is that there was no significant difference found between gender identities regarding their self-reported fear or their skin conductance stability. Taken together, these findings support that the psychological and physiological fear experienced is not different between gender identities, but females are more inclined to demonstrate that they are scared by audibly gasping or screaming and jolting. This finding is consistent with the literature that says that females express actions associated with fear more than men (McDuff, Kodra, Kaliouby, & LaFrance, 2017). I encourage researchers to consider this difference in fear expression found between gender identities when measuring fear responses.



The other difference found between gender identities was for motivation to complete the game's objective. Of the 16 participants who identified as females, 50% indicated that they had not played *Slender: The Eight Pages*, 37.5% had seen or heard of the game, and 12.5% had played the game before. Of the 12 participants who identified as male, 33% had not played the game, 33% had seen or heard of it, and 33% had played it before. This difference in motivation may be attributed to the difference between attitude towards computer games. Video games seem to be more popular among males, especially computer games. It may have been the case that the male participants in the study were more enthusiastic about playing a computer game than the females so they were more motivated to complete the game's objective. Alternatively, it might be the case that the way motivation was operationally defined was biased towards those who are more experienced in computer games. Since motivation was defined as the culmination of map-checking, flashlight-distinguishing, and navigation, somebody more familiar with computer games would likely perform better on each of these criteria. In either case, I encourage researchers to consider these gender identity issues when conducting research that requires participants to play computer games.

No significant correlations between bravery, motivation to complete the game's objective, self-reported fear, or skin conductance stability were found. This finding is especially peculiar because all measures were incorporated to determine how much fear was experienced by the participant. Given that none of the measures were correlated, it is possible that most participants in the study did not experience a sufficient amount of fear. This possibility is substantiated by the low means and the lack of variability within the measures. For example, the mean for self-reported fear was 4.34 and the standard deviation was 2.26. The 4.34 rating is less than the expected value of 5.50, and is perhaps too low for the purposes of studying fear

responses. Moreover, the normal distribution of data disseminated around the mean suggests that most (i.e. 68%) self-reported fear responses were between 2.08 and 6.60. Given such a low mean and standard deviation, it is possible that most participants did not experience a sufficient amount of fear, and that there was too little variability between measures for them to be significantly correlated with each other. The low mean and standard deviation can likely be attributed to the low number of fear stimuli that occurred during a single trial of the study which ranged from one to five. Since the amount of fear participants experienced during gameplay was lower than expected, and since the game does not feature a high number of fear stimuli, *Slender: The Eight Pages* should be discouraged from being used in empirical research studying fear responses.

An alternative explanation for why no significant correlations were found between measures is simply that there is not a significant relationship between any of these measures. If this is the case, researchers studying fear should carefully consider which measure to use in order to ensure that they obtain a valid measure of fear. Future research needs to explore the relationship between these measures.

The study measured skin conductance using the NeuLog Galvanic Skin Response (GSR) Logger Sensor NUL-217. A limitation to this GSR sensor was that it had the limited range from 0 to 10 microsiemens. Throughout trials, participants would reach the maximum value of 10 microsiemens and the data would be insufficiently accurate. For this reason, the researcher switched to measuring skin conductance in arbitrary units for some participants. The researcher explored different measures for comparing skin conductance between the two conditions. The chosen measure of dividing the range of the highest and lowest values during gameplay by the same values during typing was chosen to best account for individual differences in skin

conductance. A similar measure of GSR which calculated the difference between the maximum GSR in the five seconds following a conditioned fear stimulus to the GSR immediately before the stimulus was used by Bridger and Mandel (1964). The researcher assumed that skin conductance during gameplay would be much less stable than during typing, however, this measure is problematic if participants are consistently terrified and generating a high skin conductance throughout the gameplay. For this reason, I encourage researchers to carefully consider all alternatives for measuring skin conductance.

The study aimed to replicate and improve upon the results of the prior study (Giulietti, 2017). By operationally defining terms more specifically, introducing a second observer, and having a larger sample size, the prior study's results were not replicated. Since the present experiment failed to replicate the prior study's results despite all these improvements, it is now known that the prior study's results, if accurate, do not generalize well to other circumstances. Based on the non-significant results of the present experiment, I recommend for studies involving role-playing to be longitudinal in order to allow participants to become immersed in their characters. It is also recommended that studies include a control group in order to better isolate the influence of role-playing on individuals. The study's exploratory results show that it might be necessary for participants to be able to empathise to a high degree to be able to properly engage in role-playing exercises. Further exploratory results found differences between gender identities in bravery (as measured by fear responses concealed minus fear responses demonstrated) and motivation to complete the game's objective. These gender differences should be considered when measuring fear responses and when using computer games as part of the methodology. The game *Slender: The Eight Pages* was not found to be particularly fear-inducing and thus, may be inappropriate for use in studies measuring fear. Skin conductance

stability was chosen to be the measure for determining differences in physiological fear responses. This study carefully decided what measure would be best to use for determining differences in physiological fear responses and it is encouraged that other researchers do the same. Ultimately, the influences of role-playing on people's behaviour remains to be an understudied phenomenon with great undiscovered potential that is worth researching further.

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## **Appendix A**

### **Please imagine yourself in the following scenario:**

You are a brave and fearless hero in a magical, fantastic world. You are known throughout the lands for your incredible feats: The time you defeated the evil warlock, Klofulius, with your superior magical abilities is a story told about your greatness in every school in every civilization known to humankind. Not only do you possess awesome spellcasting and magical abilities, but you also have superhuman strength and dexterity. Any foe to cross your path, be it an evil warlock, a fire-breathing dragon, or a deadly basilisk would soon learn how sorry it was for perturbing you.

**OR**

You are sitting at your desk at home. You are on your laptop updating your personal daily blog. You write about the cereal you had for breakfast that tasted unusually good for some reason. It was probably the oat bran that you sprinkled on top. You're trying to eat healthier these days and you indicate that in your blog. You're the kind of person who likes to stick to the daily routine, so changing minor details isn't always easy. You finish your blog, pack your bag full of the files that need sorting, and head over to work as an office associate for an accounting firm.

## Appendix B

**You are walking alone down a path. Coming from the opposite direction is a hooded, suspicious-looking person. Judging by the person's appearance and the location you are in, you figure that there is an 80% chance that the person is dangerous. What action do you take?**

**You are at a carnival. A man running a "high striker" (or "strongman") game calls out to you. He challenges you to play the game by taking the game's hammer and to slam it down as hard as you can on the platform to send a puck up the lever to hit the bell at its top. He tells you that no person has ever been able to make the bell ring before. The game costs \$50 to play (all the money in your wallet) but anyone who succeeds in making the bell ring will win \$500. What action do you take?**

**You are walking through the woods alone at night. You hear a noise. You correctly deduce that you are being followed. What action do you take?**

**While on a mission, you are confronted by a masked person who prevents you from continuing. What action do you take?**



Appendix C

D	A	D	D
A	W	A	S
A	D	W	W
D	S	W	D
D	W	D	A
W	S	D	W
S	A	S	D
S	W	S	S
S	W	W	D
S	D	A	D
A	A	W	S
S	D	W	W
W	A	S	W
D	S	S	A
A	A	W	A
A	A	D	A
D	A	S	D
W	S	W	A
D	S	W	D
S	W	S	D
A	W	A	S
D	S	S	A
S	A	A	W
D	W	W	D
A	D	W	S

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