

PLAYER-CHARACTER IDENTIFICATION BY PERSONALITY MATCHING,
PERCEIVED PERSONALIZATION AND POSITIVE/NEGATIVE IN-GAME
EXPERIENCE

BY

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THESIS

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ABSTRACT

Player-character identification is that video-game players adopt the perspective of a game character during gameplay as a part of their own identity. Player-character identification can be established through several psychological mechanisms, including perspective taking, presence, idealization, and perceived similarities. Although game studies have examined many factors leading to player-character identification, most have focused on physical, behavioral, and social attributes. The role and impact of deeper level connections, such as perceived personality similarities, on player-character identification have not been fully explored. This study examines three factors that might trigger player-character identification: 1) personality description, 2) perceived personalization, and 3) positive and negative in-game experiences. In Experiment 1, 91 students participated in a 2 (personality descriptions: matching/non-matching) \times 2 (perceived personalization: personalized/non-personalized) factorial experiment. In Experiment 2, 136 students participated in a 2 (personality descriptions: matching/non-matching) \times 3 (game experience: positive/negative/control) factorial experiment. Results indicated that personality description was effective on inducing player-character identification; however, explicitly informing players the character's personality was generated based on their own, and exposing players to positive/negative game experiences were not effective.

Keywords: game, identification, personality, game character

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION	1
CHAPTER 2: LITERATURE REVIEW	3
2.1 Concept of Player-Character Identification	3
2.2 Mechanisms of Player-Character Identification	4
2.2.1 Identification through Perspective Taking.....	5
2.2.2 Identification through Presence	5
2.2.3 Identification through Idealization.....	7
2.2.4 Identification though Perceived Similarities.....	8
CHAPTER 3: OVERVIEW OF CURRENT STUDY	9
3.1 Personality Description.....	11
3.2 Perceived Personalization	11
3.3 Positive/Negative In-game Experience.....	12
CHAPTER 4: EXPERIMENT 1	15
4.1 Participants and Design.....	15
4.2 Procedure	15
4.3 Game Stimulus.....	16
4.4 Experimental Treatments	16
4.4.1 Personality Matching through Personality Descriptions.....	16

4.4.2 Perceived Personalization	16
4.5 Dependent Measures	17
4.5.1 The Inclusion-of-the-Other-in-the-Self (IOS) Scale	17
4.5.2 Cohen’s Identification Scale	18
4.6 Results	18
4.7 Discussion	19
CHAPTER 5: EXPERIMENT 2	22
5.1 Participants and Design	22
5.2 Procedure	22
5.3 Experimental Treatments	23
5.3.1 Personality Descriptions	23
5.3.2 Positive/Negative Game Experience	23
5.4 Dependent Measures	24
5.5 Results	24
5.6 Discussion	25
CHAPTER 6: GENERAL DISCUSSIONS	27
6.1 Future Research	27
6.1.1 Customizing the Game Narratives	27
6.1.2 Customizing the Personality of the Game Characters	28

6.1.3 Inducing Personality Identification through a Player’s Real Personality	28
6.1.4 Matching Personality Traits and Game Contexts.	28
6.1.5 Conducting a Longitude Study on Personality Identification.....	29
6.1.6 Integrating Multiple Levels Of Identification.....	29
6.2 Limitations	30
TABLES AND FIGURE	31
REFERENCES	35
APPENDIX A: GAME NARRATIVE.....	44
APPENDIX B: PERSONALITY DESCRIPTIONS	45
APPENDIX C: ADJUSTED COHEN’S 10-ITEM IDENTIFICATION SCALE.....	48
APPENDIX D: POSITIVE /NEGATIVE IN-GAME EXPERIENCE.....	49

CHAPTER 1: INTRODUCTION

Player-character identification offers players of role-play games (RPGs) a personalized experience. In a typical RPG, players assume the identify of a protagonist (Klimmt, Hefner, & Vorderer, 2009), and experience a storyline or a fantasy they cannot otherwise experience in the real world (Sanders, 2010). Despite the physical separation of body, players merge themselves with the game character (Klimmt et al., 2009).

Player-character identification can shorten the psychological distance between the players and their game characters, and would make the game playing experience more self-relevant and engaging. Previous studies showed player-character identification could strengthen and magnify positive psychological effects associated with playing games. For example, Hefner, Klimmt, and Vorderer (2007) found players had temporarily changed their self-concept to match those attributes of their game characters. They found players perceived themselves to be more powerful and courageous when they identified with a soldier in the game. Yee and Bailenson (2007) found players' agreeableness and self-disclosure would increase if they play a more attractive game character. The reverse could also be true: Player-character identification may enhance negative effects. Huesmann, Moise-Titus, Podolski, and Eron (2003) found identifying with a violent game character would increase players' aggressiveness. Behm-Morawitz and Mastro (2009) found an idealized image of the female body in game characters negatively

affected female players' self-esteem and self-efficacy. Player's game experience will not only influence players' self-perceptions, and their identification with game character.

The present study has two objectives. First, I am interested in developing player-character identification through perceived personality similarity. Past studies has focused on player-character identification through surface level characteristics such as physical attributes and behavioral control (Kim, Prestopnik & Biocca, 2014; Bailenson, Beall, Blascovich, Raimundo, & Weisbuch, 2001; Maccoby & Wilson, 1957), but they rarely focused on identification through deeper level factors such as personality attributes. To achieve the first objective, I propose two methods of inducing personality identification: through personality description and through perceived game personalization.

Second, I will explore how a positive or negative in-game experience would affect player-character identification. Player-character identification is influenced not only by the attributes of a player's game character but by a player's game experience (Hoffner & Buchanan, 2005). For example, when players' game character was successful and attractive, players might increase their identification with the game character; on the contrary, whey players' game character was fail to complete a task or behave in a socially undesirable way, players might decrease their identification with the game character. However, few study has examined the influence of positive and negative experiences on identification. Therefore, the effect of players' game experience on player-character identification is worth examination.

CHAPTER 2: LITERATURE REVIEW

2.1 Concept of player-character identification

Identification with media characters is an important construct in media studies (Van Reijmersdal, Jansz, Peters, & Van Noort, 2013; Hefner et al., 2007; Maccoby & Wilson, 1957). Cohen (2006) defined identification with media character as “an imaginative process in which we adopt a character’s point of view and develop an empathic understanding of his or her plight and motivations” (p 194). According to Cohen’s conceptualization, identification with media character requires two conditions. First, identification requires the media audience to share the viewpoint and values of the media character. With perspective taking, the media audience may experience feelings and thoughts they ordinarily would not in reality. Second, identification is both a cognitive and an affective process – the media audience must understand the goals and motives of the game character and develop empathetic feelings towards the character (Cohen, 2001). Cohen (2006) expanded the theoretical framework of identification with media character to consider the influence of different media (e.g., TV and video games), genres (e.g., comedy or novel), types of characters (e.g., success or failure, and heroes or villains), the characteristics of viewers (e.g., personality and demographic information), and the time length of interacting with media characters (e.g., long-term or short-term).

A game player identifying with the in-game character they control is a specific type of media character identification. Researchers have used several terms interchangeably to

describe this process: Game character identification (Van Reijmersdal et al., 2013), avatar identification (Christy & Fox, 2016), character identification (Bachen, Hernández-Ramos, Raphael, & Waldron, 2016; Jung, Park, & Lee, 2015), and identification with video game characters (Klimmt, Hefner, Vorderer, Roth, & Blake, 2010). While sharing the underpinning mechanism, player-character identification differentiates from identification with media characters for two reasons. First, video games have higher levels of interactivity (Schneider, Lang, Shin, & Bradley, 2004; McDonald & Kim, 2001; Klimmt et al., 2010) because players actively influence the game narratives and control their characters. High interactivity will lead to a stronger player-character identification (Hefner et al., 2007; Zillmann, 2006; McDonald & Kim, 2001) and video-game players will develop a closer relationship with the game character than audiences in other media. Second, many video games allow players to customize their game characters' appearance and other attributes (e.g., gender, age, physical appearance, and personality). Such affordances may strengthen or even alter the identification process. For example, players are free to either develop a character similar to their real-world identities or invent a new persona.

2.2 Mechanisms of Player-Character Identification

This section describes the aforementioned mechanisms of player-character identification, namely perspective taking, presence, idealization, and perceived

similarities. It also explores the processes of player-character identification under each mechanism.

2.2.1 Identification through Perspective Taking. Perspective identification refers to the process through which players control game characters in first-person points of view. There are two ways to induce player-character identification through perspective taking: by adopting the first-person visual perspective or by adopting the first-person pronoun. Regarding the first-person visual perspective, previous researchers indicated that players identify with game characters when they look directly through their characters' eyes (Cohen, 2001; Klimmt et al., 2009). David et al. (2006) found the underlying neural mechanisms of both first-person and third-person perspectives are distinct, and that players react significantly faster when operating from the first-person perspective. Regarding the first-person pronoun, Miall and Kuiken (2002) suggested literary readers implicitly assumed the perspective of a novel character when exposed to texts such as "I am ...". Readers actively merges their own identity with the character, and understands the character more personally. In video games, these two ways (first-person visual perspectives and first-person pronoun) frequently overlap, and are often discussed together.

2.2.2 Identification through Presence. Presence is "a psychological state in which virtual objects are experienced as actual objects in either sensory or non-sensory ways"

(Lee, 2004, p37). Presence makes players feel like they can interact with other beings and objects in the virtual environment.

Presence comprises three dimensions: self-presence, social presence and environmental presence (Lee, 2004). The first dimension, self-presence, refers to the feeling of owning the game characters' bodies (Christy & Fox, 2016). Players feel that "I am the initiator of the action, thought or desire" and "I am the one who is undergoing this experience; it is my body that is moving" (Decety & Charminade, 2003, p585) when they control the game characters and receive simultaneous reactions as they move their bodies. Kim et al. (2014) suggested that players would identify with the game characters more strongly if using sensory control (smelling or touching) and motion control (moving their arms or leg) during the game. The second dimension, social presence is the feeling of "being with someone" (Heeter, 1992). Players feel a sense of social presence when they recognize the existence of other intelligent beings (Slater, Sadagic, Usoh, & Schroeder, 2000; Kim et al., 2014). Players perceive themselves in an authentic social environment, and interact with other beings in the virtual environment as they would with real humans (Heeter, 1992). Bailenson, Yee, Merget, and Schroeder (2006) found the humanistic behaviors of a game character (e.g., gazing, turning the head, and smiling) have a stronger influence on player-character identification than physical appearances. The third dimension, environmental presence, is the feeling of "being there" in the virtual environment (Heeter, 1992). It refers to the extent to which the virtual environment

responds to players' actions. For example, an in-game elevator automatically operates as a player steps into it, or the light turns on as a player enters a room.

There are some studies examining the relationship between presence and player-character identification (Bachen et al., 2016; Christy & Fox, 2016; Jin, 2011), yet few studies explicated the specific process from presence to identification. Bachen (2016) found that presence led to a stronger player-character identification and could explaining nearly half of the variance in identification. Similarly, Jin (2011) found a relationship between self-presence and player-character identification, yet the measurement of identification only captured players' empathetic feelings but not perspective sharing with the game characters.

2.2.3 Identification through Idealization. Identification through idealization, also called wishful identification, is the process through which players view game characters as their idealized selves (Konijn, Nijl Bijvank, & Bushman, 2007). Because the players are motivated to reduce the discrepancies between their ideal self and actual self (Higgins, 1989), they frequently customize their game characters to project their idealized selves (Christy & Fox, 2016). As ideal selves are more important to their self-concepts than actual selves, players have stronger identification with the game characters similar to their ideal selves than to their actual selves (McDonald & Kim, 2006). Therefore, players would identify with an idealized game character, and temporarily alter their self-perceptions (Bessière, Seay, & Kiesler, 2007; Klimmt et al., 2010).

2.2.4 Identification through Perceived Similarities. Perceived similarity is the degree to which players perceive the shared characteristics between themselves and their game characters. Previous study regarded perceived similarity as an antecedent to player-character identification (Jung et al., 2015; Cohen, 2006; Cohen, 2001). Previous studies have examined several aspects of characteristics that a player could perceive similarities with his game character (Moyer-Gusé, 2008; Vasalou, Joinson & Pitt, 2007; Cohen & Perse, 2003; Hoffner & Cantor, 1991; Maccoby & Wilson, 1957): physical attributes; demographic variables, such as age, gender, race, and social classes; cultural background; personality; beliefs; values; interests; attitudes; and emotional experiences.

Players are more likely to identify with game characters that resemble them than ones that are different from them, since they perceive the similar game characters to be self-relevant and coherent with themselves. Bailenson et al. (2001) found players were more likely to build relationships with agents that looked like them. Cohen (2006) suggested players felt close to similar game characters, and were more likely to experience empathetic feelings and understand the desires and goals of those characters.

CHAPTER 3: OVERVIEW OF CURRENT STUDY

Among all the mechanisms of identification, the present study focuses on player-character identification through a perceived similarity of personality.

Personality refers to enduring individual differences in cognition, affection, behavior, and desire (Robert, 2006). Decety & Charminade (2003) suggested personality included an individual's mental states, intentions, desires, and beliefs about others. Previous studies adopted several methods to construct the game characters' personalities. Lee et al. (2006) used both verbal (loudness, mean fundamental frequency, frequency range, speech rate) and nonverbal cues (facial expression, moving angel, moving speed, autonomous movements) to construct the perceived extrovertedness and introvertedness of a robot. His study showed players could recognize the personality of the character through these cues. Wang, Tree, Walker, & Neff (2016) found non-verbal cues, such as the pose and motion of the hands, could alter players' perception on the extraversion and openness of the game characters.

Empirical evidence from past studies suggested that identification through personality similarity could be just as influential as, if not more than, identification through physical and demographic similarity. McDonald and Kim (2001) found children were more likely to identify with and imitate a game character with a similar personality to their own. Likewise, Trepte and Reinecke (2010) found players were more likely to identify with game characters that shared similar personality profiles with themselves

than game characters that did not. They measured players' self-perceptions and evaluations on the Big Five personality of their game characters and found similarities in the personalities of players and their game characters had led to a stronger player-character identification. Bessi re et al. (2007) used Big Five personality inventory to examine the relationship between the personality of players' actual selves, ideal selves, and their game characters. They found the players customized the personality of the game character similar to their idealized selves. Together, these studies support the view that perceived personality similarities between players and their game characters is important for player-character identification.

Despite the wide recognition of the influence of personality similarity on player-character identification, few studies have systematically studied such effect. Vasalou and Joinson (2009), for example, allowed players to customize several complicated attributes of the game characters (intellectual ability, social skills, artistic and musical ability, leadership ability, emotional stability, sense of humor, and discipline) to investigate how players created game characters in various game contexts, such as blogging, dating, or competitive gaming, but they did not examine the influence of these traits on player-character identification. There is a void in understanding in relation to the conditions under which players connect to their game characters through similar personalities. As such, I raise the first broad research question of this study: How do players identify with their game characters through perceived personality similarity?

3.1 Personality Description

Personality descriptions use textual form to express one's personality and construct an individual's identity and self-concepts narratively (Booth, 2008; Polkinghorne, 1991; Bruner, 1987). Rosenberg (1988) suggested individuals perceived themselves by describing themselves to others. McDonald and Kim (2001) found that when players identified with a game character, they used similar dimensions to describe themselves and that character. In the context of computer gaming, the textual form of personality description is an advantage to trigger player-character identification. Oatley (1999) argued the narrative text could reveal the character's thoughts, desires, and goals, which cannot be done by graphs. Oatley (1999) further assumed that, when processing literary text, readers went through the same cognitive and emotional processes with protagonists in novels. Therefore, personality descriptions will magnify the effect of personality similarity on player-character identification.

In the present study, I propose that personality description influence player-character identification. If the game characters' personality descriptions match players' self-perceptions, players would be more likely to identify with the game characters, and vice versa.

H1: Players identify with their game characters more strongly under the condition of matching personality descriptions than non-matching personality descriptions.

3.2 Perceived Personalization

Perceived personalization occurs when an individual considers a communication message to be specifically addressing to him or her (Li, 2016). Perceived personalization does not require actual personalization (e.g., an information sender intentionally modifying the information based on the receiver's preferences). Li (2016) found there was no definite relation between perceived personalization and actual personalization. If there is no mismatch in information, non-personalized information could be perceived as personalized. In the context of computer gaming, players could perceive personalization through the use of their names (Webb, Simmons & Brandon, 2005; Howard & Kerin, 2004), or just through targeted phrases such as "for you". Individuals would regard information that explicitly speaks to them (e.g., "You may remember...") as self-relevant statements; they are also more likely to utilize central processing to scrutinize self-related statements (Burnkrant & Unnava, 1989).

In the current study, I argue that perceived personalization would intensify the effects of perceived personality match. I predict that:

H2: There is an interaction effect between personality matching and perceived game personalization on player-character identification; the effects of perceived personality matching on player-character identification would be greater when the players perceive the game to be personalized than not.

3.3 Positive/Negative In-game Experience

Positive in-game experience offers players enjoyments, while negative in-game experience makes players feel uncomfortable and even distressed during gameplay (Steinemann, 2015). Previous study suggested that positive or negative in-game experiences might influence player-character identification. Hoffner and Buchanan (2005), for example, examined several attributes of a game character that influence player-character identification: success, intelligence, attractiveness, humor, violence, and admiration. They found players identified more strongly with successful characters. Besides, men especially identify more strongly with male characters who were intelligent and violent, whereas women identified more strongly with female characters who were intelligent, attractive, and admired. Hefner et al. (2007) found players would not identify with a soldier if they felt nauseated by war scenarios.

A self-serving bias may explain players' inclination to identify with likeable characters and avoid unlikable characters. This bias, which is also called positive attributional bias, occurs when an individual attributes reasons for successes and favorable events to internal, stable, and global factors and that for failures and unfavorable events to external, unstable, and specific factors (Greenberg, Pyszczynski & Solomon, 1986). When exposed to a positive stimulus, an individual will enhance the connection between him or her and the positive source. Cialdini et al. (1976) found individuals were more willing to identify themselves or to reveal their academic affiliation after their university or school team wins. Baumeister, Campbell, Krueger, &

Vohs (2003) found individuals only publicize their connection with successful entities. In contrast, when players' self-concept was threatened or when players fail to control the character to a success, they will cut the relationship with the game character. Empirical study showed the loss and mortality of game characters were not traumatic to players' self-images, even when the game characters looked like a replication of the players (Bailenson et al., 2001). The reason is probably that players dissociate themselves with the character and terminate player-character identification to prevent themselves from being hurt. As such, I proposed the following hypotheses.

H3: Players will identify more with the game character when they have a positive in-game experience than a negative in-game experience.

H4: There is an interaction between personality matching and positive/negative in-game experiences on player-character identification; the effect of positive and negative in-game experience on player-character identification will be greater when the players were in the personality description matching conditions than the non-matching conditions.

CHAPTER 4: EXPERIMENT 1

Experiment 1 is aimed to test the effects of personality matching and perceived personalization on player-character identification as predicted in H1 and H2.

4.1 Participants and Design

Ninety-one undergraduate students from an undergraduate research pool at the University of Illinois at Urbana-Champaign participated in experiment 1 for extra course credits. Students were randomly assigned to a 2 (personality descriptions: matching or non-matching) \times 2 factorial design (explicitly or implicitly stating) (see Table 1, for sample size in each experimental condition).

4.2 Procedure

Participants signed the consent form before they started the experiment. They were informed that the purpose of the present study was to test a new game by a Swedish game company called BJÖRN. Participants first completed a Big-Five Inventory personality test. After they submitted the personality test, they were showed a welcome page, which introduced the game company, briefly described the game narrative, and assigned them to a game character with randomly generated names. Following this page, they played a customized game designed for this study. Participants played this game for approximately five to ten minutes until they reached the end of the game narrative. Then, they completed an online questionnaire, which included the measurement of player-character identification. Upon completion, participants were debriefed and thanked.

4.3 Game Stimulus

The game was a text-based adventure game altered from a game called “A Dark Room”. It started with the game character waking up in a dark room and beginning to explore the virtual world. The game character explored the small room, looked for game-related objects, and went on an expedition in a small town. Players controlled the character by choosing the following action of the game character, and would see the descriptions about the storyline, the environment of the virtual world, the personality of character, and the result of the actions (see Appendix A, for specific game narratives).

4.4 Experimental Treatments

4.4.1 Personality Matching through Personality Descriptions. The game characters’ personality descriptions were gradually exposed to participants as the game narrative unfolded (see Appendix B). Players in the personality matching condition were exposed to Forer-effect personality description (Forer, 1949), a universal version of personality description that people generally identify with. Sundberg (1955) found people were more inclined to accept vague, double-headed, modal, and favorable personality statements as their accurate personality descriptions. In contrast, players in the personality non-matching condition were exposed to the opposite version of the universal personality description.

4.4.2 Perceived Personalization. Participants in the personalized condition were told that the personality test was related to the game they were about to play. On the

welcome page, participants were then told that their game character was generated to match the personality assessment they completed earlier. Participants in the non-personalized conditions were told that the personality test was a data collection from the Department of Advertising. On the welcome page, participants were only told that they were assigned to a game character with a random name.

4.5 Dependent Measures

4.5.1 The Inclusion-of-the-Other-in-the-Self (IOS) Scale. The IOS scale (Aron, Aron, and Smollan, 1992) (see Figure 1, for the illustration of the IOS scale) is a single-item, pictorial measure. Instead of using the seven-point Likert scale to measure individuals' attitudes, the IOS scale uses seven Venn-like diagrams with two overlapping circles: a circle representing self and the other circle standing for others. Responses were recorded on a seven-point Likert scale (1 = Not overlapping at all and 7 = Fully overlapping). The overlapping proportion of the two circles illustrates the overlapping proportion between self and others.

The IOS scale was first generated to measure individuals' perception of intimacy between themselves and others. The measurement of psychological distance between the media audience and the character has long been used as the substituted measurement of identification with media characters (Newton & Buck, 1985; Reeves & Miller, 1978). Reeves and Miller (1978) used a three-dimensional measurement to measure the distance between television characters and the media audience. They found the three-dimensional

measurement of distance accounted for nearly 80% similarity between the television character and the media audience, and was highly correlated with the traditional measurement of identification with media characters. Therefore, the IOS scale is a straightforward measurement tool to determine the extent to which participants give up their own standpoint and identify themselves with the game characters.

4.5.2 Cohen's Identification Scale. Cohen's identification scale is a 10-item question scale developed by Cohen (2001) (see Appendix C). Cohen operationalized identification on four dimensions: sharing the feelings of the character, sharing the perspective of the character, internalizing and sharing the goals of the character, and absorption during exposure to the media. Responses were recorded on a 5-point Likert scale that was anchored by (1 = Not at all and 5 = Very much).

The two measurement scales of identification (the IOS scale and Cohen's identification scale) access the concept from different perspectives, and examine the reliability of various operationalization and measurements of identification.

4.6 Results

A two-way analysis of variance (ANOVA) test was conducted to test H1 and H2. The two personality identification measures yielded different results. When measured by the IOS scale, personality matching showed a statistically significant effect on player-character identification; participants in the personality matching conditions ($M = 4.04$, $SD = 1.56$) reported a higher level of identification than those in the non-matching

conditions ($M = 3.23$, $SD = 1.51$). However, when measured by Cohen's identification scale, there is no statistically significant difference in the group means of player-character identification [$F(1, 87) = 2.22$, $p = 0.14$] between the personality-description matching conditions ($M = 3.06$, $SD = 0.86$) and the non-matching conditions ($M = 2.81$, $SD = 0.72$). The support for H1 is mixed.

The interaction effect between personality description conditions and perceived personalization conditions on player-character identification was not statistically significant on either the IOS scale [$F(1, 87) = 0.17$, $p = 0.68$] or Cohen's identification scale [$F(1, 87) = 0.28$, $p = 0.60$]. H2 was not supported.

4.7 Discussion

In Experiment 1, two scales were used to measure player-character identification. Although the IOS scale and Cohen's identification scale were highly reliable (see Table 2, for scale reliability between the two scales), they yielded inconsistent results on measuring player-character identification.

There is not enough evidence in my study to explain the cause of such a difference. As a figure scale, the IOS scale is more straightforward and intuitive, and is suitable to measure unconscious and subtle psychological processes. However, this scale also created trouble on interpretation. Cohen (2001) argued against the figure scale, suggesting that the measuring distance between media characters and the media audience through a figure scale was ambiguous. He argued that although this measurement seemed

intuitional, it could not reveal the exact concept that it measured. Also, IOS scale is a one-item scale, which may not fully capture the multidimensionality of the construct. In contrast, self-reporting questions, such as those in Cohen's identification scale, may not effectively differentiate self-identification and other similar concepts (such as imagination, empathy, and presence). Klimmt et al. (2009) argued that Cohen's identification scale only measured the empathy but not the identity merging between the media audiences and the media characters.

Measurement issues aside, player-character identification may shift dynamically during the game process (Cohen, 2001). Players might have experienced a greater perceived distance between themselves and the game character after a momentary player-character identification (Klimmt et al., 2009). Therefore, implicit measurement and in-game measurement of player-character identification should be adopted in future studies to capture the intensity and frequency of identification. Previous studies (Sestir, 2008; Klimmt et al, 2010) indicated reflection time as a useful tool to measure the psychological distance between self and the character using name initial association.

In Experiment 1, there was no pretest on whether the non-matching personality descriptions were perceived to be neutral or negative. Since the Forer-effect descriptions only had an identified version of personality descriptions, I generated the non-matching personality descriptions by making semantically opposite descriptions of the universally identified version. This opposite version, albeit deliberately avoided negative wording,

was not pretested whether it associated with negative emotions or not. In the non-matching condition, there was a confounding factor that players' lack of identification with the game character may be due to the negative perception of personality description, but not the non-matching of personality description.

Perceived personalization did not affect player-character identification in Experiment 1. There are several possible reasons. First, the effectiveness of perceived personalization treatments was not checked. Perhaps the players did not perceive their characters as personalized by their personality test. Second, the game characters were generated immediately after participants submitting the personality test; there was no time interval. This fast process could have led participants to distrust that the character was indeed generated based on their personality test; it is possible that participants perceived the game character to be predesigned. Third, being informed of game personalization might have led the players to observe their characters more carefully. When players held higher expectations that the game characters should be similar to themselves, they were more likely to find incongruence and therefore strive to distinguish themselves from the character, regardless of the personality-description matching and non-matching conditions.

CHAPTER 5: EXPERIMENT 2

Considering the inconsistent findings from Experiment 1, Experiment 2 retested H1 as a replication with a larger sample size. In addition, it also examined the effect of positive/negative in-game experiences on player-character identification as predicted in H3 and H4.

5.1 Participants and Design

One hundred and thirty-six undergraduate students from the undergraduate participant pool participated in Experiment 2 for extra course credit. The students were randomly assigned to a 2 (identification: identify or not identify) \times 3 (interaction: positive or negative or control) between-subject experiment (see Table 3, for sample size in each experimental condition).

5.2 Procedure

The procedure of experiment 2 was similar to experiment 1. When students arrived in the laboratory, they were asked to sign the consent form. They first completed a Big-Five Inventory personality test. After they submitted the test, they were shown a welcome page. The welcome page informed participants that the present study is aimed to test a new game released by a Swedish game company, BJÖRN; it also briefly described the game narrative to participants, and assigned participants to a game character with a randomly generated gender-neutral name.

Participants played the game for approximately five to ten minutes until they reached the end of the game. After finishing the game, participants were asked to complete a survey, including the measurement of player-character identification. Upon completion, participants were debriefed and thanked.

5.3 Experimental Treatments

5.3.1 Personality Descriptions. The personality descriptions were the same as in Experiment 1.

5.3.2 Positive/negative Game Experience. Participants encountered a social agent who interacted with the players' game characters and evaluated them either positively or negatively in different contexts (see Appendix D). First, the social agent commented on the appearance of participants' game characters when they first met (positive: "I cannot believe people as gorgeous as you actually exist," or negative: "I cannot believe people who look as awful as you actually exist"). Second, the social agent commented on the performance of participants' game characters (positive: "you have a natural talent for this," or negative: "you are horrible at this!" or "I cannot stand your horrible work anymore"). Finally, the social agent commented on the social likeness of participants' game characters when they bid farewell to each other (positive: "you are a wonderful person; I admire and respect you," or negative: "you are such a terrible person; I cannot see any value in you"). In control conditions, the social agent encountered participants'

game characters, but did not comment on their appearance, performance, or social likeness.

5.4 Dependent Measures

As in Experiment 1, player-character identification was measured by two scales: the IOS figure scale, on a seven-point Likert scale (1 = Not overlapping at all and 7 = Fully overlapping); and Cohen's ten-question identification scale, on a five-point Likert scale (1 = Not at all and 5 = Very much).

5.5 Results

A two-way analysis of variance (ANOVA) test was conducted to compare the main effects of personality description and positive/negative in-game experiences, and the interaction effect between the two factors on player-character identification. There is a statistically significant difference in the group means of player-character identification measured by the IOS scale [$F(1,130) = 7.60, p = 0.007$] between the personality-description matching condition ($M = 3.18, SD = 1.60$) and the personality-description non-matching condition ($M = 2.47, SD = 1.39$). The group means of player-character identification measured by Cohen's identification scale was also different [$F(2,130) = 5.56, p = 0.02$] between the personality-description matching condition ($M = 2.85, SD = 0.88$) and the personality-description non-matching condition ($M = 2.50, SD = 0.83$). Therefore, H1 was supported in Experiment 2.

Player-character identification did not differ between the positive and negative in-game experience conditions on either the IOS scale [$F(2,130) = 0.60, p = 0.55$] or Cohen's identification scale [$F(2,130) = 0.078, p = 0.93$]. H3 was not supported. The interaction effect of personality-description conditions and positive/negative in-game experience conditions on player-character identification was not statistically significant on either the IOS scale [$F(2,130) = 0.90, p = 0.41$] or Cohen's identification scale [$F(2,130) = 0.64, p = 0.53$]. Therefore, H4 was not supported.

5.6 Discussion

In Experiment 2, both measures of player-character identification supported H1, suggesting that personality description could be an effective method to induce player-character identification.

However, positive/negative in-game experiences did not influence player-character identification as I predicted. Several possible limitations could explain this result. First, the design of the game stimulus might have influenced player-character identification. The game stimulus in Experiment 2 contained two parts: The first part, which conveyed participants their game characters' personality, was detail-oriented and elaborated; the second part, which described how participants' game characters encountered the social agent, was short, cursory, and did not include as many context-related details and descriptions as the first part. Second, although the positive and negative comments were effective in inducing corresponding reactions in a non-contextualized survey, they were

not pretested in the specific game-playing context. Third, participants' attitudes towards the social agent were unknown. The relationship between the participants' game character and the social agent is influential on the effect of positive and negative in-game experience. For example, whether the players treat the social agent as an important other will affect participants' reactions and feelings, as participants will pay more attention to – and are more likely to be influenced by – significant others.

CHAPTER 6: GENERAL DISCUSSIONS

In the present study, I conducted two experiments to examine the effectiveness of the three factors that might affect player-character identification: personality description, perceived personalization, and positive/negative game experience. The results showed personality description could influence player-character identification. However, neither perceived personalization nor positive/negative in-game experience had any significant main effects and interaction effects on player-character identification. In summary, this study demonstrated participants were more likely to identify with the game characters when they received matching personality descriptions.

6.1 Future Research

6.1.1 Customizing the Game Narratives. In this study, the same game storyline was assigned to every participant. Although participants had the freedom to decide when to take the next action, they could not freely decide the game narrative or their game characters' actions. Players were half interacting with and half observing the game. While the restriction on game narrative kept the noise in the game process under control, it might obstruct participants from developing their game characters based on their own preferences, and restrict the induction of a stronger player-character identification. If players could choose their game character' actions, their decision tree would be a straightforward behavioral signal to measure their relationships with the game characters. The decision tree could reveal whether players make choices following the personality of

their own or that of the game characters. By remaining the general game narrative unchanged but allowing small branches of differences, the game stimulus could control the noise while eliminating the restrictions on participants.

6.1.2 Customizing the Personality of the Game Characters. Although there are options for players to customize game characters' appearances, option to customize the game characters' personalities rarely exists. In some video games, players could choose their characters' reactions and language style, which leads to a different game narrative. However, there are rarely games using the Big Five Personality to customize a character's personality, for example, an extroverted or an introverted character. Given the rapid development of technology, players could create autonomous, animated characters (Hartmann & Klimmt, 2006) that simulate human behaviors, emotions, and even personalities (Wang et al., 2005). It would be a promising direction to enable players to more aspects of game character design other than appearance.

6.1.3 Inducing Personality Identification through a Player's Real Personality. This study used a universal version of personality description. Although the universal personality description is effective in inducing player-character identification, participants' actual personality description would be more influential.

6.1.4 Matching Personality Traits and Game Contexts. Players might emphasize certain personality traits in different contexts. Klimmt, Hartmann, Gysbers & Vorderer (2005) suggested there was a stronger relationship between a specific personality trait and

a specific behavior, for example, players' competitiveness and their actions in game.

Vasalou and Joinson (2009) found players exaggerated different characteristics to suit the need of different contexts such as dating, blogging, and gaming. Therefore, matching specific personality trait with specific game context might trigger a stronger player-character identification.

6.1.5 Conducting a Longitude Study on Personality Identification. In this study, a short-term player-character identification was induced under experimental conditions. In a short-term game, players could differentiate their real-life identities from their game characters due to the perception of reality and social environments cues (Christoph, Dorothee & Peter, 2009). However, in a long-term game, players are more likely to develop a stronger player-character identification.

6.1.6 Integrating Multiple Levels of Identification. Multiple levels of player-character identification, such as physical, behavioral, social, and psychological realism, could exist in the same game context or even on the same game character. Previous study examined the interaction between different kinds of identification in other media contexts. Maccoby and Wilson (1957) found that when the audiences identified with two film characters from different aspects, they had to compare the intensity and decide the importance of different identification. For example, audiences might identify with a character's motivations and attitudes, yet find dissonance regarding gender and social status. It is possible that the conflict of multiple levels of identification holds true in game

contexts. The present study used an unrealistic text-based game as the stimulus, eliminating the effect of physical appearance on player-character identification. It is not clear whether personality identification would outplay other kinds of identification, and influence game players in an essential and lasting way.

6.2 Limitations

There are several limitations in addition to those discussed in earlier sections. First, both experiments had a small sample size. A post-hoc power analysis indicated the sample size should be approximately 400 to have a .8 power, given the effect sizes found in both experiments. Second, demographic information was not included in the survey; therefore, it was uncertain whether there has been any gender effect in player-character identification. Previous study suggested the processes through which women and men developed identification were different. Although most players prefer game characters in accordance with their gender (Trepte & Reinecke, 2010), men are more likely to identify with a same-sex character and focus on physical strength than women (Reeves & Miller, 1978). Trepte and Reinecke (2010) demonstrated that women were more likely to be affected by the similarity and the differences between themselves and their game characters in competitive games. Third, the personality test results were not recorded due to technological limitations. Participants might interpret and react to the personality descriptions and the positive/negative in-game experience differently based on their personalities.

TABLES AND FIGURE

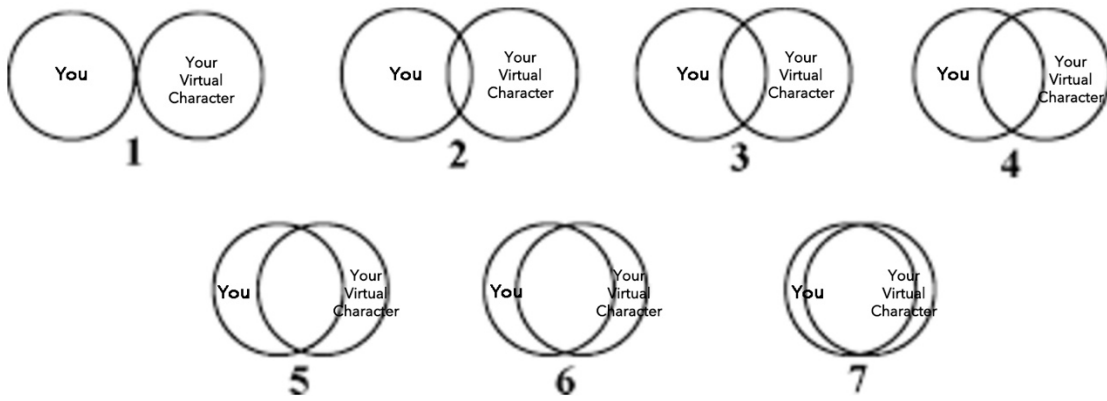


Figure 1. Adjusted IOS Scale

Table 1.

Sample size in each experimental condition

	PD Matching	PD Non-matching	Total
Personalized	25	22	47
Non-personalized	22	22	44
Total	47	44	91

Note. PD = personality description

Table 2.

Scale reliability between the IOS and Cohen's identification scale

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Number of Items
.897	.897	11

Table 3

Sample size in each experimental condition

	PD Matching	PD Non-matching	Total
Positive	23	23	46
Control	23	20	42
Negative	23	25	48
Total	68	68	136

Note. PD = personality description

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APPENDIX A: GAME NARRATIVE

Part 1: Character Identification. X (substituted by the randomly generated neutral character name) wakes up alone in a dark room of an old little cable in the midnight. After lighting the fire and getting warm, X started exploring in the room and found some stuff in the corner. X picked them up and examined them. When day comes, X decided to go for a hiking to the small town at the horizon. X planned the trip and started hiking. X reached the small town

Part 2: Encountering social agent and message. X entered the small town. X met a stranger called Y (substituted by another randomly generated neutral character name). They introduced themselves to each other, and Y commented on X's appearance (appearance message). X hunted a rabbit and rubbed the wood to start a fire. Y commented on X's hunting performance/ability (performance message). The next morning, X and Y fared each other well, and Y commented on X's accompany (social attitude message).

APPENDIX B: PERSONALITY DESCRIPTIONS

Game scenarios		Personality description condition	
		Matching	Non-Matching
1	X picks up the painting. The painting seems to be a beautiful view. But it is covered with thick dust and cannot be seen very clearly.	X imagines vividly how it would be like to live in a place like this with some loved one. X knows that it is not possible to be true one day. Some of X's aspirations tend to be pretty unrealistic.	X doesn't bother to imagine how it would be like to live in a place like this with some loved one. X knows that it is not likely to be true one day. X never has any unrealistic aspirations.
2	There seems to be some suggestions from other people, and some unproved guesses on the edge of parchment.	However, X does not want to follow their threads of thinking at the beginning. X wants to be an independent thinker, and does not accept others' statements without satisfactory proof.	X is so glad that there are other people's instructions. X does not wish to be an independent thinker, and will happily accept others' unproved statements if it can save the job for X to figure things out by self.
3	The diary describes how the traveler strive to get people admit all the great achievement of adventure and expedition. It also narrates some related emotional struggles and family issues.	X understands that very much. X also has a great need to be liked and admired by other people.	X doesn't understand that. X doesn't have a great need to be liked or admired by other people.
4	From the diary, it seems that the travelers leave this diary to other people who might also stay in this cabin. X knows a lot of details the traveler from the diary. X feels close to the traveler.	However, X will not write a very high self-disclosure diary and leave it somewhere for other people to read. X has found it unwise to be too frank	If given a chance, X might also happily write a very high self-disclosure diary and leave it somewhere for other people to read. X doesn't found it unwise to be very

		in revealing self to others.	frank in revealing self to others.
5	Suddenly, X heard some cracking sounds outside the window.	X becomes vigilant, so X decides to examine what has happened. Security is one of X major goals in life.	X doesn't care about it that much, but still decides to examine what has happened. Security does not matter that much for X.
6	X carefully moved toward the window. X found some branches are on the ground in the snow.	X has no idea what happened. Disciplined and self-controlled outside, X is actually worrisome and insecure inside.	X doesn't pay much attention on it. X has never been worrisome and insecure inside at any point.
7	There is no one around and nothing else to do.	But X doesn't feel very lonely. At times X is extroverted, affable, sociable, while at other times X is introverted, wary, reserved.	But X doesn't feel very lonely. X is always introverted and prefer to be alone. X does not need any contact with people.
		When there is some time alone, X has a tendency to be critical of self. So X begins to think about things that has been done wrongly and what X should have done. X has some personality weaknesses, but are generally able to compensate for them.	However, even when there is some time alone, X is never critical of self. X can't think of any personality weaknesses.
8	X has been hiking for another hour. X is very tired, but the town still looks pretty far away.	At times X have serious doubts as to whether this is the	But X never doubts whether this is the

right decision or the right thing to do.	right decision or the right thing to do.
---------------------------------------------	---------------------------------------------

APPENDIX C: ADJUSTED COHEN'S 10-ITEM IDENTIFICATION SCALE

(1 = Not at all and 5 = Very much)

When my character succeeded I felt joy, but when my character failed, I was sad.

While playing the game, I felt as if I was part of the action.

While playing the game, I forgot myself and was fully absorbed.

I was able to understand the events in the game in a manner similar to that in which my character understood them.

I think I have a good understanding of my character.

I tend to understand the reasons of what my character does.

While playing the game I could feel the emotions my character portrayed.

During playing, I felt I could really get inside my character's head.

At key moments in the game, I felt I knew exactly what my character was going through.

While playing the game, I wanted my character to succeed in achieving the goals.

APPENDIX D: POSITIVE /NEGATIVE IN-GAME EXPERIENCE

Game Scenarios	Positive Experience	Negative Experience
1 The stranger walks to X, and makes a short introduction: My name is Y. X says: “Hi, my name is X.”	Y looks at X and said: I cannot believe people as gorgeous as you actually exist.	Y looks at X and said: I cannot believe people who look as awful as you actually exist.
2 X picks up a sharp stone and aims at it.	X hits it! The rabbit seems fainted. Y said: I am totally amazed by your excellent skill!	X misses it! The rabbit runs away. Y said: You are horrible at this!
3 X found a piece of wood. It could be used to start a campfire.	X rubs the wood skillfully, and start the fire very easily. Y said: You have a natural talent for this.	X rubs the wood for a long time, but cannot start the fire for a long time. X finally start the fire after a long time trying. Y said: I cannot stand your horrible work anymore.
4 X and Y both feels there is not much to see in the small town. They decide to leave the town and go back.	Before left, Y said: You are a wonderful person; I admire and respect you. Goodbye.	Before left, Y said: You are such a terrible person. I cannot see any value in you. Goodbye.