PLAYER-CHARACTER CONGRUITY AND IMMERSIVE EXPERIENCES: IMPACT ON LOYALTY IN GAMING

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ABSTRACT

Brand loyalty in a gaming context takes many forms, including conscious selection of brand, intention of game continuation, positive word of mouth, recommendation, or even active recruitment. As games can be played multiple times, player loyalty is essential to fostering an on-going relationship between brand and consumer. This study focuses on the theory of self-congruity, the congruence between one's self-concept and one's perception of a brand's personality, and its impact on brand loyalty in the gaming industry, a market that has grown exponentially in recent years. Through 31 in-depth interviews, the initial qualitative research explores self-congruity (actual, ideal, social, and ideal social) and its relationship to the gaming environment and how that impacts brand loyalty. The findings of the first study demonstrated: 1. congruity between the player and game character, rather than the game itself, 2. the deeply personal approach to character design, and 3. the feeling of immersion in the game's narrative. Based on the initial study findings, the second study was developed to incorporate flow theory that describes the nature of feeling fully immersed within the game. A conceptual model was created to integrate self-congruity and flow theories and their impact on brand loyalty. The model was then tested through 512 respondents of a self-reported survey. Results supported prior researchers' findings, such as the relationships between player-character identification and flow as well as flow and loyalty. Yet, we found that ideal congruity may be a stronger indicator of loyalty as mediated through flow, while actual congruity may in fact inhibit the relationship. The results of this research provide a theoretical contribution by adding self-congruity theory to the flow and loyalty body of knowledge in the gaming space. Furthermore, the self-congruity measurement

model provides an alternative measurement method to the previous player-character identification model. From a managerial perspective, the study results support an approach to game design that encourages character design suited to players' ideal selves rather than mimicking their actual, "real world" selves.

Keywords: gaming, self-congruity theory, flow theory, player-character identification, brand loyalty

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CHAPTER 1. INTRODUCTION

The Gaming Industry

The U.S. gaming industry is a force to be reckoned with, having reached $23.5 billion in total video game revenues in 2015 (Morris, 2016). Traditional and social/casual gaming revenue is also projected to increase through the year 2020 (PricewaterhouseCoopers LLP, 2016). Per Mintel's *Gamers and Gaming* study of Internet users aged 18+, 86% of men and 75% of women report having recently played some type of video game from puzzle or card games to role-playing and strategy games (Harland, 2014). In fact, 71% of respondents from another Mintel study report at least one hour of video game usage per week, and 53% of respondents report a willingness to pay for video games (Harland, 2015). Some games garner higher price tags, as *Magic: The Gathering* card decks can be worth over $1,000 and individual cards valued at an even higher price tag. Subscription games like *World of Warcraft* require the purchase of the game, plus ongoing access fees. Gaming can also be a source of income with the introduction of *Major League Gaming* and *Magic: The Gathering* professional tournaments rewarding winners with $4,000 to $40,000 in proceeds (Dreier, 2015). With such notable industry growth and revenue potential, a fertile ground exists for research opportunities especially in the marketing discipline.

The Importance of Brand Loyalty

Brand loyalty is a critical element to marketing success and has been extensively studied (Jacoby & Kyner, 1973; Sirgy, Johar, Samli & Claiborne, 1991; Bloemer & Kasper, 1995; Amine, 1998; Choi & Kim, 2004; Kressmann, et al., 2006; Joe & Chiu, 2008; He, 2012; Liu, et al., 2012; Teng & Chen, 2014; Dwivedi, 2015; Tseng, Huang & Teng, 2015; Zhou, et al., 2015; Leckie, Nyadzayo, & Johnson, 2016). Brand loyalty has been studied in relation to its numerous benefits to the firm, including repeat purchasing, increased revenue for loyal customers, positive word-of-mouth, and even brand advocacy (Amine, 1998). "In current highly competitive environments, improving consumers' loyalty to brands allows firms to secure a comfortable long-term position in the market-place" (Amine, 1998). Customers that maintain long-lasting relationships with brands, purchase upgrades or complementary add-ons, and recommend brands to friends or colleagues traditionally generate the most profitable relationships.

Brand loyalty is a complex phenomenon that can be separated into attitudinal and behavioral brand loyalty, distinguishing between a consumer's desire to purchase a brand and the actual purchase of that brand (Kressmann, et al., 2006). Marketers face the challenge not only to target the most loyal customers but also to identify the least loyal customers for removal from promotions. Understanding loyalty enables marketers to create strategies that prioritize ideal target segments and deprioritize potential problem groups. The importance of brand loyalty within the marketing function motivates this research.

Theory of Self-Congruity

The theory of self-congruity presents a psychological approach to a marketing issue. This theory has been studied for at least 30 years and has been the basis for multiple research initiatives, including its impact on satisfaction and behavioral intentions (Sirgy, 1985; Sirgy, Grewal, & Mangleburg, 2000; Kressmann, et al., 2006; Ibrahim & Najjar, 2008; Liu, et al., 2012; Yu, Lin & Chen, 2013). Self-congruity has been studied and expanded in several ways over the years, resulting in various constructs and dimensions such as actual self-congruity, ideal self-congruity, social self-congruity, ideal social self-congruity, and virtual world self-congruity. All of these concepts will be discussed in more depth within this paper.

Many types of games, such as adventure or role-playing games, include the creation of a character or avatar, a representation of a player within the game. The creation of such characters may be highly personal or idealistic as players may choose to represent themselves as their realistic self, their ideal self, or even a version of themselves that may only exist in a virtual or fantasy setting. Players may also select to design a character that departs from their self entirely. Because of the personal nature of gaming and the creation of characters and avatars, the theory of self-congruity and its extensions present a natural opportunity to understand this phenomenon.

Research Focus

While initial studies have focused on broader aspects of brand loyalty (Amine, 1998; Kressmann, et al., 2006; Liu, et al., 2012; Leckie, Nyadzayo, & Johnson, 2016; Dwivedi, 2015), opportunities exist to expand the antecedents to loyalty within the context of the gaming industry. As the gaming industry continues to grow and gain revenue each year, new ways to improve games and identify target segments to grow gamer loyalty are essential for many reasons:

1. If game design can be updated to improve the connection between a player and his/her character/avatar, loyalty will improve.
2. Many products and industries experience market saturation. As more customers are acquired and the target populations become saturated, identifying new target segments will become more difficult and more expensive over time. Understanding critical factors to identify more (or less) brand loyal customers will become a key component of marketing segmentation to improve acquisition.
3. If more loyal segments can be identified and acquired (resulting in longer-tenure customers and, potentially, increased referrals), revenue will increase.
4. As more brand loyal customers are identified, marketers must attract those targets and begin to build a strong brand relationship to gain financial and competitive advantage.

Given these important practical applications, research to understand what factors affect loyalty in the gaming industry is an essential endeavor.

At the intersection of the growth of the gaming industry and the importance of brand loyalty to firm success, the focus of this research is the application of self-congruity theory on brand loyalty within the gaming industry. How does the congruity between a person's self-image and the game brand impact brand loyalty with gaming products? If congruence between self and brand does not exist, are there elements of the game with which player self-concepts are congruent? What is the relationship between the person and his/her character/avatar and how does that impact their loyalty attitudes? These topics are the primary foci of this research.

CHAPTER 2. LITERATURE REVIEW

Brand Loyalty Defined

Loyalty to a company or brand has been discussed in various disciplines and defined in several ways (Jacoby & Kyner, 1973; Sirgy, Johar, Samli & Claiborne, 1991; Bloemer & Kasper, 1995; Amine, 1998; Choi & Kim, 2004; Kressmann, et al., 2006; Joe & Chiu, 2008; He, 2012; Liu, et al., 2012; Teng & Chen, 2014; Dwivedi, 2015; Tseng, Huang & Teng, 2015; Zhou, et al., 2015; Leckie, Nyadzayo, & Johnson, 2016). Common terms interchanged with "brand loyalty" are "customer loyalty," "loyalty," and "commitment." "Gamer loyalty," the tendency to engage in a game repeatedly, is also referenced when studying loyalty in the context of the gaming industry (Zhou, et al., 2015; Tseng, Huang & Teng, 2015). Marketing themes include the "degree of attachment a customer has for a particular brand" (Liu, et al., 2012; Leckie, Nyadzayo, & Johnson, 2016) and a "deeply held commitment to re-buy or re-patronize preferred product/services consistently in the future" (Dwivedi, 2015). Amine (1998) presents both definition approaches: repeat purchasing behavior over time and positive feelings about a brand. Bloemer and Kasper (1995) in the psychology discipline make a clear distinction between repeat purchasing, the actual behavior of repurchase, and the following definition of brand loyalty, "the chance of buying the same brand the next time they needed to buy such a product." Business research provided similar definitions using terms, such as commitment, intention to re-purchase (Kressmann, et al., 2006), and a "central indicator of customer relational strength" (He, 2012). The concept of continuation intention enters the literature

within the context of the gaming industry as “subjective willingness of continued usage” (Zhou, et al., 2015; Tseng, Huang & Teng, 2015).

All definitions of loyalty have an indication of commitment or connection between the consumer and the brand, even heightening the terminology with qualifying expressions such as “deeply” and “relational strength.” Loyalty is not seen as a surface construct but more a function of a person’s rooted thoughts and emotions. Definitions differed most overtly by use of terminology that indicates re-purchase intention. Bloemer and Kasper (1995) asserted the difference between the actual behavior and the attitude (or chance) of purchasing the product. Both business and psychology disciplines address “attitudinal brand loyalty” or “planned commitment” as a subset of brand loyalty (Kressmann, et al., 2006), demonstrating the difference between an intended connection to a brand and the actual re-purchase behavior. While some consumers would intend to re-purchase, only certain circumstances will lead to actual purchase such as available income, time, etc. Also, re-purchase does not indicate brand loyalty. While re-purchase and brand loyalty may appear to be similar in nature, “their underlying dynamics are different” (Jacoby and Kyner, 1973). For example, a selected customer may purchase the same brand more than once in a random manner or with no thoughtful evaluation or intention to do so. Jacoby and Kyner (1973) present the factors describing how “brand loyalty differs from simple repeat purchasing behavior.” In fact, they present six conditions that must be present for brand loyalty to truly exist: “(1) the biased (i.e., nonrandom), (2) behavioral response (i.e., purchase), (3) expressed over time, (4) by some decision-making unit, (5) with respect to one or more alternative brands out of a set of such brands, and (6)

is a function of psychological (decision-making, evaluative) processes" (Jacoby & Kyner, 1973).

Self-Congruity Theory

Self-congruity theory is a key characteristic for this study due to its connection to both the psychology and marketing disciplines. Self-congruity has also been referenced as self-congruence, self-image congruence or simply image congruence. Self-congruity and related dimensions have been studied as primary antecedents to various consumer behaviors and decision-making patterns. Self-congruity is succinctly defined by Kressman, et al. (2006) as "the match between consumers' self-concept (actual self, ideal self, etc.) and the user image (or 'personality') of a given product, brand, store, etc." Dolich (1969) found that "individuals tend to relate brand symbol to self concepts" and that "favored brands were consistent with the self concept and thus reinforced it (Dolich, 1969). Kressman, et al. (2006) focused research on the automobile industry, showing that "self-image congruence positively affects brand loyalty directly and indirectly through functional congruity, product involvement, and brand relationship quality" (Kressmann et al., 2006). This study also compared self-congruity to functional congruity, "the match between consumers' ideal expectations of utilitarian product features and their perceptions of how the brand is perceived along the same features" (Kressmann, et al., 2006). An earlier study showed that both functional and self-congruity were predictive of consumer behavior, but functional congruity tends to be stronger though self-congruity can

influence that relationship (Sirgy, et al., 1991). More recently, Branaghan and Hildebrand (2011) studied self-congruity theory in relation to automobiles and soft drinks, demonstrating the impact of self-congruity on brand preference. And Yu, Lin & Chen (2013) completed a study in the luxury goods industry, demonstrating that self-congruity has a positive impact on purchase intention.

Because of the self and social nature of this theory, other research has explored its multiple dimensions: actual self-congruity, ideal self-congruity, social self-congruity, and ideal social self-congruity:

- Actual Self-Congruity – "The degree of match between a shopper's actual self-image and a retail patron image" (Sirgy, Grewal, & Mangleburg, 2000)
- Ideal Self-Congruity – "The degree of match between a shopper's ideal self-image and a retail patron image or the fit between how shoppers like to see themselves in relation to the retail patron image;" a function of the "private self" (Sirgy, Grewal, & Mangleburg, 2000)
- Social Self-Congruity – "The degree of match between a shopper's social self-image and a retail patron image or the fit between how shoppers believe they are seen by others in relation to the retail patron image" (Sirgy, Grewal, & Mangleburg, 2000)
- Ideal Social Self-Congruity – "The degree of match between a shopper's ideal social self-image and a retail patron image or the fit between how shoppers would like to be seen by others in relation to the retail patron image" (Sirgy, Grewal, & Mangleburg, 2000)

In a study on the housing market, Malhotra (1988) discusses a multidimensional approach to self-congruity and the fact that "the differential role of ideal, actual and social self concept is likely to vary over individuals." Individuals have different goals and decision-making processes that serve their complex motivations: "In the context of self concept, the goals of an individual could be to maintain (actual self concept), enhance (ideal self concept), or project a certain self concept to significant others (social self concept)" (Malhotra, 1988). Self-congruity and ideal self-congruity have been found to be additive in nature in regard to purchase motivation for magazines and automobiles, meaning that ideal self-congruity adds to the strength of self-congruity's impact when both are present (Sirgy, 1985). When considering the four dimensions of self-congruity, it is critical to understand that each motivation is different. In Sirgy, Grewal, and Mangleburg's (2000) study of the retail environment, each dimension was paired with its related motivation:

- Actual self-congruity and self-consistency, relating to a person's "private self" and the protection of one's sense of self. *Is the purchase of this brand consistent with who I am?*
- Ideal self-congruity and self-esteem, also in relation to a person's "private self" and if a person does not like his/her self-image. *Will the purchase of this brand improve how I feel about myself or portray the person that I wish to be?*
- Social self-congruity and social self-consistency, how a person feels that he/she is viewed by others. *Is the purchase of this brand consistent with who people believe me to be?*

- Ideal social self-congruity and social approval, how a person would like to be viewed by others. *Will the purchase of this brand improve how others view me?*

Beyond the four dimensions of self-congruity, Gabisch (2011) delved into the virtual community *Second Life* to understand why consumers purchase virtual branded products, resulting in a comparison between "Real-World Self-Image Congruency" and "Virtual World Self-Image Congruency." Gabisch (2011) posits that "consumers who perceive product and brand experiences in the virtual world to be consistent with their self-image may be more likely to transfer their purchase intentions and behavior to the real world."

Consequences of Brand Loyalty

Brand loyalty has been supported as a critical factor in marketing programs, driving increased revenue and firm competitive advantage. Customer loyalty provides many advantages to a company or brand:

- Brand Confidence – Amine (1998) described loyalty's impact as "the consumers' confidence in the brand." Confidence in the brand also strengthens brand loyalty in return as a cyclical process.
- Positive Word of Mouth – Amine (1998) also describes loyalty and its "positive word of mouth communication or brand support." Positive word of

mouth or brand advocacy is often pursued by firms with little control or understanding of its function.

- Firm Competitive Advantage – "Loyal customers provide a competitive advantage for firms" (Teng et al., 2012) and "customer loyalty is essential to service providers" (Reichheld & Schefter, 2000).
- Repeat Purchase – Several studies tie loyalty with the behavior of repeat purchasing or an increase in sales (Bloemer & Kasper, 1995; Amine, 1998; Kressman, 2006; Joe & Chiu, 2008; Huang & Hsieh, 2011). Repeat purchase differs from continued engagement as the latter does not indicate purchase or money transfer, rather experience with a brand. Most studies have focused on the intention to repurchase a selected brand when the opportunity arises.

Brand loyalty is also shown to be "an indicator of continuance and represents an important behavioral consequence in online gaming" (Huang & Hsieh, 2011). Zhou, et al. (2015) also uses loyalty synonymously with "continuance intention" within social virtual worlds. Continued engagement is essential for gaming brands as they are experience goods, which require regular player interaction to maintain the relationship. Brand loyalty and continued engagement intention are critical elements of this proposed research.

Brand Loyalty Construct – Selected Antecedents and Consequences

The construct below illustrates relevant antecedents and consequences in relation to brand loyalty as described in the literature review. Dimensions of self-congruity (actual, ideal, social, ideal social, and virtual world) have been observed to be predictors of brand loyalty concepts (attitudinal, behavioral) (Dolich, 1969; Sirgy, 1985; Sirgy, Johar, Samli & Claiborne, 1991; Sirgy, Grewal, & Mangleburg, 2000; Kressmann, et al., 2006; Ibrahim & Najjar, 2008; Gabisch, 2010; Branaghan & Hildebrand, 2011; Aguirre-Rodriguez, et al., 2012; Liu, et al., 2012; Yu, Lin & Chen, 2013). Brand loyalty has also been studied with respect to its consequences, such as brand confidence (Amine, 1998), continued engagement (Huang & Hsieh, 2011; Zhou, et al., 2015), repeat purchase (Bloemer & Kasper, 1995; Amine, 1998; Kressmann, et al., 2006; Joe & Chiu, 2008; Huang & Hsieh, 2011), positive word of mouth (Amine, 1998), and firm competitive advantage (Reichheld & Schefter, 2000; Teng, et al., 2012). Given the positive impact of brand loyalty on the firm, research in this area is essential to the improvement of product development and marketing efforts.

CHAPTER 3. RESEARCH CONTRIBUTION

Research Gaps

This research is intended to address primary gaps outlined in previous studies:

1. The concepts of self-congruity, ideal self-congruity, social self-congruity, and social ideal self-congruity are included within the framework to deconstruct the consumer psychology in relation to gaming brands. Gabisch's (2011) research in the context of the *Second Life* online community extended self-congruity theory into virtual environments; however, additional growth in this topic area and application to another industry is an existing opportunity in the space. While Gabisch (2011) describes self-congruity and how virtual relationships impact real-world purchase decisions, further opportunity exists to understand the player's sense of self within that virtual or simulated world. First, how does the theory of self-congruity apply to gamers and their loyalty to the game? Second, how does a player's connection with their character or avatar impact their loyalty to the same? Third, how does that loyalty impact continued engagement with the game and sales for the firm? Contributions to both the literature and managers are generated from a deeper understanding of these relationships:
    a. The self-congruity model is enhanced with data in a new industry and consumer dynamic.
    b. Managers will gain insight into the psychology of the players and their relationships with the brand and/or characters.

c. Managers will gain insight to improve gaming products that address player needs and desires to improve gamer loyalty, thus improving long-term sales.

2. Teng and Chen (2014) observed the impact of team participation on gamer loyalty with moderating variables of compliance to team norms and social need satisfaction in an initial study of online gaming web sites (without reference to self-congruity). These authors discuss the opportunity to tie gaming consumer's personality traits with game interaction and brand loyalty. This proposal suggests a deeper study to address a consumer's sense of self and its impact on brand loyalty. This research proposes the utilization of a personality inventory with semi-structured interviews, which probes gamers on the psychological relationship between self, the game, and their character/avatar.
3. Finally, Huang and Hsieh's (2011) study was limited to university students that actively played online, communal games and how their level of entertainment, sociability, challenge, control, and interactivity impacts their loyalty to the game. The authors expressed the need to introduce humanistic needs, e.g. self-esteem, into the brand loyalty topic applied to the gaming industry. The proposed research addresses their suggested research gap by applying self-congruity theory, which is directly related to a person's self of self, and observing its influence on loyalty. The application of self-congruity to gaming brands is addressed in two ways:

a. How self-congruity theory applies to a player's sense of self and its relationship to the gaming brand.
b. The role of a player's character/avatar and its impact on the relationship.

Special attention is paid to how all elements interact and influence each other; for example, does self-congruity apply to the game brand itself, the character/avatar within the game, or other related factors?

Research Contribution

An opportunity exists to expand the self-congruity research into the gaming industry. This research employed an inductive research approach to allow new findings to emerge through the research. While Gabisch (2011) presents a new application of self-congruity theory, the gaming and fantasy context provides another application for the research community. This research focuses on identifying elements of previous theory but also analyzing potential extensions or applications in this new context. For example, do people create gaming characters based on their own self-image, ideal self-image, or other frameworks? Is there another category that has yet to be discovered? How does the existence of these theories impact brand loyalty for gaming brands? The answers to these questions not only contribute to the academic body of knowledge but they also guide marketing recommendations for product development and future acquisition and retention programs. New discoveries in this area allow marketers to understand gaming customers more deeply, allowing them to craft more relevant communications, define

tighter user groups, and provide retention methods that are more relevant to their (and potentially their character or avatar's) psychological needs.

CHAPTER 4. DATA COLLECTION METHODOLOGY

This study employed the application of grounded theory (Strauss & Corbin, 1990). Grounded theory provides a methodology that "allows the researcher to develop a theoretical account of the general features of a topic while simultaneously grounding the account in empirical observations or data" (Martin, 1986). First, grounded theory enables the research to penetrate the intricacies of consumer behavior and psychology. Secondly, grounded theory supports the study of a phenomenon at a detailed level, using inductive methods that help the scholar gain insights that may not have been uncovered before. This is particularly useful in subject areas where new "ground" is being addressed. Thirdly, grounded theory methods help to generate theory or extend an existing theory, a goal that this study seeks to achieve. Finally, conducting a grounded theory process can aid further study utilizing other methods. Grounded theory helps to refine unclear topic areas and guide new direction to triangulate the findings with other types of analysis that can contribute to substantiate and clarify the initial results (Strauss & Corbin, 1990).

Data Collection

In-depth, semi-structured interviews were selected as the primary data collection methods for the first phase of this study. Data collection was conducted until no new information was gained. Data collection and analysis were conducted through theoretical sampling to allow the research to become more focused as new theories begin to develop (Myers, 2013).

The data collection process included three phases: 1. Pre-Interview Screener Survey, 2. Personality Assessment, and 3. Interview. Potential participants were presented with a Survey Monkey questionnaire via online link that included such questions as frequency of play with various game types as adapted from Harland's earlier industry research (2014), amount of time spent on each type of game, method of play (offline, desktop computer, etc.), creation of a character/avatar, and level of passion for gaming. Creation of a character/avatar within the past year (currently playing a character/avatar was preferred) was required for interviewee selection. Demographic questions (gender, employment status, level of education, geography, etc.) were also included for sample analysis. See the Appendix for the Interview Screener survey.

Participants were solicited through gaming community referrals and online community spaces, more specifically Facebook gaming group pages. Due to the source of the participants, a higher level of passion was expected to facilitate discussions surrounding the gaming loyalty topic. The response rate is indeterminant as solicitation was performance via social channels, which do not have a set target count. Recruitment efforts yielded 200 responses with the following breakdown: 2 respondents removed due to age (under 18), 49 respondents removed due to an invalid E-mail address or no E-mail provided, and 33 respondents removed due to screener qualifications (never created a character/avatar or have so more than 5 years ago). From the sample, 8 additional participants were removed as they were known respondents. The removal of close friends or family was applied as this research topic is personal in nature, and the responses may have been compromised based on the

pre-existing relationship. The final potential interviewee target list was narrowed to 108 participants.

Upon selection based on the Pre-Interview Screener Survey, participants were invited via E-mail to continue to the interview phase by returning a scanned copy of the required consent form (on file). Interviewees were then provided a link to the personality assessment, which was also a link to a Survey Monkey questionnaire. The personality assessment was administered prior to the interview to obtain a profile of the participant's actual self (see Table 1 below for personality dimensions). The personality assessment was adapted from the Kressmann, et al. (2006) scale for evaluating self-concept, which has been previously tested and validated. This scale is also intended for future use in relation to product personality measurement. Each of the 42 personality factors are measured on a 7-point scale from strongly disagree to strongly agree. All factors are organized under 5 key categories: sincerity, excitement, competence, sophistication, and ruggedness (Kressmann, et al., 2006). Of the 108 potential participants, 34 people returned a signed and scanned consent form. Interviews were completed for 31 of those participants.

Table 1. Pre-Interview Personality Assessment with Categories
(Adapted from Kressmann, et al. (2006))

Sincerity	Excitement	Competence	Sophistication	Ruggedness
1. Down to Earth 2. Family-Oriented 3. Small-Town 4. Honest 5. Sincere 6. Real 7. Wholesome 8. Original 9. Cheerful 10. Sentimental 11. Friendly	12. Daring 13. Trendy 14. Exciting 15. Spirited 16. Cool 17. Young 18. Imaginative 19. Unique 20. Up to Date 21. Independent 22. Contemporary	23. Reliable 24. Hard Working 25. Secure 26. Intelligent 27. Technical 28. Corporate 29. Successful 30. Leader 31. Confident	32. Upper Class 33. Glamorous 34. Good Looking 35. Charming 36. Feminine 37. Smooth	38. Outdoorsy 39. Masculine 40. Western 41. Tough 42. Rugged

Upon completion of the personality assessment, the participants were scheduled for the interview and provided a WebEx link for the date and time. Once the interview was completed, each interviewee was provided a $75 Amazon gift code via E-mail. All recordings were submitted to Rev.com for transcription and imported to Microsoft Word and NVivo for analysis.

Interviews were semi-structured and conducted in an open-ended fashion. Topics within the interview guide included: 1.) engagement with gaming brands (current and past), 2.) in-depth discussion on any fantasy or virtual personas (characters/avatars), 3.) monetary expenditure for gaming activities, 4.) future intentions for each brand, and 5.) reflections on their loyalty to each brand. Questions were reiterated throughout the discussion to triangulate responses. The interview

guide evolved slightly as additional information emerged from the research (Strauss & Corbin, 1990). For example, participants indicated that character development may differ when playing a short-term game versus a long-term game. An additional question was added to the interview guide to expand the formal approach to the discussions. See the Appendix for the final interview guide.

CHAPTER 5. DATA ANALYSIS

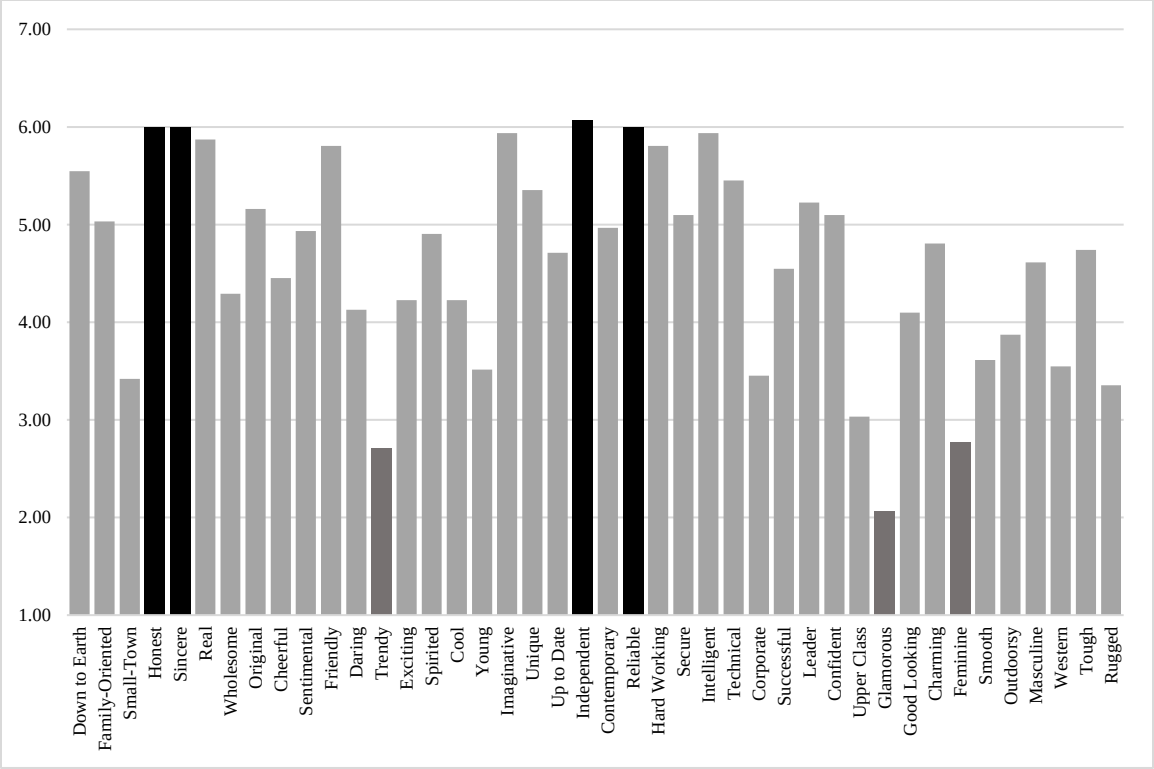
The data analysis procedure was a multiple-step process that involved constant comparison and evaluation as the data were analyzed. The data collection included both survey and interview data, resulting in a blend of analyses. Summary reports of usage, demographic and personality profile survey data was compiled and reported through Microsoft Excel. The fundamental qualitative data analysis procedure deployed a technique called "data coding." This process as described by Glaser & Strauss (1967, 2006) involved both substantive and theoretical coding. Substantive coding is a method that derives categories that can describe the phenomenon being studied. Theoretical codes are more abstract and emerge as the substantive codes are developed. Researchers build categories that can help develop a hypothesis (Glaser & Strauss, 1967, 2006). The steps included: data coding, categorization, sorting, theoretical memo-ing, and theoretical coding (Gandomani & Nafchi, 2015). The coding process was facilitated by the NVivo Pro qualitative software package by QSR International.

Summary Personality Assessment Results

As detailed earlier in the paper, the personality assessment that was utilized for this study was adapted from Kressmann, et al. (2006). The chart below summarizes the results of this assessment. The survey results demonstrated that the highest mean personality scores (marked in green, values 6.00 and above) were honest, sincere,

independent, and reliable. The lowest mean personality scores (marked in red, values 3.00 and below) were trendy, glamorous, and feminine.

Figure 1. Interview Participant Mean Personality Scores (n=31)



Personality traits were also combined into five categories as outlined in Kressmann, et al. (2006) – sincerity, excitement, competence, sophistication, and ruggedness. Descriptive statistics were calculated for all categories, demonstrating that the sincerity and competence categories were highest in mean and median scores, yet the competence category was more volatile with a higher standard deviation. The ruggedness category resulted in the highest range and standard deviation, showing a high variance of responses. These results are summarized in Figures 2 and 3.

Figure 2. Personality Trait Category Descriptive Statistics (n=31)

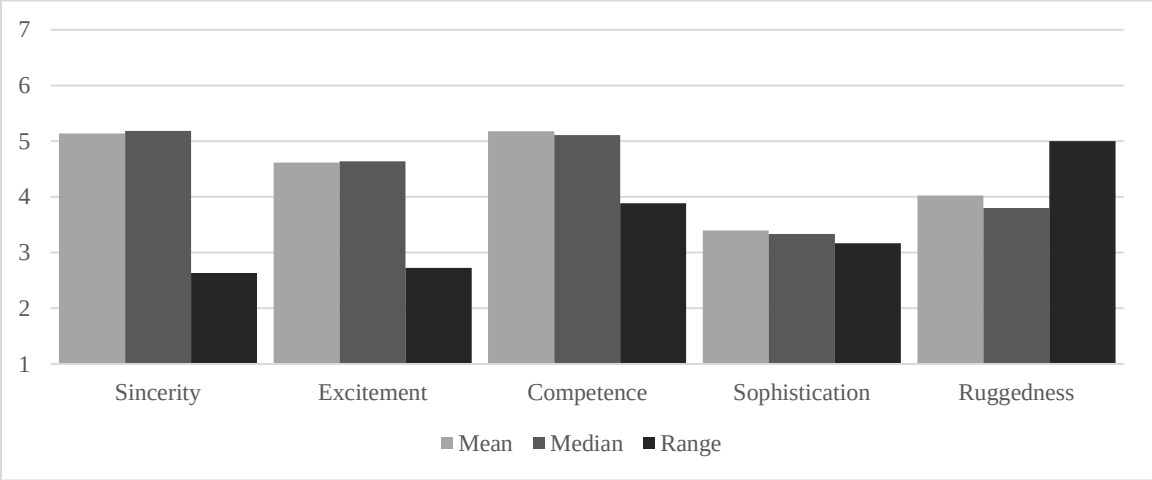
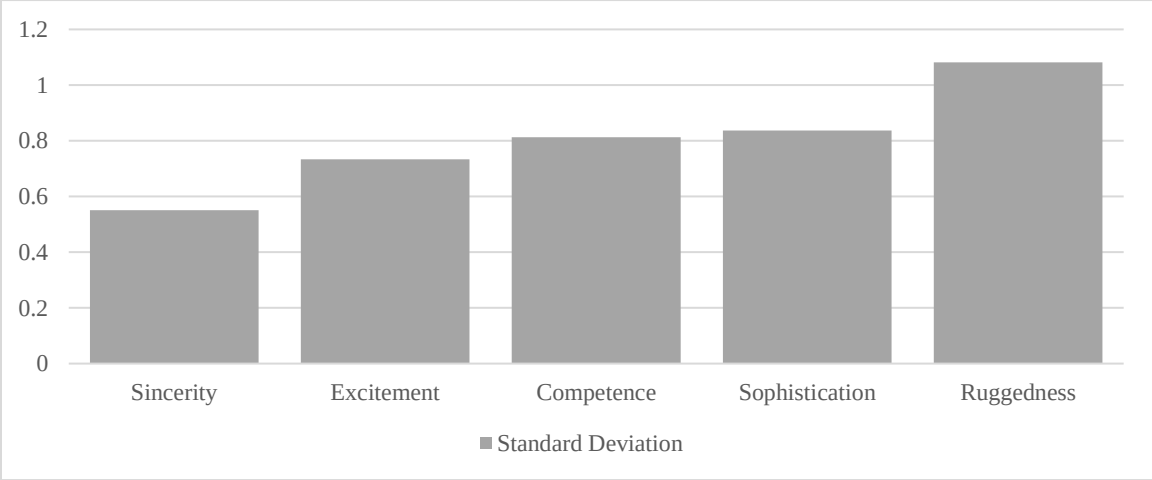


Figure 3. Personality Trait Category Standard Deviation (n=31)



Qualitative Data Analysis

All interview transcriptions were imported into nVivo for the multi-step coding process. The initial stage of coding included categorization of the most granular themes and substantive codes, such as escape, ease of use, system requirements, etc. A full list and counts of sources and references are listed in Table 2. After the initial stage of substantive coding, all nodes were then categorized into five overarching

themes: entertainment, investment, loyalty, social, and gameplay. The entertainment theme included comments about general fun and interest as well as creativity and escapism. Investment topics included statements concerning cost and time commitments as well as personal investment with the game (often related to time as well). Participant indications of loyalty were flagged upon statements of game continuation, nostalgia, and emotion. Social themes emerged through discussion of gameplay with friends (both online and offline) and family as well as general discussion of other players within the game that may enhance or hurt the gaming experience. Gameplay comments, the largest contribution to the interview discussions, included a range of topics from the game narrative and design to game challenge and replay-ability. Discussion of the participants' gaming characters were also categorized within the gameplay category. See Table 3 for the full list of categories and sample supporting commentary.

Table 2. Substantive Coding Counts

Category/Code	Source Count	Reference Count
Entertainment	25	88
Creativity	8	16
Escape	18	34
Investment	31	202
Financial Cost	13	25
Time	21	62
Loyalty	27	67
Emotion	5	11
Nostalgia	4	6
Social	31	240
Gameplay	31	726
Achievement	16	24
Balance	9	15
Challenge	20	46
Character	31	317
Community/Feedback	5	10
Competition	9	21
Content/Narrative	29	105
Design/Aesthetics	18	24
Fatigue	9	16
Replay	18	34
Technical (speed, updates)	12	25

Table 3. Supporting Commentary for Substantive Coding

Category/Code	Supporting Commentary
Entertainment	
General Entertainment	• "They're just fun to play, so I play them a lot." (Participant 609637707) • "I think it's just the entertainment of it." (Participant 6096518409)
Creativity	• "I just personally enjoy the creativity of it." (Participant 6096424276) • "It's fun, it's creative, it's challenging. It pushes me to my best, and when my creative juices get going, I come up with really cool stuff that I'm proud of, a lot of stuff that I'm proud of, even in a tertiary way." (Participant 6096755013)
Escape	• "The online games, I guess I play them more, just as an escape at this point, from everything else. I just don't want to think about anything else. For me, sitting back and gaming a little bit is my way of escaping everything for a little bit. I enjoy that." (Participant 6094736112) • "Primary reasons are mostly relaxation. Way for me to get away from the stressors of work. It's kind of an escape I guess I would say in a lot of ways." (Participant 6127015525)

Table 3, continued

Investment	
Financial Cost	• "Well, games are expensive, and so as I mentioned, I do varying amounts of research before I decide to buy a game." (Participant 6096377007) • "Brand new games I usually wait until they're cheaper." (Participant 6096518409) • "I'll spend anywhere around 0 to 60. I don't usually spend $60 because I try to look for deals or something, but if it's something I really really want at the time, then I'll do it." (Participant 6114865911)
Time	• "It was consuming too much of my time." (Participant 6096552056) • "I've just completed my graduate school and I'm moving on to a hardcore science job hopefully and so that obviously is first priority. My time for gaming is going to go way down because of that and it's something I recognize. It is one of the few things that I think could get me to stop gaming period." (Participant 6102303334) • "Not because of the subscription so much as the time requirements." (Participant 6104555915) • "I have stakes in it right now. I'm like, no, I put a lot of work into this, and building it up, so that's mine." (Participant 6096741304)

Table 3, continued

Loyalty	
General Loyalty	• "Like when Uncharted four was coming out, you know I had my ear to the ground waiting for Uncharted four, any news whatsoever coming out for Uncharted four because I liked the previous games so much." (Participant 6096377007) • "I'm like a homing pigeon when it comes to EverQuest. I'll try different games, but then, you know, I'll go back to EQ. I'll try something else, and then I'll go back to EQ." (Participant 6126592710)
Emotion	• "Ultimately, I can't lie. I have a passion for it. It's the passion." (Participant 6096755031) • "Like Grand Theft Auto, I really love Grand Theft Auto 4 online, love it." (Participant 6096606170)
Nostalgia	• "I'm willing to spend the $300, $350 just to play that game because it's a true nostalgic feel." (Participant 6127249316) • "I wouldn't even call it a brand loyalty, but a familiarity that's been there since our youth. Maybe it's nostalgic reasons we keep playing it." (Participant 6096528351)

Table 3, continued

Social	
General Social	• "I think really the weekly poker game aspect of it. I like the social component of it. I really enjoy having my buddies over and eating pretzels and drinking beer and playing some D&D. It's the social aspect." (Participant 6096463870) • "Socialization a lot of the time. It's something fun where you get to get away from your responsibilities for a few hours." (Participant 6096482439) • "Another factor in that is also if you have friends that play the game and they stop playing the game. So a lot of my friends had stopped playing the game, I said the subscription fee just wasn't worth it anymore, so I stopped playing the game." (Participant 6096518409) • "I like that one because I can play with real people. Once in a while it's, I don't know, feels like either the computer's cheating or it's letting you win, so it's nice to play with other people, see if you're doing pretty well." (Participant 6096552056)

Table 3, continued

Gameplay	
Achievement	• "You know, there was a trophy in Uncharted that you get when you kill 1,000 guys, and I totally got that trophy." (Participant 6096377007) • I like having tasks to complete, so that you're like, 'Oh, I accomplished this.'" (Participant 6096741304)
Balance	• "The biggest overall thing that would stop me from playing any game going forward in the future would be balance. It just, if it feels as though there's a specific aspect, character, model, unit, whatever, in any of the games that are too powerful that the company doesn't want to fix or for whatever reason or doesn't fix very quickly or they continuously have these major balance flaws that are really glaring, that would stop me from playing the game because it's either play this or don't or lose. That's no fun." (Participant 6094736112) • "Not that the game was really designed to be super fair, but balancing issues can kind of be an issue for me when playing multiplayer games." (Participant 6126925264)
Challenge	• "That balance between challenge and fun, and its ability to keep me interested, keep my brain moving, keep things rolling in the sense that it doesn't stagnate or get dull. Those are the two most important things." (Participant 6126925264) • "World of Warcraft we don't play anymore. It got too easy. It's too fluffy. It's like they used to give you a coloring sheet with crayons, and now they do the coloring for you." (Participant 6127249316)

Table 3, continued

Character	• "I love the role playing of it. I love pretending to be a different character and trying to play as that character." (Participant 6096463870) • "Yes, my favorite part of that is ... I love my character for this game." (Participant 6096482439)
Community/Feedback	• "I think one of the biggest things too is just how the company handles their community." (Participant 6094736112) • "Community involvement is a big one to me. I've found very few gaming developers who really, really get their communities involved and listen to what their players want to see." (Participant 6126925264)
Competition	• "I played World of Warcraft incredibly competitively back when it first came out. My guild was the third guild in the U.S. to kill Ragnaros. We were top ten and top five for a number of other loss kills that were considered prestigious back then." (Participant 6094736112) • "Well, Battlefield in particular, it's gameplay. It's multiplayer-based platform. I really like that it's team versus team competitive environment." (Participant 6126925264)
Content/Narrative	• "I like third-person, I like adventure, I like a great story." (Participant 6096377007) • "Generally, I like a narrative. I like the sort of personal story, as opposed to some big online campaign." (Participant 6098998459)

Table 3, continued

Design/Aesthetics	• "The graphics. The way they made it. They paid tribute so well to Final Fantasy VII." (Participant 6127249316) • "Part of it is also because 14 looks way better than World of Warcraft. That's kind of what starts getting me to. Its like okay, this is a 10 or 15 year old game or something and it still looks like it's sitting in the 90's kind of thing." (Participant 6126738475)
Fatigue	• "Some games are still good games but you just play them so much that you're sick of them and you want to play something else." (Participant 6096528351) • "Either I'm stuck or I've gotten to a spot where I just get fed up with the game and it's like okay or I just get bored with it and I just have to take a break and I never get back around to it." (Participant 6126738475)
Replay	• "All the games, the reason why I keep playing them is just because of entertainment. That's the only reason why I keep going back is just because it never gets boring. It's always entertaining. I don't get tired of it. You just can replay it as much as you want." (Participant 6097972549) • "And as I said, it's like a movie that you love, a song that you love. For me, going back to it doesn't seem repetitive. It seems like I'm just revisiting something that I enjoy." (Participant 6098998459)

Table 3, continued

Technical (speed, updates)	• "I think they're mostly technical reasons. For instance, there are a lot of tabletop roleplaying games that simply aren't made anymore, they're not supported anymore, like the companies have moved on to new games or the companies have made newer versions of games that were less appealing, so I stopped playing them. With computer games it's like, I mean as technology advances sometimes your old games don't work anymore." (Participant 6096518409) • "Obviously, if there's a problem with my hardware, that's always a big one. It's "Ah, my console broke. I guess that game's done," or if the ... Because a couple of them are still newer, sometimes a patch will get added or they'll release a free update that kind of ... Even if it doesn't actually break the game to where it's unplayable, it makes it less fun." (Participant 6096741304)

The next stage of coding provided insight into the theoretical context of this study. Two approaches to the theoretical coding were taken: 1. Creation of overarching memos related to self-congruity theory and its application within the interviews (based on the pure definition of self-congruity; relationship between self-image and the game "personality") and 2. Creation of additional nodes assigned to evidence of self-congruity theory. The self-congruity nodes included four sub-nodes that reflected prior literature: actual self-congruity, ideal self-congruity, social self-congruity, and ideal social self-congruity.

The theoretical coding phase produced little evidence of self-congruity between the players' and game brand personalities. The congruence between the players and the game brand itself caused hesitation, confusion, and vague responses in the participants; therefore, congruence was sought in other areas of the game experience. If congruence does not exist with the game brand itself, with what aspect of the game may the player be congruent? Theoretical coding was pursued in relation to congruence specifically with the players' characters/avatars. Of the 31 interview participants, 30 displayed at least one type of congruence with gaming characters or avatars. Actual self-congruence was most represented with 26 sources and 48 references, followed by ideal self-congruence with 14 sources and 23 references. The social self-congruence theme was much lower with only 5 sources and 8 references, and ideal social self-congruence was not represented at all.

Table 4. Self-Congruity Theoretical Coding

Self-Congruence Code	Sources	References
Actual	26	49
Ideal	14	24
Social	5	8
Ideal Social	0	0
Overall	30	81

Table 5. Supporting Commentary for Theoretical Coding

Self-Congruity Code	Supporting Commentary
Actual	• "The sort of wanting to go everywhere, explore everything, learn knowledge, and dig into the past and learn new abilities, that's me. I like to learn. I like going to different places and learning new languages and learning new skills." (Participant 6094736112) • "I just match myself in games like this. That I guess it's because that's what I mostly know. How I behave and how I look and stuff." (Participant 6099084132) • "I like the characters to be an extension of myself, so I can insert myself into this world. So the hair design is similar, hair color usually similar." (Participant 6115104383) • "Well, they're probably similar in the way that I'm running them personally, because they are sort of kind of like me. I don't think I've done anybody who's really out there, really that different from the way I am. I mean, if you ran all my character, you'd pretty much get an idea of what I was like." (Participant 6126592710)

Table 5, continued

Ideal	• "Some players will play characters of they're sort of, they're fantasy of how they want to be, of how they wish they could be. I think there's a little bit of that in the way that I approach my characters too." (Participant 6096518409) • "Yeah, I would say I somewhat model my characters after myself but maybe in a little better shape." (Participant 6096606170) • "I like to think that he's my better self, certainly. He doesn't have my weaknesses." (Participant 6096755031) • "The Fallout 4 character, that one I tried to mirror what my ideal self would be in that post-apocalyptic scenario. That character was a very rugged, very rough kind of character, who in particular followed a moral compass but took advantage of as much self-improving situations as possible. That one, that character I could go on for a very long time about what I designed there, but I was very invested in that one." (Participant 6126925264)

Table 5, continued

Social	• "For the most part, I've usually chosen the nice guy route, although it's sometimes fun to be a jerk, but I think I just care too much about the outcome to be too much of a jerk, because I want everyone to like me." (Participant 6096377007) • "A lot of it depends on what kind of group I'm playing with. A lot of times it doesn't benefit for the group to have all the same kind of players, so I normally have two or three different roles that I fall into." (Participant 6096424276) • "One thing that I have noticed is that when you play with the same group of people for a while it becomes easier to predict what kind of characters the players will make. Different players will … They have sort of patterns that they fall into." (Participant 6096518409) • "In fact, some of my friends online on Facebook refer to me as Great because that's how we met in game." (Participant 6127372005)
Ideal Social	• None available

CHAPTER 6. DISCUSSION OF RESULTS

Self-congruity with Game Brand

During the interviews, participants were asked their perceptions of the game brand. Most respondents struggled with the question, and many needed time to consider their response. Samples responses included, “Oh, wow. Gosh. That's an interesting question. I have never thought about that like that,” “Ha! That's a question only an academic would ask. Let me think about that for a second. I honestly don't know if I can answer that question,” “Ooh. That's such a terrible question, oh my goodness,” and “Personality? That's a tricky one.” Difficulty with the response to this particular inquiry may indicate that self-congruity theory may not be supported in this consumer experience based on its truest definition. While congruity did not appear to exist with game brands, participants were probed on their relationship with their character(s) and/or avatar(s) to identify any congruence that may have emerged.

Self-congruity with Game Characters

Participant reports on the difference or similarity of self to their character varied, but many report that at least a part of their selves can be found in each character. Sample responses included, “Well, when you have a character you create, I mean I think that it's, I feel I have a certain sense of responsibility towards that character, because I tend to make characters like me,” “Oh, I don't know. I like to think that he's my better self, certainly. He doesn't have my weaknesses,” “I would say I tend to steer towards myself rather than being different from myself,” and “The dwarf monk, the monk part

of me is the part that I've always been very interested and influenced by the meditation in the monks from China. That's always been something I found fascinating and also very peaceful and relaxing. His silly wild side would be the side of me that I always basically keep in check, but I want to go out and have fun." During discussions of character experience, many participants demonstrated evidence of either actual or ideal congruity with the characters. While most sources and comments reference actual congruity, half of the coded respondents displayed ideal congruity. These comments indicate that when given the appropriate tools and opportunity, characters or avatars may provide players the ability to create an entity in their likeness or how they wish they could be. Through that character, players may experience worlds or narratives that are not accessible in the "real world," allowing them to extent their existence for short periods of time. Many participants also discussed the concept of escapism and how games provided a reprieve from the day-to-day. Exploration of new worlds and experiences through self-created characters may enhance the level of escapism achieved through a game.

Connection to Game Characters

Interview participants displayed varying levels of connection to their characters, although many players demonstrated deeper, personal connections. Descriptions of characters were often highly detailed and personal, using pronouns such as "he" or "she." A few players referred to the characters by name. Many participants reported long lengths of time working on character creation, such as hours or even days.

Sample responses included, “It's a character you're playing and you're being put through these scenarios by the dungeon master or the game master. As time goes on my imprint of myself gets more put on the character. Because I'm making decisions based on what's happening so probably he's evolved more towards my way of thinking,” “He is a mask that I wear. I, in real life, I'm not lawful good. I'm not a lawful good person. I don't think in those terms, but if I were to be a lawful good person, I would be Janos,” “I can spend hours playing with the little individualization, you know picking just the right hair color, just the right outfit and what not. I've spent hours doing that,” and “Oh days. Days. It was one of the first characters I created, and I tried to be so precise with everything I was doing. I crafted this initial back story and then I had to match it.” Throughout the character development process, participants appear to associate with their creations either through a relationship or a reflection of self (whether actual or ideal). Similar to the discussion of how the character is developed, players’ experiences may be enhanced by this connection to their characters or avatars, and the development of the character may be an integral part of the player-character bonding process.

The Collective Narrative

Throughout the interviews, several participants discuss themes of the “collective narrative” and how their decisions appear to have an impact on the story. Sample responses included, “I mean the interaction, the immersion, being part of the story. I think that's another part is being part of a story, having a role in a story to play, even

with the computer game it's pre-scripted so I mean you easily see either where or kinda feel like your choices aren't making that much of an impact but there are games do that better," "Especially a GM who knows what they're doing can write a very immersive, because the other thing is. It's a collective storytelling experience," "And I really enjoy the interactivity, like the fact that you're put into that story, as well," and "It's the same reasons I like any other type of RPG. I just, I like building the character and I like creating the story." Almost all interview participants (29/31) referred to the narrative or content of the game as part of their experience. For many players, this aspect of the game can be the determining factor of their game continuation. If the story is not compelling, the game is likely to be abandoned. While the discussion of the story may be important to the gaming experience, the most interesting concept within these comments is influence. Games that offer a level of control (even limited) or influence on the storyline based on player decisions appear to be more compelling and interesting to play. Games that offer a single-track, storyline mode received mixed reviews – some participants continuing to enjoy based on the storyline and some participants experiencing frustration with the lack of options. Many participants also connected the discussion of the story with their character, possibly indicating that the connection with one's character may play an important role in that shared narrative experience.

Loyalty to Games

Loyalty to the game was discussed in a variety of ways, such as continuation of play, purchasing additional titles from the same company, playing a title more than one, etc. Due to the selection criteria, participants were expected to exhibit higher levels of passion for games. Of the 31 interviews, loyalty topics emerged with 27 of participants with 67 mentions. Many interviewees admitted to following gaming companies so that they would be aware when new games were planned for release. Two additional sub-categories emerged: emotion and nostalgia. Loyalty is often expressed with emotional terms, such as passion and love. Other participants discussed loyalty due to nostalgic reasons, having known or played the game since childhood or related sentiments. Overall, most participants expressed at least one form of brand loyalty during this initial study.

CHAPTER 7. CONCLUSION

Brand loyalty is studied as a critical function of marketing, providing several benefits to the firm. The study of the consumer's sense of self and its relationship to a brand has shown a positive impact on loyalty through the self-congruity theory. The application of the self-congruity theory to gaming brands and game players provides a significant contribution to both academic and professional audiences in three important ways:

1. Extends the self-congruity theory research.
2. Provides guidance on improving brand loyalty to managers of gaming brands.
3. Provides insight to managers on game improvements to extend gamer loyalty.

This research supports a deeper comprehension of players and their experience with games. This information proves valuable to marketers and product developers to aid game improvements, new game development, and marketing initiatives.

Throughout the initial research, self-congruity theory in its purest form does not appear to be supported. Player images of the brand hinge upon their experience through various gameplay, social, and other factors rather than the true brand itself. Most participants in this research struggled to identify a true brand personality of the game, and most descriptions tended to be vague. However, discussions of the character and involvement with the game narrative were fruitful and robust. Players reported the presence of themselves with the gaming characters, contributing to a deeper connection with those characters and in-turn the overall storyline. The majority of participants (30 of 31) reported at least one type of congruity during

interview discussions with actual congruity being most present (26 participants) and ideal congruity being second-most present (14 participants). Additionally, loyalty was a strong theme throughout the interviews with 27 participants discussing at least one form of game loyalty. The interview insights point to additional opportunity for inquiry:

- Participants discussed being part of the narrative and feeling immersed within the game. If that sense of immersion increases, will that feeling have an impact on a player's desire to continue the game or display other types of gamer loyalty? Do factors exist that improve the feeling of immersion?
- Participants recognized portions of self within their character development. Does actual self-congruity exist between players and gaming characters? Do ideal, social, and/or ideal social self-congruity also play a part in the relationship between a player and the game? How does the congruence influence a player's sense of immersion within the game?
- Participants also described their characters in highly personal ways, often referring to their characters by name or by he/she pronouns. How strong is the relationship between the player and character? Does the connection between player and character improve the feeling of immersion within the game?

While this research provides an in-depth, qualitative perspective on the self-congruity theory within the gaming world and how consumers portray themselves in virtual or fantasy environments, additional research is required to deepen the understanding of this phenomenon. Many opportunities exist to continue this research

stream, including executing an additional study to quantify the results from this initial study, extending this research to include other potential theories that strengthen the understanding of game continuation, and exploring a causational relationship between character development, game narrative, and game continuation.

The initial study presented three key concepts that informed our second study. First, players' reporting a high level of connection to the game narrative and the immersion that they experienced during game play. Second, players' descriptions of the characters were highly personalized and details. Third, participants reported including at least a portion of their actual selves in their character development. The combination of these three findings led to the examination of flow theory, player-character identification, and their impact on loyalty, which is discussed in the second study.

PART II. FLOW THEORY AND GAMING LOYALTY

CHAPTER 8. SELF-CONGRUITY AND FLOW THEORIES: INTEGRATED MODEL OF LOYALTY

Theory of Flow

Flow theory has become increasing popular with the growth of computer-mediated and online forms of communication though its origin dates to the 1970s in the work of Mihaly Csikszentmihalyi (Csikszentmihalyi, 1975). Flow, a feeling of immersion within an experience, has been studied by numerous authors over the years (Novak, Hoffman, & Yung, 2000; Hsu & Lu, 2003; Sherry, 2004; Novak, Hoffman, & Duhacheck, 2003; Chen, 2007; Hoffman & Novak, 2009; Wang & Hsiao, 2012; Moon, Hossain, Sanders, Garrity, & Jo, 2013; Bian, Yang, Gao, Li, Zhou, Li, Sun, & Meng, 2016; Merhi, 2016; Soutter & Hitchens, 2016; Huang, Huang, Chou, & Teng, 2017; Liu, 2017). Numerous antecedents and consequences of flow have been supported throughout the literature; many of which will be discussed in this paper. Player-character similarity and identification is believed to act as antecedents to flow (Soutter & Hitchens, 2016), and brand loyalty is a consequence (Liu, 2017).

Flow theory is a fruitful and impactful area of study. Its psychological nature creates a complex environment within which to conduct analyses. Despite numerous studies over the years, much opportunity exists to deepen and expand flow theory (Hoffman & Novak, 2009). As technology grows and changes, new contexts and influences will emerge that will impact one's flow state. Therefore, researchers must continue to scrutinize all flow theory models and their elements.

Research Focus

A clear opportunity exists to expand both self-congruity and flow theories by creating and testing an integrated model. Research by Soutter and Hitchens in 2016 identified player-character similarity and identification as sequential antecedents to flow state, congruent with the theory of actual self-congruity. Liu (2017) presents supporting data that indicates flow positively impacts replay intention of online games. These elements, together with the comprehensive self-congruity model, including actual, ideal, social, and ideal social self-congruity, is be the focus of this study. The fusion of self-congruity and flow theories not only provides a novel contribution to the academic community, but the findings also have tangible implications for game design and marketing disciplines.

CHAPTER 9. LITERATURE REVIEW

Flow Theory

Flow theory was first coined by Mihaly Csikszentmihalyi as a state of "holistic sensation that people feel when they act with total involvement" (Csikszentmihalyi, 1975). Other operational definitions have emerged over the years, including Liu's (2017) recent description in relation to gaming: "a cognitive state experienced during gameplay…" "determined by high skill levels, high challenge levels, focused attention, and telepresence." Novak, Hoffman, and Yung (2000) also spent much time defining the flow state: "a cognitive state experienced during navigation that is determined by (1) high levels of skill and control; (2) high levels of challenge and arousal; and (3) focused attention; and (4) is enhanced by interactivity and telepresence, which is defined as "the perception that the virtual environment within which a person interacts is more real or dominant than the actual physical environment" (Novak, Hoffman, & Yung, 2000; Liu, 2017). The research continued to describe a person's flow experience as "so acutely involved in the act of online navigation that thoughts and perceptions not relevant to navigation are screened out, and the consumer focuses entirely on the interaction" (Novak, Hoffman, and Yung, 2000). The balance between challenge and skill is a critical element of the flow research, as Csikszentmihalyi discusses that flow is achieved "when your challenges are higher than average and skills are higher than average" (2004). However, an equilibrium must be obtained to reach the true flow state – a congruence between skill and challenge (Csikzentmihalyi 1977).

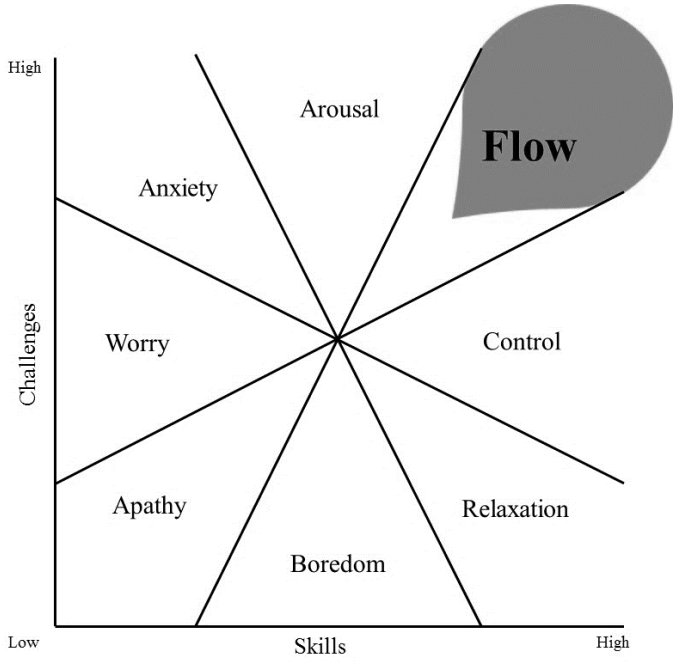
"During the Flow experience, we lose track of time and worries" (Chen, 2007). "Flow is also called the optimal experience, or being 'in the Zone'" (Chen, 2007). In fact, a person's concentration is so high, existence is "temporarily suspended" to the point of even forgetting the physical body (Csikszentmihalyi, 2004). Research has even been conducted to understand the physiological indicators of flow through virtual reality, measuring elements such as heart rate, respiratory rate, etc. Such variables pointed to a person's experience of flow (Bian, Yang, Gao, Li, Zhou, Li, Sun, & Meng, 2016). Csikszentmihalyi (2004) also outlines several impact factors of the flow state experience:

1. Completely involved in what we are doing – focused, concentrated.
2. A sense of ecstasy – of being outside of everyday reality.
3. Greater inner clarity – knowing what needs to be done, and how well we are doing.
4. Knowing that the activity is doable – that our skills are adequate to the task.
5. A sense of serenity – no worries about oneself, and a feeling of growing beyond the boundaries of the ego.
6. Timelessness – thoroughly focused on the present, hours seem to pass by in minutes.
7. Intrinsic motivation – whatever produces flow becomes its own reward.

Csikszentmihalyi (2004) details the achievement of flow state in more detail, as outlined in Figure 4. As previously mentioned, when both challenges and skills are

high and at an equilibrium flow state can be reached. Additional states may be reached based on the combination of challenges and skills:

Figure 4. Achievement of Flow State (adapted from Csikszentmihalyi 2004)



- Equilibrium of low challenges and low skills results in apathy
- Low challenges with moderate skills result in boredom
- Low challenges with high skills result in relaxation
- Moderate challenges with low skills result in worry
- Moderate challenges with high skills result in control
- High challenges with low skills result in anxiety
- High challenges with moderate skills result in arousal; arousal state presents an opportunity to improve skills to reach a flow state (Csikszentmihalyi, 2004)

Chen (2007) adapted the flow state illustration for gaming experiences in Figures 5 and 6. Figure 5 provides a simplified perspective on the original flow state model, but Figure 6 describes how a game may be designed to reach the flow state by alternating the experience based on players' abilities and choices.

Figure 5. Flow Zone Factors (Chen, 2007)

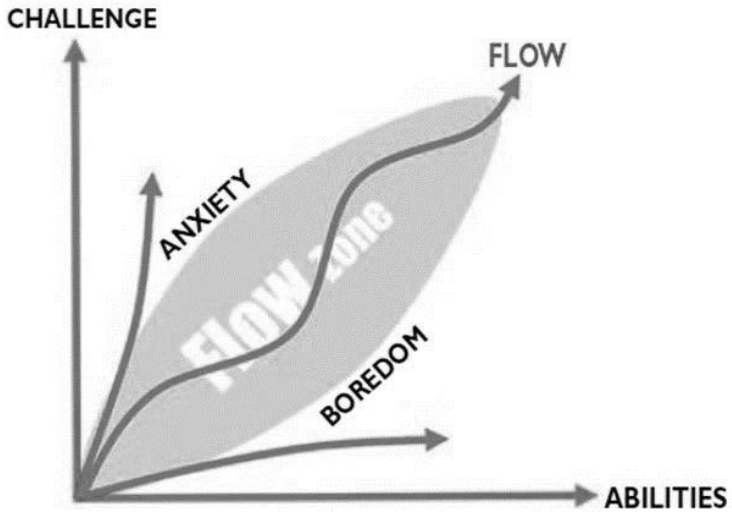
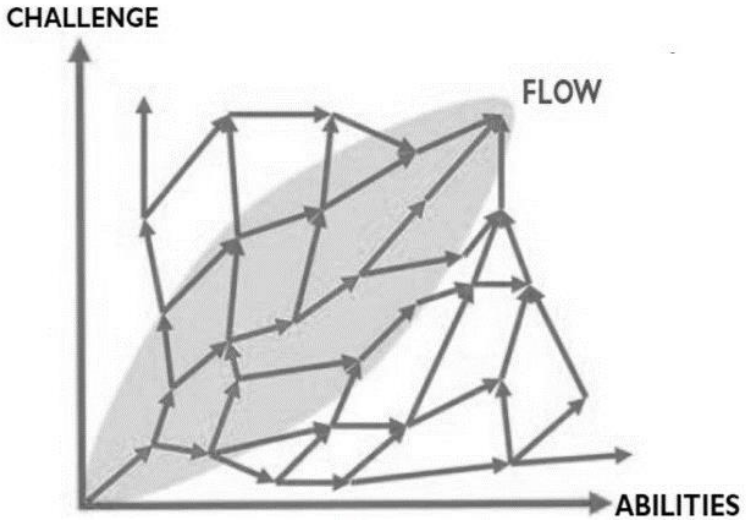


Figure 6. Game experience can be flexible to player abilities and choices (Chen, 2007)



Antecedents of Flow State

While originally defined by Csikszentmihalyi, challenges and skills have been reaffirmed as antecedents over the years (Novak, Hoffman, and Yung, 2000; Huang, Huang, Chou, & Teng, 2017; Liu, 2017). Unique antecedents have emerged in the context of gaming, such as telepresence, character influences, player identification, perceived control, perceived ease of use, etc. The following antecedents were identified as relevant elements of flow in relation to gaming experiences:

- Telepresence has been supported as a positive influence on the achievement of a flow state (Novak, Hoffman, & Yung, 2000; Huang, Huang, Chou, & Teng, 2017; Liu, 2017). Telepresence can be defined as "the perception that the virtual environment within which a person interacts is more real or dominant than the actual physical environment" (Novak, Hoffman, & Yung, 2000; Liu, 2017).
- Focused Attention refers to the level of cognitive focus that leads to a flow state (Novak, Hoffman, & Yung, 2000; Liu, 2017). Liu (2017) established a correlation between a number of antecedents to focused attention as well, including perceived attractiveness of a game, level of personal involvement, human-to-human interaction, and human-to-machine interactivity.
- Player-Character Identification was studied by Soutter and Hitchens in 2016 and shown to be positively correlated with flow state. The research also included player-character similarity's impact on player-character identification. "The more similar a video game character is to the player will be related to player's reporting they identify with their video game character more" (Soutter & Hitchens, 2016).
- Enjoyment has also been shown to contribute to achieving a flow state (Merhi, 2016). Merhi (2016) studied enjoyment in conjunction with visual appeal and escapism variables, supporting both as antecedents to enjoyment which leads to flow.
- Hsu and Lu (2003) applied the technology acceptance model (TAM) in relation to flow theory, demonstrating that perceived ease of use of the

gaming system and navigation positively correlates with the flow state experience.

- Novak, Hoffman, and Duhacheck (2003) studied the impact of task type on flow state: whether users achieve flow more so with experiential activities versus task-oriented activities. Despite expectations, evidence existed that flow may exist across both types of activities.

Additional studies present interesting contributions to the literature on players and characters, including Huang, Huang, Chou, and Teng's (2017) discussion of temperament and character influences on flow and loyalty. The authors' research included persistence, novelty seeking. and reward dependence, all of which were found to be positively related to skills, challenges, and telepresence that lead to flow and loyalty. Moon, Hossain, Sanders, Garrity, & Jo (2013) also studied perceived control over characters and its positive impact on a player's psychological ownership of that character. While flow was not a variable in their study, the dynamic between player and character ownership was positively correlated to loyalty to massively multiplayer online role-playing games (MMORPG) (Moon, Hossain, Sanders, Garrity, & Jo, 2013).

Brand Loyalty, Consequence of Flow

Brand loyalty has been identified as a consequence of a player flow state. Sherry (2004) discovered that "games that facilitate flow are likely to be adopted whereas games that don't create flow are likely to be discarded." Chen (2007) contributes to

this concept by positing that players value online games on the basis of whether they provide a flow experience. Wang and Hsiao (2012) also found that achieving a flow state creates more favorable attitudes and a higher re-patronage intention. While Merhi's study of online game adoption (2016) did not find significant correlation between flow and loyalty, Huang, Huang, Chou, and Teng bolstered the loyalty variable by supporting flow's positive impact on choice, continuation, positive word of mouth, recommendation and encouragement of friends and relatives.

CHAPTER 10. RESEARCH CONTRIBUTION

Research Gaps

While flow theory has been the subject of numerous research studies, opportunity still exists to expand and enhance the understanding of this phenomenon:

1. Investigation to discover new methods or contexts in which to increase flow. Achieving a flow state has primarily shown to have a positive impact on replay intention (Sherry, 2004; Liu, 2017). Understanding how to initiate or maintain player flow state would provide a valuable contribution to both academic and professional communities and would be an important discovery for game developers and marketers.
2. Soutter and Hitchens (2016) remark on the opportunity to expand flow research through the examination of additional variables. As Soutter and Hitchens' research utilized player-character similarity as the primary antecedent to player-character identification, inclusion of the four facets of self-congruity – actual, ideal, social, and ideal social – presents a novel and interesting approach to this area. These additional values differentiate this proposed research from Soutter and Hitchens' prior work in two ways:
    a. Soutter and Hitchens focused on player-character similarity and identification, which may correspond to actual self-congruity or how similar a player's self-image is to their character. This research compares the variables of player-character identification and actual self-congruity to understand their relationship and how the measurements may differ within the model.

    b. Soutter and Hitchens limited their research to player-character similarity and identification. This research adds three variables: ideal self-congruity, social self-congruity, and ideal social self-congruity.
3. Soutter and Hitchens also discuss the correlational nature of their findings, which do not indicate causation (2016). Opportunity also exists to expand the research methods to experimentation or other options to improve the deterministic nature of this phenomenon.

Research Contribution

Based on recent research gaps, this research proposal presents an opportunity to contribute the following:

1. An academic contribution by extending both self-congruity and flow theories:
    a. Extending both self-congruity and flow theories to introduce potential new variables
    b. Extending both self-congruity and flow theories to study potential ways to increase both phenomena, thus improving brand loyalty
    c. Extending flow theory through research methodology that focuses on both correlational and causational analyses
2. A managerial contribution by providing additional insights that improve understanding of the relationship between player, game, and character:
    a. Improvement of game design
    b. Marketing insights for customer selection and retention

CHAPTER 11. PROPOSED CONCEPTUAL MODEL

Two recent studies have addressed flow in the gaming context with relevant variables to this proposed research. However, these two studies have limitations:

- Soutter and Hitchens (2016) investigation of player-character similarity correlated to player-character identification, leading to a positive impact on flow. While the authors provided a novel and insightful addition to the literature, their study provides limited view to player-character similarity only. Other types of player-character congruencies are not addressed: ideal, social, and ideal social. The addition of self-congruity explores these additional factors.
- Liu's (2017) investigation of flow focuses on replay intention only, a limited view of brand loyalty in games. This study utilizes questions from Teng, Chen, Chen, and Li's (2012) study that increase the scope of brand loyalty to include choice, replay intention, positive word of mouth, recommendation, and recruitment.

Player-Character Congruity

Soutter and Hitchens' (2016) study presented the variable of player-character similarity. The present research merges self-congruity theory with this variable to create player-character congruity with the same four types: actual, ideal, social, and ideal social. The congruity (actual, ideal, social, ideal social) definitions are utilized based on Sirgy, Grewal, and Mangleburg's (2000) research that was previously

presented (Part I, Chapter 2: Self-Congruity Theory). Player-character congruity is a dependent variable to player-character identification, the degree to which players connect with a particular character. Each type of congruity is determined by comparing responses to a personality profile and the character personality profile.

Player-Character Identification

Player-character identification remains consistent with Soutter and Hitchens (2016) research. This variable is defined as, "the merging of player with the character" and is measured through three groupings of self-reported survey questions: similarity identification, embodied presence, and wishful identification. Similarity identification encompasses variables, such as the character being an extension of self, how like the character is to self, and resemblance of character to player. Embodied presence encompasses if a player feels as if they are the character, becoming one with the character, and being transported into the character. Wishful identification encompasses the desire to become the character and other factors similar to the character being one's ideal self. This variable is calculated from self-reported questions on how the player relates to and feels about the character (Soutter and Hitchens, 2016).

Flow

This study uses Novak, Hoffman, and Yung's (2000) definition of flow: when a player is "so acutely involved in the act of online navigation that thoughts and

perceptions not relevant to navigation are screened out, and the consumer focuses entirely on the interaction." Flow was defined for participants, and then questions were presented for participants to reflect on their flow experience and its frequency.

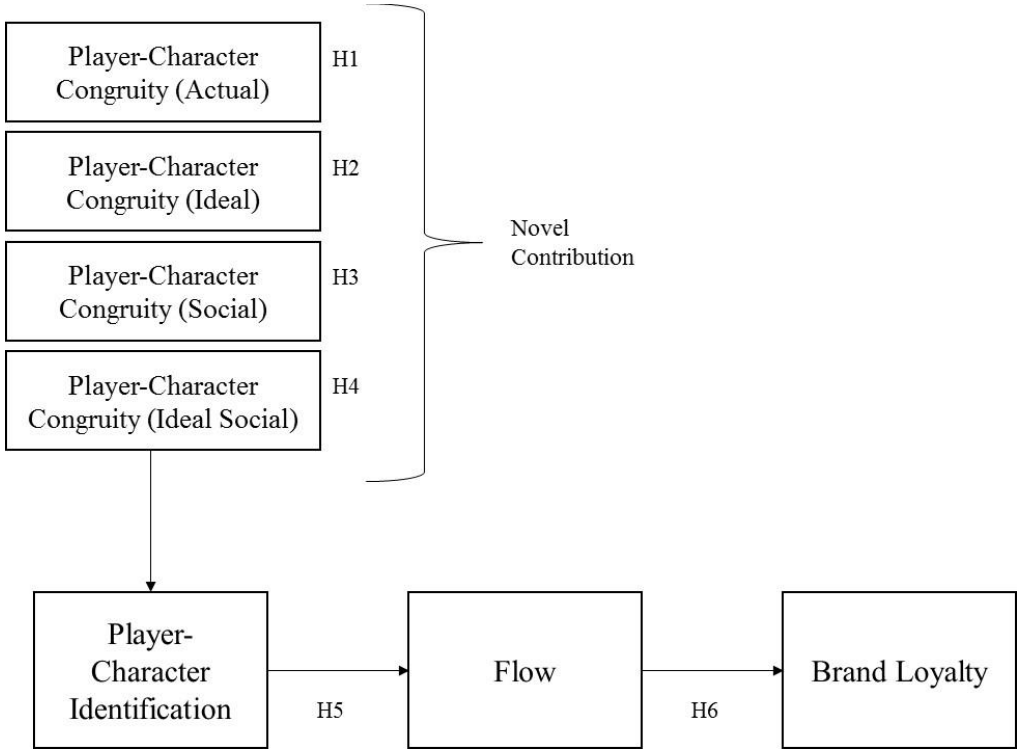
Brand Loyalty

As brand loyalty has been defined in many ways, this study adopted a more inclusive approach to this topic. Questions were included to address: 1. A participant's choice of the game brand; 2. Intention to play the game again in the future; 3. Intention to speak positively about the game; 4. Intention to recommend the game to others; and 5. Intention to recruit other people to play the game as well. These questions have been adapted from Teng, Chen, Chen, and Li (2012) in their research on flow in gaming.

The proposed conceptual model, which can be referenced in Figure 7, combines the insights from the previous research study and limitations as outlined above. Initial findings indicated that congruity exists within the gaming experience, potentially in relation to players and characters. Based on initial data, the four self-congruity types (actual, ideal, social, and ideal social) are included in the model as a novel contribution to the literature. The remaining portion of the model reflects the limited research as discussed above. Player-character identification and flow are included based on prior research from Soutter and Hitchens (2016). Flow and brand loyalty are included based on prior research from Liu (2017) with methodology expanded based on Teng, Chen, Chen, and Li (2012). The combination of these

established studies and the qualitative insights in this proposal create a promising approach for this new investigation.

Figure 7. Proposed Conceptual Model



Based on these variables the following six hypotheses are proposed. Hypotheses one through four include player-character congruity (actual, ideal, social, ideal social) and the impact on player-character identification. As previously discussed, player-character congruity measures the similarity between player and character based on comparisons of personality profiles. Player-character congruence is then analyzed to determine any influence on player-character identification, which measures how strongly a player connects with their character (see Table 8 for breakdown of player-identification measures). Flow and loyalty are included in hypotheses five and six. Loyalty is the final dependent variable, which is the primary goal for this research.

- H1. Actual player-character congruity will positively influence player-character identification. This hypothesis is grounded in Soutter and Hitchens (2016) study of player-character similarity and its impact on player-character identification. Player-character similarity will be adapted to player-character congruence, which is aligned to self-congruity (actual) theory.
- H2. Ideal player-character congruity will positively influence player-character identification. This hypothesis extends Soutter and Hitchens (2016) by adding the ideal perspective to the player-character congruity variable, aligned to self-congruity theory (ideal). Player-character identification is consistent with Soutter and Hitchens' (2016) research.
- H3. Social player-character congruity will positively influence player-character identification. This hypothesis extends Soutter and Hitchens (2016) by adding the social perspective to the player-character congruity variable, aligned to self-congruity theory (social). Player-character identification is consistent with Soutter and Hitchens' (2016) research.
- H4. Ideal social player-character congruity will positively influence player-character identification. This hypothesis extends Soutter and Hitchens (2016) by adding the ideal social perspective to the player-character congruity variable, aligned to self-congruity theory (ideal social). Player-character identification is consistent with Soutter and Hitchens' (2016) research.
- H5. Player-character identification will positively influence the ability for a player to obtain the state of flow. This hypothesis is consistent with Soutter

and Hitchens' (2016) previous study. The variables will be retested through this research.

- H6. A player's state of flow will positively influence brand loyalty. This hypothesis is consistent with Liu's (2017) study of flow state's impact on replay intention with gaming brands. The brand loyalty variable in this study extends previous research by adding multiple layers of brand loyalty measurement (replay intention as well as choice, recommendation, etc.).

Additional model configurations were also tested, including the relationships between congruity variables, player-character identification, flow, and loyalty. Testing for mediating variables were conducted on player-character identification and flow variables. See Figures 8 and 9 for alternative models that illustrate the following hypotheses:

- H7: Player-character identification mediates the relationship between actual player-character congruity and flow.
- H8: Player-character identification mediates the relationship between ideal player-character congruity and flow.
- H9: Player-character identification mediates the relationship between social player-character congruity and flow.
- H10: Player-character identification mediates the relationship between ideal social player-character congruity and flow.
- H11: Flow mediates the relationship between player-character identification and brand loyalty.

Figure 8. Proposed Conceptual Model with Player-Character Identification as Mediating Variable (H7)

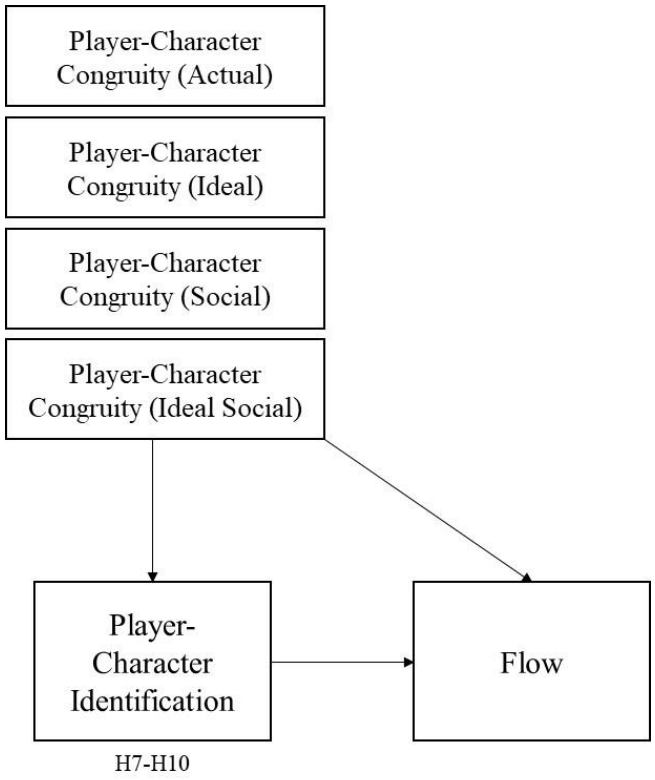
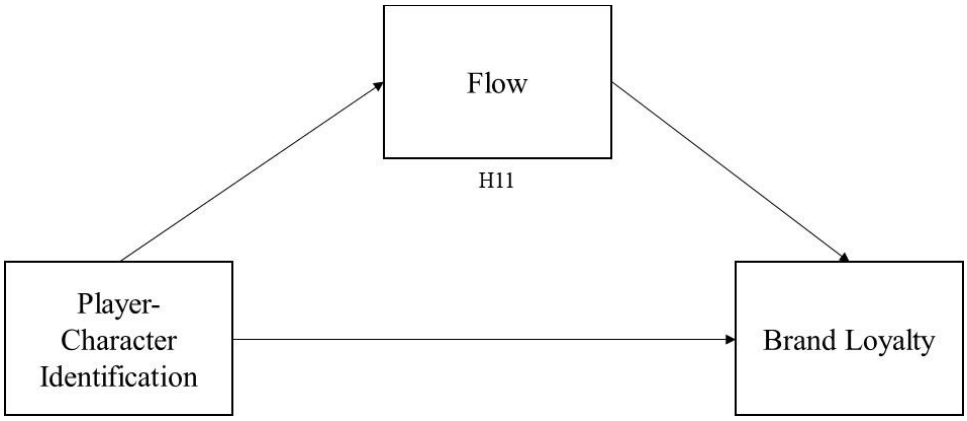


Figure 9. Proposed Conceptual Model with Flow as Mediating Variable (H8)



CHAPTER 12. DATA COLLECTION METHODOLOGY

Data Collection

Data collection was facilitated through two popular online survey platforms: Survey Monkey and Qualtrics. Survey questions, order, and flow were the same across both platforms. Respondents were required to be 18 years or older and to have played a game for which he or she created a character for gameplay. Respondents were required to self-identify a game and character to utilize for the survey. That game and character were used throughout the survey to connect the questions with their gaming experience. Demographic information was also required at the end of the survey; no restrictions or limitations were placed on any demographic category.

Respondents were solicited through three sources: online platforms and referrals, gaming events, and a Qualtrics audience panel. An invitation to the survey was posted on Facebook and shared through online gaming pages, such as Gamer Geeks, Intergalactic Geek Alliance, etc. Online users were able to share the link with other connections through the Facebook platform. Two gaming events were attended to recruit participants: Friday Night Magic in West Chester, PA and Gifts for Gamers in Oaks, PA. Respondents were also recruited through a Qualtrics audience panel, having required participants to be 18 years or older and possess evidence of playing games (video, online, board). The survey launched on November 27, 2017 and closed on January 19, 2018. A $5 Amazon gift code was provided for all completions through the social and event sources; Qualtrics was paid $5 per completed response. Response rates are as follows:

Table 6. Phase 2 Survey Response Rates

Source	Total Responses	Completed Responses	Completion %
Social	296	269	90.9%
Events	49	36	73.5%
Qualtrics Panel	249	210	84.3%
Total	594	515	86.7%

Upon inspection of the Qualtrics panel data, three respondents were eliminated due to a “IDK” or “None” responses to the game name question. The final count for analysis is 512 completed responses. Updated response rates and counts are as follows:

Table 7. Updated Phase 2 Survey Response Rates

Source	Completed Responses	Final Responses	Final % from Completed
Social	269	269	100%
Events	36	36	100%
Qualtrics Panel	210	207	98.6%
Total	515	512	99.4%

A comparison of the sources revealed some differences in demographics. The social source provided a sample that skewed younger (mean 25.8, median 25, variance 10.142, deviation 3.185), male (88.8%), higher education (college or above 75.1%), higher income ($100,000+ 66.5%), single (75.1%), home ownership (81%), and no children (88.1%). The panel source provided a sample that skewed older (mean 35.9, median 34, variance 162.613, deviation 12.725), female (65.7%), lower education (college or above 37.7%), lower income ($100,000+ 11.1%), single (44%), home rental (50.2%), and no children (53.6%). The event source was quite smaller

than the other two sample groups (36 respondents). This sample provided demographics that skewed younger (mean 26.4, median 24, variance 58.997, deviation 7.681), male (91.7%), lower education (college or above 38.9%), lower income (8.3%), single (77.8%), split home rental/do not own or rent (38.9%, 38.9%), and no children (88.9%). Due to the differences in the sample groups, the model was analyzed by sample group to denote any variances in results.

Model Survey Questions

The following questions have been adapted from previous studies and validated scales, organized by model variable category:

Table 8. Model Variables and Survey Questions

Model Variable	Questions
Player-Character Congruity (adapted from Gosling, Rentfrow, & Swann, 2003)	Self-Congruity Type: • Actual: I see myself as… • Ideal: I wish I could be… • Social: I believe that others see me as… • Ideal Social: I wish others would see me as… • Character Profile: I see my character as… Personality Traits (abbreviated Big-5): • Extraverted, enthusiastic. • Critical, quarrelsome. • Dependable, self-disciplined. • Anxious, easily upset. • Open to new experiences, complex. • Reserved, quiet. • Sympathetic, warm. • Disorganized, careless. • Calm, emotionally stable. • Conventional, uncreative.

Table 8, continued

Player-Character Identification (adapted from Van Looy, Courtois, De Vocht, & De Marez, 2012)	Similarity Identification • My character is like me in many ways. • My character resembles me. • I identify with my character. • My character is an extension of myself. • My character is similar to me. • I resemble my character. Embodied Presence • When I am playing, it feels as if I am my character. • I feel like I am inside my character when playing. • In the game, it is as if I become one with my character. • When I am playing, I am transported into my character. • When playing, it feels as if my character's body becomes my own. • In the game, it is as if I am acting directly through my character. Wishful Identification • If I could become my character, I would. • I would like to be more like my character. • My character is an example of me. • My character is a better me. • My character has characteristics that I would like to have.
Flow (adapted from Liu, 2017)	Present flow definition: "a feeling of immersion within an experience when you act with total involvement." • I have experienced flow when playing this game. • In general, how frequently would you say you experience "flow" when playing this game? (5-point scale, very frequently to not very frequently) • Most of the time I play this game I feel that I am in flow.

Table 8, continued

Brand Loyalty (adapted from Teng, Chen, Chen, and Li 2012)	• This online game is my first choice. • I will continue to play this online game. • I am willing to say positive things about this game to others. • If others want to play an online game, I will recommend this game. • I will encourage friends and relatives to play this online game. • I will play sequels of this game in the future. • I will play other games from this company in the future.

See APPENDIX J for full survey and flow.

CHAPTER 13. DATA ANALYSES

Raw data was exported from the Survey Monkey and Qualtrics online platforms and imported into Microsoft Excel and IBM SPSS Statistics 25. SPSS was utilized for most analyses, including descriptive statistics, frequencies, factor analyses, Cronbach's Alpha, and correlations. Smart PLS 3 was utilized for partial least squares analysis due to its flexibility in building models and running full path analyses within the interface. Construct scores were calculated based on previously tested studies:

Table 9. Statistical Analyses

Construct	Calculation	Reference(s)
Self-Congruity, Actual	Absolute difference between actual self and character personality scores; scores averaged (lower the score, higher the congruity)	(adapted from Sirgy, 1982; Sirgy 1985; Sirgy, Johar, Samli & Claiborne, 1991; Sirgy, Grewal, & Mangleburg, 2000; Kressmann, et al., 2006)
Self-Congruity, Ideal	Absolute difference between ideal self and character personality scores; scores averaged (lower the score, higher the congruity)	(adapted from Sirgy, Johar, Samli & Claiborne, 1991; Kressmann, et al., 2006)
Self-Congruity, Social	Absolute difference between social self and character personality scores; scores averaged (lower the score, higher the congruity)	(adapted from Sirgy, Johar, Samli & Claiborne, 1991)
Self-Congruity, Ideal Social	Absolute difference between ideal social self and character personality scores; scores averaged (lower the score, higher the congruity)	(adapted from Sirgy, Johar, Samli & Claiborne, 1991)
Similarity Score	Sum of all similarity measures	(adapted from Soutter & Hitchens, 2016)
Player-Character Identification Score	Sum of all player-character identification measures, including similarity identification, embodied presence, and wishful identification	(adapted from Van Looy, Courtois, De Vocht, & De Marez, 2012; Soutter & Hitchens, 2016)

Table 9, continued

Flow Score	Sum of all flow measures	(adapted from Soutter & Hitchens, 2016)
Loyalty Score	Sum of all loyalty measures	(adapted from Teng, Chen, Chen, and Li 2012)

Descriptive Statistics and Frequencies

Analyses commenced with descriptive statistics and frequencies for all individual construct variables (see Appendix K for descriptive statistics):

1. Player-Character Similarity (contributes to Player-Character Identification)
2. Embodied Presence (contributes to Player-Character Identification)
3. Wishful Identification (contributes to Player-Character Identification)
4. Flow
5. Loyalty

Frequencies were also calculated for each individual question to determine normality. Please see Appendix L for relevant histograms and estimated normality curves. Approximately half of individual variable histograms were not normally distributed with varying types and degrees of skewness. Based on the volume of elements that would require data transformation, partial least squares regression was selected for analysis as this approach is distribution agnostic.

Construct Analyses

The second step of analyses included factor analyses and Cronbach's Alpha to determine the viability of the survey questions to represent each construct. The player-character identification score is a sum of three elements that each contain individual questions: similarity (six questions, such as "my character is like me in many ways"), embodied presence (six questions, such as "in the game, it is as if I become one with my character"), and wishful identification (five questions, such as "if I could become my character, I would"). The flow score is calculated with three questions based on the reported level of flow from players (definition of flow was provided in survey question, see Table 8), e.g. "I have experienced flow when playing [game name]." The loyalty score is calculated with seven questions, including factors such as first choice, positive word of mouth, and recommendation. As congruity scores are calculated from a personality inventory of many different items, factor analyses are not useful for the measurement of these constructs.

Construct Analysis – Similarity

Similarity variables were loaded into the SPSS factor analysis function, using eigenvalues of greater than one and a varimax rotation. Correlations and significances were within range, but the correlation between the "resembles me" and "I resemble character" was high at 0.812 indicating that the two questions measure the same observation. As these questions were intended as cross checks, this high correlation is expected.

Table 10. Correlation Matrix – Similarity

Correlation Matrix[a]

		Similarity-LikeMe	Similarity-ResemblesMe	Similarity-Iidentify	Similarity-ExtensionSelf	Similarity-SimilarToMe	Similarity-IResembleCharacter
Correlation	Similarity-LikeMe	1.000	.555	.651	.501	.625	.511
	Similarity-ResemblesMe	.555	1.000	.541	.142	.256	.812
	Similarity-Iidentify	.651	.541	1.000	.556	.567	.542
	Similarity-ExtensionSelf	.501	.142	.556	1.000	.759	.159
	Similarity-SimilarToMe	.625	.256	.567	.759	1.000	.234
	Similarity-IResembleCharacter	.511	.812	.542	.159	.234	1.000
Sig. (1-tailed)	Similarity-LikeMe		.000	.000	.000	.000	.000
	Similarity-ResemblesMe	.000		.000	.001	.000	.000
	Similarity-Iidentify	.000	.000		.000	.000	.000
	Similarity-ExtensionSelf	.000	.001	.000		.000	.000
	Similarity-SimilarToMe	.000	.000	.000	.000		.000
	Similarity-IResembleCharacter	.000	.000	.000	.000	.000	

a. Determinant = .024

The factor analysis indicated that the two "resemble" questions divert from other variables. These two variables were eliminated from the similarity grouping, and a second factor analysis was produced with the updated construct elements. The new component matrix shows that the remaining variables are within acceptable range to determine this construct and results in a good 0.862 (George and Mallery, 2003) Cronbach's Alpha. The total variance explained is 70.795%.

Table 11. Rotated Component Matrix – Similarity

Rotated Component Matrix[a]

	Component	
	1	2
Similarity-LikeMe	.640	.563
Similarity-ResemblesMe	.109	.933
Similarity-Iidentify	.636	.569
Similarity-ExtensionSelf	.918	.012
Similarity-SimilarToMe	.909	.135
Similarity-IResembleCharacter	.098	.926

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Table 12. Updated Rotated Component Matrix – Similarity

Component Matrix[a]

	Component 1
Similarity-LikeMe	.822
Similarity-Iidentify	.820
Similarity-ExtensionSelf	.839
Similarity-SimilarToMe	.882

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Table 13. Total Variable Explained – Similarity

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.832	70.795	70.795	2.832	70.795	70.795
2	.587	14.668	85.463			
3	.371	9.272	94.735			
4	.211	5.265	100.000			

Extraction Method: Principal Component Analysis.

Construct Analysis – Embodied Presence

Embodied presence variables were also loaded into the SPSS factor analysis function, using eigenvalues of greater than one and a varimax rotation. Correlations and significances were within range and did not indicate that any variables were measuring the same item.

Table 14. Correlation Matrix – Embodied Presence

Correlation Matrix[a]

		Embodied-FeelAsIfIAm	Embodied-FeelAmInside	Embodied-BecomeOne	Embodied-Transported	Embodied-BodyBecomesOwn	Embodied-ActingDirectly
Correlation	Embodied-FeelAsIfIAm	1.000	.546	.507	.288	.489	.292
	Embodied-FeelAmInside	.546	1.000	.466	.236	.465	.414
	Embodied-BecomeOne	.507	.466	1.000	.243	.463	.435
	Embodied-Transported	.288	.236	.243	1.000	.216	.489
	Embodied-BodyBecomesOwn	.489	.465	.463	.216	1.000	.400
	Embodied-ActingDirectly	.292	.414	.435	.489	.400	1.000
Sig. (1-tailed)	Embodied-FeelAsIfIAm		.000	.000	.000	.000	.000
	Embodied-FeelAmInside	.000		.000	.000	.000	.000
	Embodied-BecomeOne	.000	.000		.000	.000	.000
	Embodied-Transported	.000	.000	.000		.000	.000
	Embodied-BodyBecomesOwn	.000	.000	.000	.000		.000
	Embodied-ActingDirectly	.000	.000	.000	.000	.000	

a. Determinant = .172

The factor analysis indicated that the "transported" question diverts from other variables. This variable was eliminated from the similarity grouping, and a second factor analysis was produced with the updated construct elements. The new component matrix shows that the remaining variables are within acceptable range to determine this construct and results in a good 0.802 Cronbach's Alpha (George and Mallery, 2003). The total variance explained is 55.975%.

Table 15. Component Matrix – Embodied Presence

Component Matrix[a]

	Component 1
Embodied-FeelAsIfIAm	.751
Embodied-FeelAmInside	.755
Embodied-BecomeOne	.750
Embodied-Transported	.537
Embodied-BodyBecomesOwn	.728
Embodied-ActingDirectly	.703

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Table 16. Updated Rotated Component Matrix – Embodied Presence

Component Matrix[a]

	Component 1
Embodied-FeelAsIflAm	.767
Embodied-FeelAmInside	.780
Embodied-BecomeOne	.772
Embodied-BodyBecomesOwn	.756
Embodied-ActingDirectly	.659

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Table 17. Total Variance Explained – Embodied Presence

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.799	55.975	55.975	2.799	55.975	55.975
2	.725	14.510	70.485			
3	.543	10.863	81.348			
4	.531	10.621	91.969			
5	.402	8.031	100.000			

Extraction Method: Principal Component Analysis.

Construct Analysis – Wishful Identification

Wishful Identification variables were also loaded into the SPSS factor analysis function, using eigenvalues of greater than one and a varimax rotation. Correlations and significances were within range and did not indicate that any variables were measuring the same item.

Table 18. Correlation Matrix – Wishful Identification

Correlation Matrix[a]

		Wishful-BecomeCharacter	Wishful-BeMoreLike	Wishful-ExampleOfMe	Wishful-BetterMe	Wishful-CharacteristicslWant
Correlation	Wishful-BecomeCharacter	1.000	.068	.196	.221	.551
	Wishful-BeMoreLike	.068	1.000	.518	.666	.183
	Wishful-ExampleOfMe	.196	.518	1.000	.503	.178
	Wishful-BetterMe	.221	.666	.503	1.000	.302
	Wishful-CharacteristicslWant	.551	.183	.178	.302	1.000
Sig. (1-tailed)	Wishful-BecomeCharacter		.064	.000	.000	.000
	Wishful-BeMoreLike	.064		.000	.000	.000
	Wishful-ExampleOfMe	.000	.000		.000	.000
	Wishful-BetterMe	.000	.000	.000		.000
	Wishful-CharacteristicslWant	.000	.000	.000	.000	

a. Determinant = .233

Although the initial Cronbach's Alpha value was within acceptable range at 0.719, the factor analysis indicated that two questions divert from other variables: "become character" and "characteristics I want." These two variables were eliminated from the similarity grouping, and a second factor analysis was produced with the updated construct elements. The new component matrix shows that the remaining variables are within acceptable range to determine this construct and results in a more acceptable 0.794 Cronbach's Alpha (George and Mallery, 2003). The total variance explained is 70.941%.

Table 19. Rotated Component Matrix – Wishful Identification

Rotated Component Matrix[a]

	Component	
	1	2
Wishful-BecomeCharacter	.062	.886
Wishful-BeMoreLike	.886	.005
Wishful-ExampleOfMe	.773	.122
Wishful-BetterMe	.841	.211
Wishful-CharacteristicsIWant	.164	.857

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Table 20. Updated Component Matrix – Wishful Identification

Component Matrix[a]

	Component
	1
Wishful-BeMoreLike	.872
Wishful-ExampleOfMe	.786
Wishful-BetterMe	.866

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Table 21. Total Variance Explained – Wishful Identification

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.128	70.941	70.941	2.128	70.941	70.941
2	.539	17.954	88.894			
3	.333	11.106	100.000			

Extraction Method: Principal Component Analysis.

Construct Analysis – Player-Character Identification

Similarity, embodied presence, and wishful identification scores are combined to determine the overall player-character identification score. After the adjustments to each score as indicated above, an overall factor analysis and Cronbach's Alpha was performed to determine the overall reliability of the combine player-identification score (eigenvalues of greater than one and a varimax rotation.). The player-character identification construct does not produce ideal results. The initial factor analysis results in the wishful identification score pulling away from similarity and embodied presence with a questionable Cronbach's Alpha of 0.667 which borders on the acceptable 0.7 limit (George and Mallery, 2003). If wishful identification is removed, the updated factor analysis scores show improvement (both components at 0.886 in factor analysis), and the Cronbach's Alpha score improves to an acceptable 0.727 (George and Mallery, 2003). However, as this study seeks to replicate this portion of prior research methods, analyses continued with the adjusted similarity, embodied presence, and wishful identification scores comprising the total player-character identification score. Also, the total variance explained is 60.503%. Wishful identification was not removed from the analysis.

Table 22. Component Matrix – Player-Character Identification

Component Matrix[a]

	Component 1
SimilarityIdentificationScore2	.857
EmbodiedPresenceScore2	.813
WishfulIdentificationScore2	.648

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Table 23. Total Variance Explained – Player-Character Identification

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.815	60.503	60.503	1.815	60.503	60.503
2	.767	25.550	86.053			
3	.418	13.947	100.000			

Extraction Method: Principal Component Analysis.

Construct Analysis – Flow

Flow variables were also loaded into the SPSS factor analysis function, using eigenvalues of greater than one and a varimax rotation. Correlations and significances were within range and did not indicate that any variables were measuring the same item.

Table 24. Correlation Matrix – Flow

Correlation Matrix[a]

		Flow-ExperiencedFlow	Flow-MostOfTime	Flow-Frequency
Correlation	Flow-ExperiencedFlow	1.000	.744	.172
	Flow-MostOfTime	.744	1.000	.033
	Flow-Frequency	.172	.033	1.000
Sig. (1-tailed)	Flow-ExperiencedFlow		.000	.000
	Flow-MostOfTime	.000		.226
	Flow-Frequency	.000	.226	

a. Determinant = .424

The factor analysis indicated that the flow frequency question was quite separate from the other measures. The flow frequency variable was eliminated from the similarity grouping, and a second factor analysis was produced with the updated construct elements. The new component matrix shows that the remaining variables are within acceptable range to determine this construct and results in a good 0.853 Cronbach's Alpha (George and Mallery, 2003). The total variance explained is 87.191%.

Table 25. Component Matrix – Flow

Component Matrix[a]

	Component 1
Flow-ExperiencedFlow	.936
Flow-MostOfTime	.913
Flow-Frequency	.249

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Table 26. Updated Component Matrix – Flow

Component Matrix[a]

	Component 1
Flow-ExperiencedFlow	.934
Flow-MostOfTime	.934

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Table 27. Total Variance Explained – Flow

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.744	87.191	87.191	1.744	87.191	87.191
2	.256	12.809	100.000			

Extraction Method: Principal Component Analysis.

Construct Analysis – Loyalty

Loyalty variables were also loaded into the SPSS factor analysis function, using eigenvalues of greater than one and a varimax rotation. Correlations and significances were within range and did not indicate that any variables were measuring the same item.

Table 28. Correlation Matrix – Loyalty

Correlation Matrix[a]

		Loyalty-FirstChoice	Loyalty-ContinueToPlay	Loyalty-SayPositiveThings	Loyalty-Recommend	Loyalty-EncourageFF	Loyalty-PlaySequels	Loyalty-OtherGamesFromCompany
Correlation	Loyalty-FirstChoice	1.000	.186	.218	.240	.142	.258	.249
	Loyalty-ContinueToPlay	.186	1.000	.007	.074	.026	.163	.163
	Loyalty-SayPositiveThings	.218	.007	1.000	.355	.225	.215	.498
	Loyalty-Recommend	.240	.074	.355	1.000	.103	.384	.544
	Loyalty-EncourageFF	.142	.026	.225	.103	1.000	.178	.271
	Loyalty-PlaySequels	.258	.163	.215	.384	.178	1.000	.465
	Loyalty-OtherGamesFromCompany	.249	.163	.498	.544	.271	.465	1.000
Sig. (1-tailed)	Loyalty-FirstChoice		.000	.000	.000	.001	.000	.000
	Loyalty-ContinueToPlay	.000		.434	.048	.276	.000	.000
	Loyalty-SayPositiveThings	.000	.434		.000	.000	.000	.000
	Loyalty-Recommend	.000	.048	.000		.010	.000	.000
	Loyalty-EncourageFF	.001	.276	.000	.010		.000	.000
	Loyalty-PlaySequels	.000	.000	.000	.000	.000		.000
	Loyalty-OtherGamesFromCompany	.000	.000	.000	.000	.000	.000	

a. Determinant = .297

The factor analysis for loyalty illustrated a much more complex picture. While two groupings were identified, the values were not clustering in an obvious way. The "continue to play" variable emerged as the most distinct in this construct, pulling further than all others. The overall Cronbach's Alpha score resulted in a questionable 0.684 (George and Mallery, 2003). As a primary goal of this research is to understand how to encourage players to continue playing the game, the removal of this variable is noted for further discussion later in this paper. However, even after removing the continuation variable, the factor scores are still not tightly clustered. Yet, the Cronbach's Alpha improves to an acceptable 0.710 (George and Mallery, 2003) and the total variability explained is 42.115%; therefore, the construct remains with the single variable removed.

Table 29. Rotated Component Matrix – Loyalty

Rotated Component Matrix[a]

	Component	
	1	2
Loyalty-FirstChoice	.274	.563
Loyalty-ContinueToPlay	-.167	.848
Loyalty-SayPositiveThings	.749	-.017
Loyalty-Recommend	.674	.260
Loyalty-EncourageFF	.490	-.042
Loyalty-PlaySequels	.506	.469
Loyalty-OtherGamesFromCompany	.782	.303

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Table 30. Updated Component Matrix – Loyalty

Component Matrix[a]

	Component
	1
Loyalty-FirstChoice	.497
Loyalty-SayPositiveThings	.667
Loyalty-Recommend	.725
Loyalty-EncourageFF	.419
Loyalty-PlaySequels	.663
Loyalty-OtherGamesFromCompany	.834

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Table 31. Total Variance Explained – Loyalty

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.527	42.115	42.115	2.527	42.115	42.115
2	.931	15.512	57.627			
3	.852	14.200	71.827			
4	.763	12.714	84.541			
5	.546	9.107	93.647			
6	.381	6.353	100.000			

Extraction Method: Principal Component Analysis.

The following actions and insights were taken from the construct analyses:

- Removal of “My character resembles me” and “I resemble my character” from the similarity score.
- Removal of “When I am playing, I am transported into my character” from the embodied presence score.
- Removal of “If I could become my character, I would” and “My character has characteristics that I would like to have” from the wishful identification score.
- Player-Character identification recognized to have a limitation in reliability, based inclusion of the wishful identification score that results in a questionable Cronbach’s Alpha.
- Removal of flow frequency from the flow score.
- Removal of “I will continue to play this game” from the loyalty score.

Descriptive Statistics of Model Variables

Updated descriptive statistics and frequencies were calculated with new construct calculations:

1. Player-Character Identification, based on similarity, embodied presence, and wishful identification
2. Flow
3. Loyalty
4. Player-Character Congruity, Actual
5. Player-Character Congruity, Ideal
6. Player-Character Congruity, Social
7. Player-Character Congruity, Ideal Social

Please see Appendix L (Figures 46-52) for relevant histograms and estimated normality curves. Most histograms remain abnormally distributed with varying types and degrees of skewness, making the partial least squares approach ideal for this research.

Table 32. Descriptive Statistics of Model Variables

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
PCIdentificationScore2	512	48	12	60	42.78	7.402	54.796	-.455	.108	2.324	.215
FlowScoreNoFreq	512	12	2	14	7.98	3.484	12.139	.586	.108	-1.172	.215
LoyaltyScore2	512	18	12	30	22.88	3.791	14.370	.387	.108	-.706	.215
ActualCongruityScore	512	37	0	37	7.14	5.251	27.571	.812	.108	1.798	.215
IdealCongruityScore	512	42	0	42	4.54	5.338	28.499	2.844	.108	11.294	.215
SocialCongruityScore	512	40	0	40	6.94	5.120	26.215	.889	.108	2.635	.215
IdealSocialCongruityScore	512	31	0	31	6.40	4.677	21.877	1.305	.108	3.720	.215
Valid N (listwise)	512										

Correlation of Model Variables

The correlational analysis presents many statistically significant (0.01 level) relationships within the data. The strongest positive relationship is seen between the flow and loyalty constructs at a strong 0.603 correlation. This result is expected as the relationship between flow and loyalty have been demonstrated in previous studies (Sherry, 2004; Chen, 2007; Wang and Hsaio, 2012; Moon, Hossain, Sanders, Garrity, & Jo, 2013; Huang, Huang, Chou, and Teng, 2013; Lui, 2017). A moderate positive relationship is also observed between player-character identification and loyalty with a correlation of 0.355. Weaker positive relationships are observed between player-character identification and flow (0.267), ideal congruity and flow (0.273), and ideal congruity and loyalty (0.266). Congruity and player-character identification measures do not present statistically signification relationships. Other congruity measures present negative relationships with flow and loyalty, respectively: actual (-0.452, -0.360), social (-0.333, -0.263), ideal social (-0.203, -0.166).

Table 33. Correlation of Model Variables

Correlations

		PCIdentificationScore2	FlowScoreNoFreq	LoyaltyScore2	ActualCongruityScore	IdealCongruityScore	SocialCongruityScore	IdealSocialCongruityScore
PCIdentificationScore2	Pearson Correlation	1	.267**	.355**	-.086	.039	-.082	-.050
	Sig. (2-tailed)		.000	.000	.052	.375	.064	.258
	N	512	512	512	512	512	512	512
FlowScoreNoFreq	Pearson Correlation	.267**	1	.603**	-.452**	.273**	-.333**	-.203**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	512	512	512	512	512	512	512
LoyaltyScore2	Pearson Correlation	.355**	.603**	1	-.360**	.226**	-.263**	-.166**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	512	512	512	512	512	512	512
ActualCongruityScore	Pearson Correlation	-.086	-.452**	-.360**	1	.089*	.720**	.588**
	Sig. (2-tailed)	.052	.000	.000		.045	.000	.000
	N	512	512	512	512	512	512	512
IdealCongruityScore	Pearson Correlation	.039	.273**	.226**	.089*	1	.186**	.398**
	Sig. (2-tailed)	.375	.000	.000	.045		.000	.000
	N	512	512	512	512	512	512	512
SocialCongruityScore	Pearson Correlation	-.082	-.333**	-.263**	.720**	.186**	1	.586**
	Sig. (2-tailed)	.064	.000	.000	.000	.000		.000
	N	512	512	512	512	512	512	512
IdealSocialCongruityScore	Pearson Correlation	-.050	-.203**	-.166**	.588**	.398**	.586**	1
	Sig. (2-tailed)	.258	.000	.000	.000	.000	.000	
	N	512	512	512	512	512	512	512

**. Correlation is significant at the 0.01 level (2-tailed).

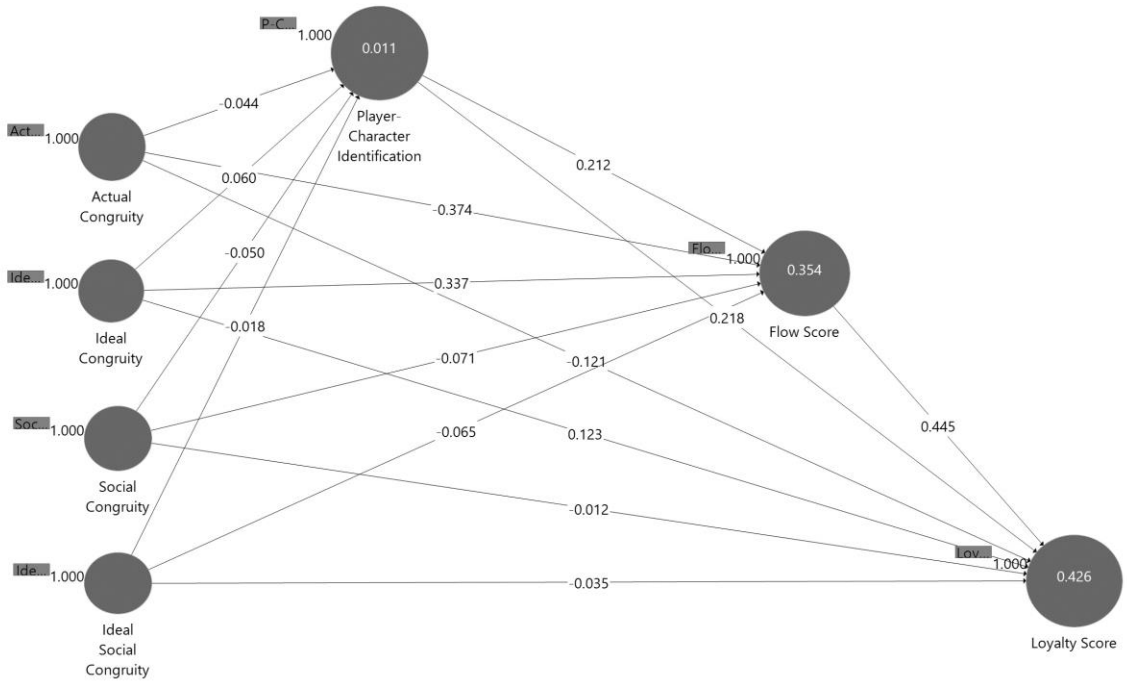
*. Correlation is significant at the 0.05 level (2-tailed).

Partial Least Squares Analyses

All model variables were loaded into the Smart PLS 3 interface then processed through the consistent PLS algorithm using a path analysis with 1000 maximum iterations. The partial least squares approach was primarily selected due to its management of non-normal distributions. Yet, this method also accommodates a large number of variables and relationships while allowing for smaller sample sizes (Liu, 2017). Additionally, Liu's study of flow theory and its impact within the gaming environment also utilized this analysis method (2017).

Figure 11 displays the model output from the interface. Based on the software results, no congruity measures are predictive of player-character identification. Additionally, both social and ideal social congruities are not predictive of flow or loyalty. However, several elements of this analysis show promise. As expected, player-character identification is weakly predictive of flow (0.212) and loyalty (0.218) through direct relationships. As the values are very close, flow does not appear to mediate the relationship between player-character identification and loyalty. Both actual and ideal congruity have moderate predictability with the flow construct (-0.374, 0.337), actual showing the same negative relationship as the correlational results. Flow shows a moderate predictability with loyalty at 0.445, which is also expected. The direct relationship of actual and ideal congruity with loyalty is weak at -0.121 and 0.123 respectively, indicating that flow mediates the relationship between these congruities and loyalty. If the predictive strength of player-character identification and ideal congruity to flow are compared, ideal congruity appears to have stronger predictive value to the flow construct. This model results in a 0.354 R square for flow and a 0.426 R square for loyalty. Model fit results are favorable with SRMR (standardized root mean square residual) being virtually zero or "values for the SRMR range from zero to 1.0 with well fitting models obtaining values less than .05" (Hooper, Coughlan, and Mullen, 2008).

Figure 10. Partial Least Squares Regression Paths for Full Model



Model was then tested through the Consistent PLS bootstrapping function with 1000 subsamples and a 0.05 significance level. This function resulted in an updated model view with corresponding t statistics, which were compared to a 1.96 (two-tailed) value indicating significance at a 95% confidence level. Similar to the results discussed above, all congruity measures were not significant in relation to player-character identification. Social and ideal social relationships are not significant for flow or loyalty. Player-character identification is significant with both flow and loyalty (4.277, 4.804), and flow does not appear to mediate the relationship between player-character identification and loyalty. Actual and ideal congruities are significant in relation to flow (4.610, 5.767) and loyalty (1.983, 2.904). Flow appears again to mediate the relationship

between actual and ideal congruities and loyalty. Ideal is also more significant than the player-character variable in relation to flow.

Figure 11. T Statistics for Full Model

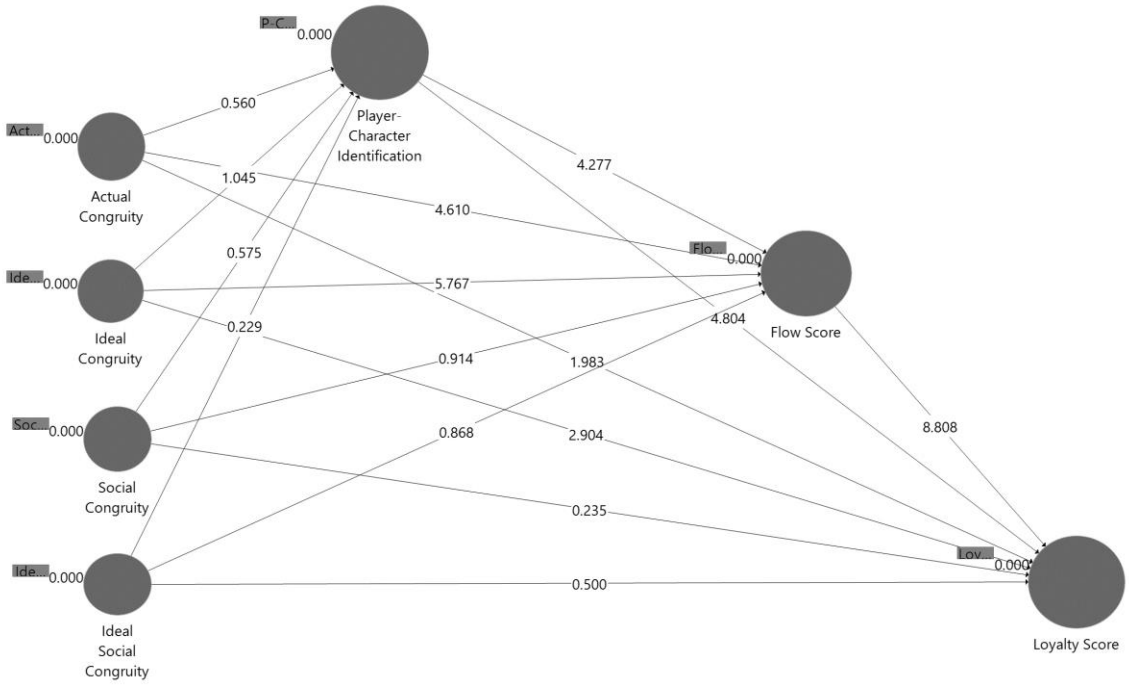


Table 34. Consistent PLS Bootstrapping Output

	ALL SOURCES		
	Regression	T Statistics	P Values
Actual Congruity -> Flow Score	-0.374	4.610	0.000
Actual Congruity -> Loyalty Score	-0.121	1.983	0.048
Actual Congruity -> Player-Character Identification	-0.044	0.560	0.575
Flow Score -> Loyalty Score	0.445	8.808	0.000
Ideal Congruity -> Flow Score	0.337	5.767	0.000
Ideal Congruity -> Loyalty Score	0.123	2.904	0.004
Ideal Congruity -> Player-Character Identification	0.060	1.045	0.296
Ideal Social Congruity -> Flow Score	-0.065	0.868	0.385
Ideal Social Congruity -> Loyalty Score	-0.035	0.500	0.617
Ideal Social Congruity -> Player-Character Identification	-0.018	0.229	0.819
Player-Character Identification -> Flow Score	0.212	4.277	0.000
Player-Character Identification -> Loyalty Score	0.218	4.804	0.000
Social Congruity -> Flow Score	-0.071	0.914	0.361
Social Congruity -> Loyalty Score	-0.012	0.235	0.814
Social Congruity -> Player-Character Identification	-0.018	0.575	0.565

Correlational analysis and partial least squares analyses was performed for each sample group individually as differences in the demographics were observed. Correlation matrices, found in Appendix N, presented three key learnings: 1. All relationships between variables were correlated in the social source (actual, social, and ideal social congruities demonstrated negative relationships with player-character identification, flow, and loyalty); 2. Within the panel source sample, relationships between player-character identification, flow, and loyalty were significant, while ideal congruity was the only congruity measure that presented a statistically significant (0.05 level) relationship with loyalty; and 3. The event source sample, due to the small size, resulted in one statistically significant (0.01 level) relationship between player-character identification and loyalty.

The partial least squares analysis maintained consistency in the conceptual model and constructs from the earlier analysis for comparison purposes. Based on the separate models, a few distinct observations may be made. The social-only model demonstrates a weak (0.244) yet significant (2.978) relationship between ideal congruity and player-character identification. Ideal congruity is also weak-moderately predictive of flow (0.293) with statistical significance (3.246). This group also shows moderate predictability of player-character identification to loyalty (0.484) that is also significant (7.561). Yet, flow does not appear to be significant in this context, even as a mediating variable. The panel-only model does not show any significant results that include the ideal congruity variable. However, the panel sample relationships are consistent with the relationships between player-character identification, flow, and loyalty with differing levels of predictability and significance (see Table 28 for comparison of statistics by

source). The panel sample is the largest driver of the flow to loyalty predictability at 0.319 with significance of 4.082 t statistic. Due to the small size of the event sample group, only one relationship resulted in significance. Player-character identification's predictability to loyalty reached 0.518 with a t statistic of 3.263.

Table 35. Partial Least Squares Results by Source

	ALL SOURCES			SOCIAL			PANEL			EVENTS		
	Regression	T Statistics	p Values	Regression	T Statistics	p Values	Regression	T Statistics	p Values	Regression	T Statistics	p Values
Actual Congruity -> Flow Score	-0.374	4.610	0.000	-0.244	0.921	0.357	-0.064	0.944	0.345	-0.146	0.712	0.477
Actual Congruity -> Loyalty Score	-0.121	1.983	0.048	0.151	1.077	0.282	-0.047	0.705	0.481	-0.032	0.153	0.878
Actual Congruity -> Player-Character Identification	-0.044	0.560	0.575	-0.188	1.262	0.207	-0.085	0.902	0.367	0.088	0.474	0.635
Flow Score -> Loyalty Score	0.445	8.808	0.000	0.101	1.188	0.235	0.319	4.082	0.000	0.085	0.555	0.579
Ideal Congruity -> Flow Score	0.337	5.767	0.000	0.293	3.246	0.001	0.046	0.646	0.519	0.168	0.745	0.456
Ideal Congruity -> Loyalty Score	0.123	2.904	0.004	0.078	1.270	0.205	0.057	0.838	0.402	-0.001	0.006	0.995
Ideal Congruity -> Player-Character Identification	0.060	1.045	0.296	0.244	2.978	0.003	0.068	0.774	0.439	-0.124	0.602	0.547
Ideal Social Congruity -> Flow Score	-0.065	0.868	0.385	0.127	0.686	0.493	-0.029	0.416	0.678	-0.246	0.958	0.338
Ideal Social Congruity -> Loyalty Score	-0.035	0.500	0.617	-0.236	1.282	0.200	0.070	1.033	0.302	-0.065	0.362	0.717
Ideal Social Congruity -> Player-Character Identification	-0.018	0.229	0.819	-0.151	1.273	0.203	0.033	0.331	0.741	-0.080	0.392	0.695
Player-Character Identification -> Flow Score	0.212	4.277	0.000	0.118	1.326	0.185	0.544	9.147	0.000	0.275	1.409	0.159
Player-Character Identification -> Loyalty Score	0.218	4.804	0.000	0.484	7.561	0.000	0.278	3.405	0.001	0.518	3.263	0.001
Social Congruity -> Flow Score	-0.071	0.914	0.361	-0.233	1.730	0.084	0.110	1.443	0.149	0.300	1.298	0.195
Social Congruity -> Loyalty Score	-0.012	0.235	0.814	-0.056	0.651	0.515	0.069	0.923	0.356	0.227	1.023	0.307
Social Congruity -> Player-Character Identification	-0.018	0.575	0.565	-0.114	1.144	0.253	-0.051	0.485	0.627	0.032	0.170	0.865

Figure 12. Partial Least Squares Regression Paths for Social Source

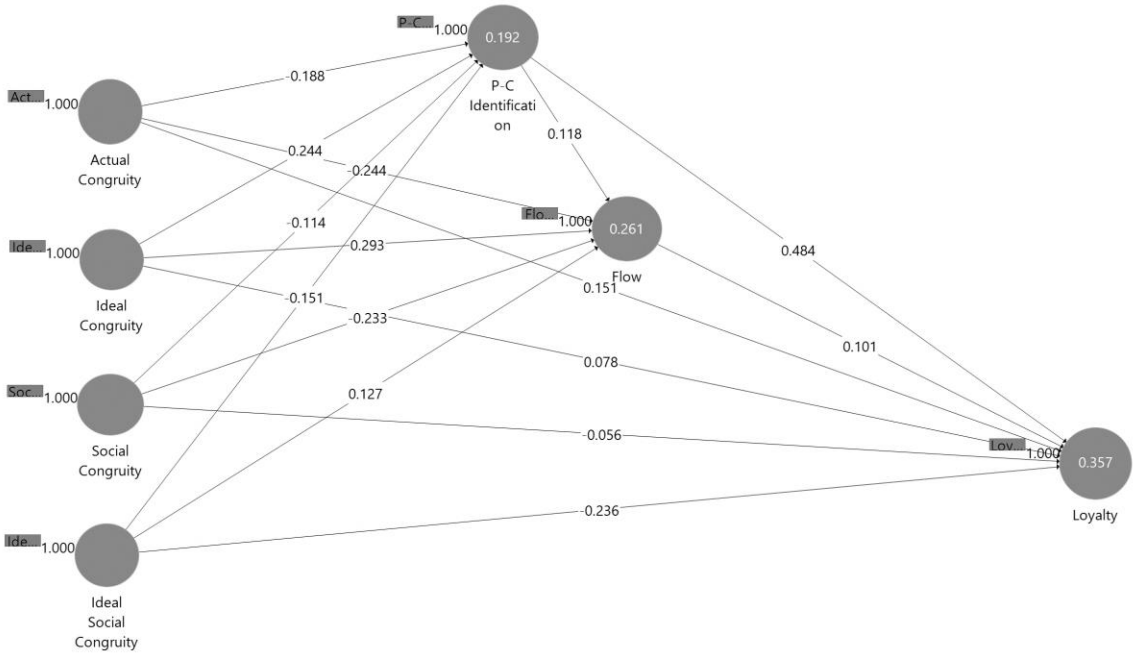


Figure 13. T Statistics for Social Source

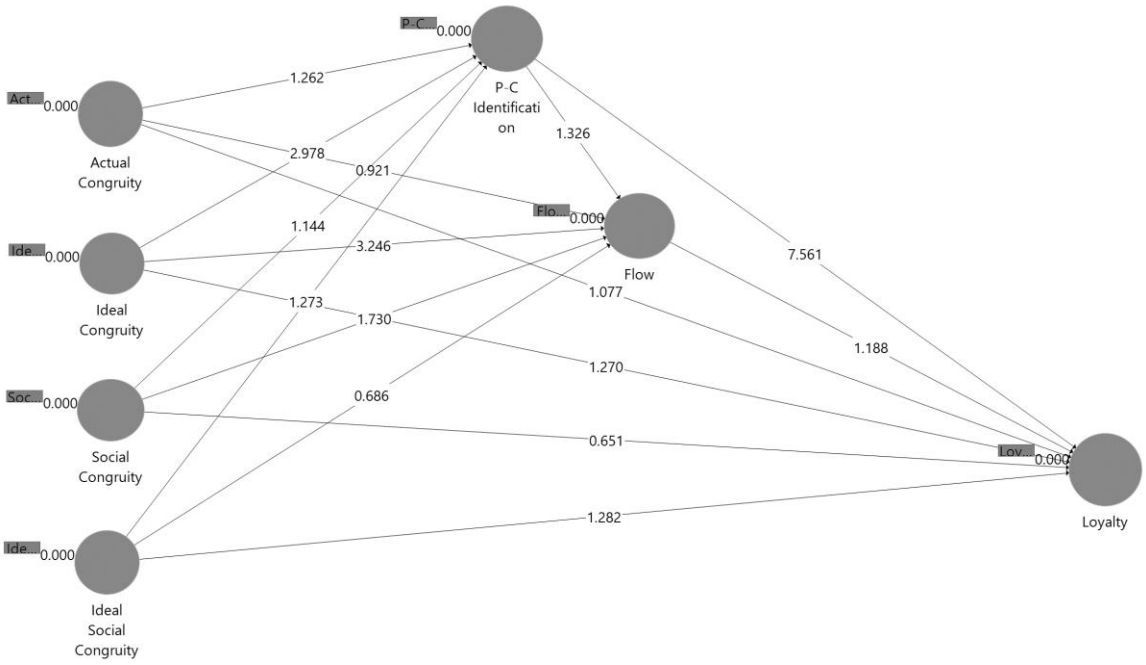


Figure 14. Partial Least Squares Regression Paths for Panel Source

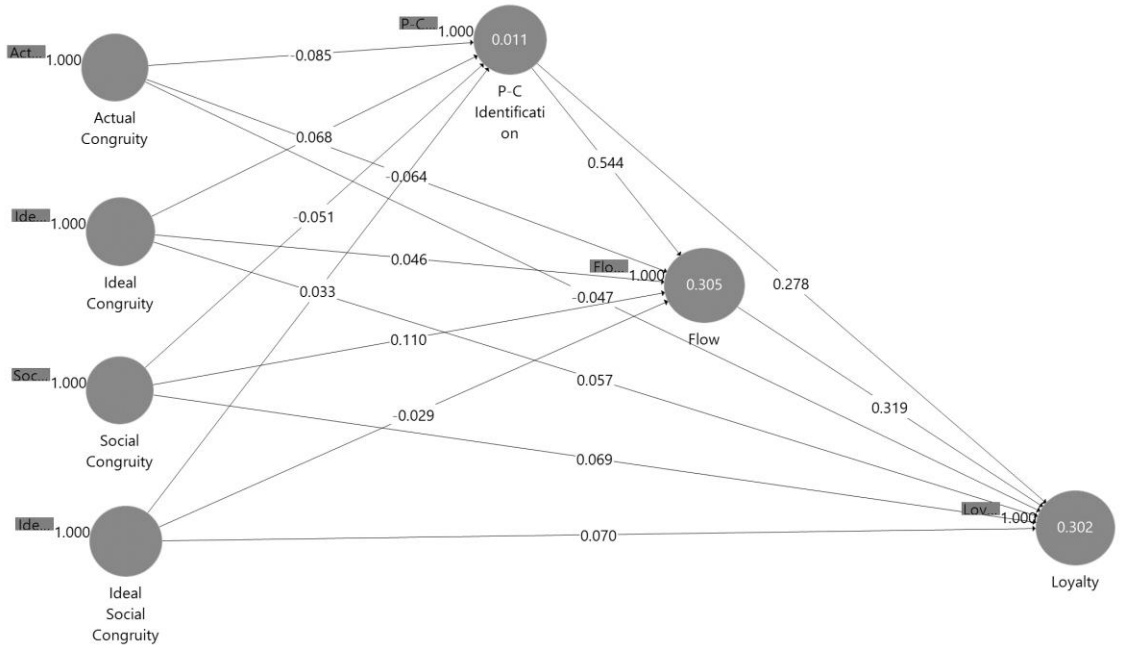


Figure 15. T Statistics for Panel Source

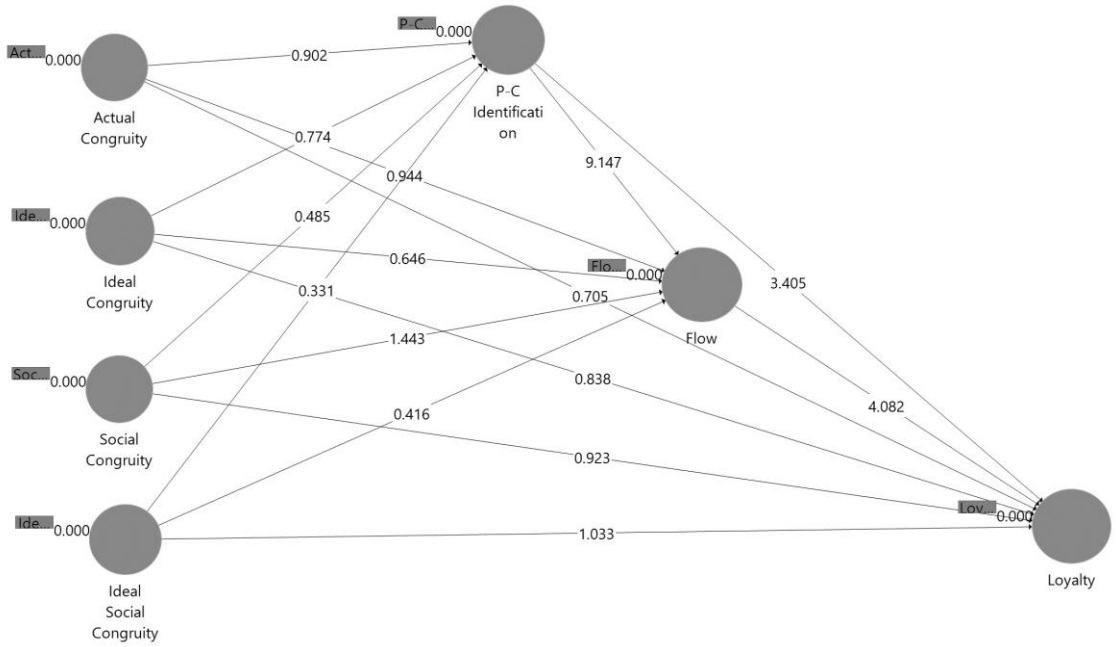


Figure 16. Partial Least Squares Regression Paths for Event Source

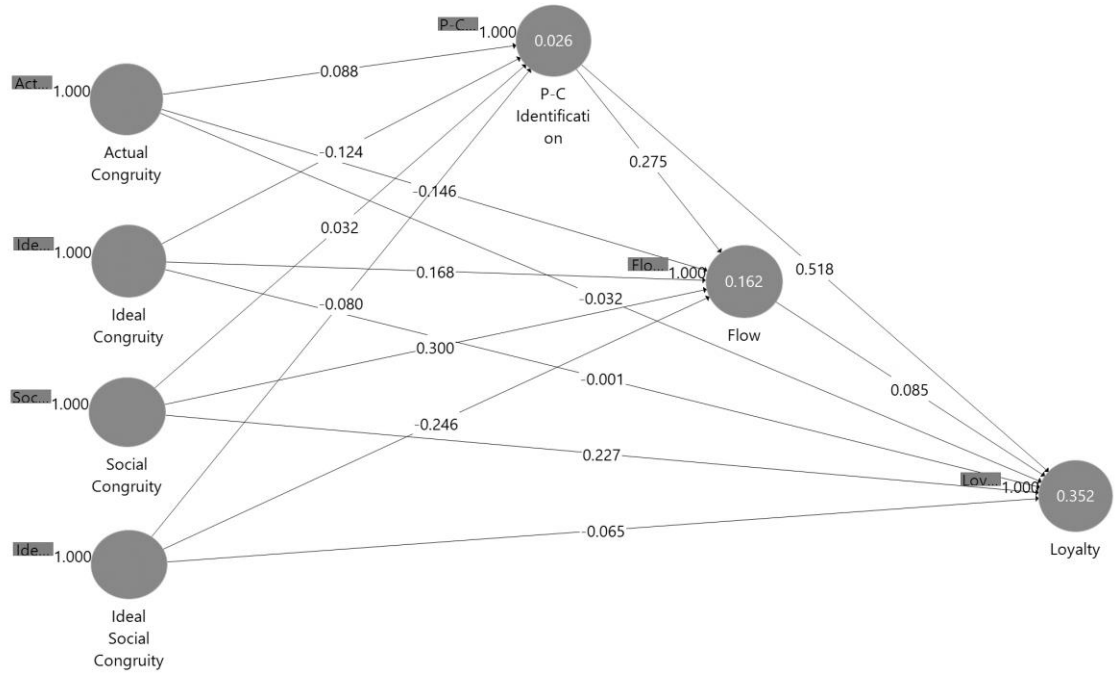
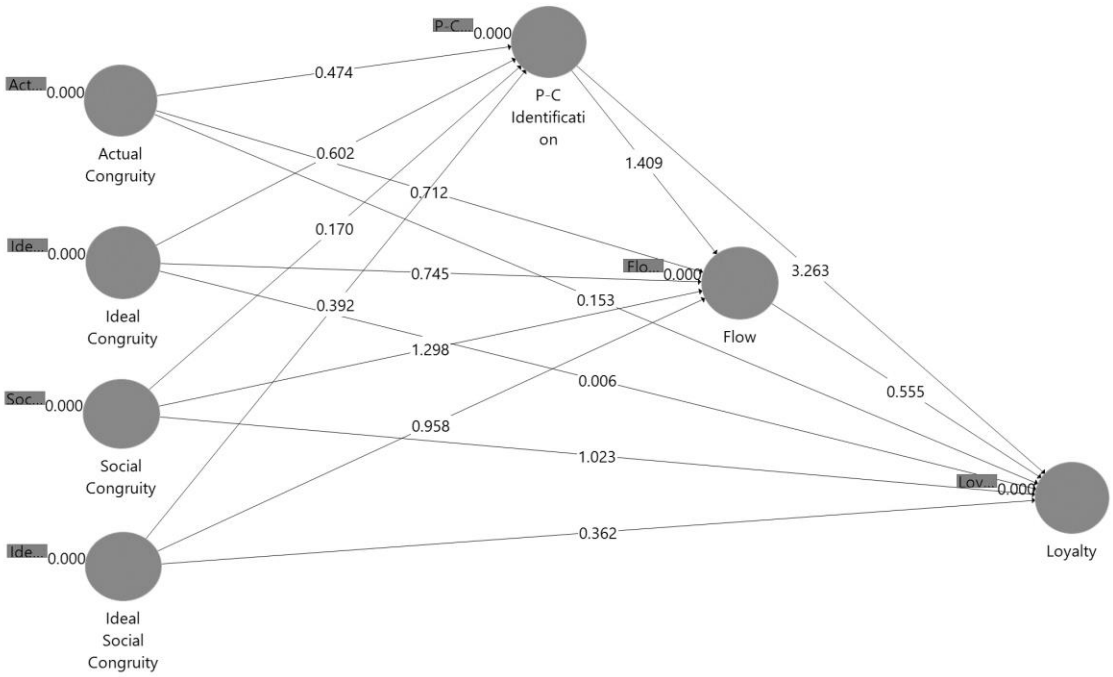


Figure 17. T Statistics for Event Source



CHAPTER 14. DISCUSSION OF RESULTS

This research has produced several notable findings based on the data collection and analysis. First, this research has supported prior research on the relationship between flow and loyalty. Hypothesis six stated that a player's state of flow will positively influence brand loyalty. Partial least squares analysis shows a 0.445 score for the flow to loyalty relationship with a 8.808 t statistic, showing statistical significance at a 95% level.

Second, the loyalty construct was adjusted to remove the game continuation element. During the construct analysis, the element that indicated game continuation required removal based on the factor analysis of loyalty. After the removal of continuation, the loyalty construct included primary choice, willingness to share positive sentiments, recommendation, encouragement of friends and family, engagement with game sequels, and engagement with games from the same company. These elements are critical for marketers as well, and the inclusion of them in the final model remains relevant. However, additional factors may exist surrounding the concept of game continuation that should be explored in the future.

Third, previous research has supported the relationship between player-identification (similarity, embodied presence, and wishful identification) and flow. Hypothesis five stated that player-character identification will positively influence the ability for a player to obtain the state of flow. This research has supported this hypothesis at a 95% confidence level, although the relationships were weak. Also, hypothesis eleven stated that flow will mediate the relationship between player-character identification and brand loyalty. Hypothesis eleven was not supported by this research. When comparing

the PLS regression results of the player-character identification to flow and player-character identification to loyalty, the results are almost identical. This observation indicates that flow does not mediate this relationship.

Fourth, hypotheses one through four stated that the various congruities (actual, ideal, social, and ideal social) will positively influence player-character identification. This research has not supported these hypotheses. Additionally, hypotheses seven through ten state that player-character identification will mediate the relationship between the various congruities and flow. This research has also not supported these hypotheses. All statistical methods did not support any relationship between the congruity and player-character measures. This observation may be attributed to the difference in the measurement as player-character identification is self-reported while congruity scores are based on personality measures. Retesting and comparing these measures is recommended in the future.

Fifth, the congruity between players' reported actual self and character has resulted in a negative relationship with both flow and loyalty. Actual congruity scores were expected to have a positive impact on flow and loyalty, indicating that players would prefer to play characters that are closest to their own personalities. In fact, Soutter and Hitchens (2016) demonstrated that player-character identification has a positive impact on flow. However, this research does not indicate that this is the case even when the analysis was reduced to only the similarity and embodied presence portions of player-character identification. In fact, the more similar the character is to the player, the lower the flow score and potentially lower loyalty to the game.

Table 36. Summary of Findings

Hypothesis	Outcome
H1: Actual player-character congruity will positively influence player-character identification.	Not Supported
H2: Ideal player-character congruity will positively influence player-character identification.	Not Supported
H3: Social player-character congruity will positively influence player-character identification.	Not Supported
H4: Ideal social player-character congruity will positively influence player-character identification.	Not Supported
H5: Player-character identification will positively influence the ability for a player to obtain the state of flow.	Supported
H6: A player's state of flow will positively influence brand loyalty.	Supported
H7: Player-character identification mediates the relationship between actual player-character congruity and flow.	Not Supported
H8: Player-character identification mediates the relationship between ideal player-character congruity and flow.	Not Supported
H9: Player-character identification mediates the relationship between social player-character congruity and flow.	Not Supported
H10: Player-character identification mediates the relationship between ideal social player-character congruity and flow.	Not Supported
H11: Flow mediates the relationship between player-character identification and brand loyalty.	Not Supported

The congruity between players' reported ideal self and character has more promise when predicting flow and, in turn, loyalty when compared to the player-character identification measurement. Although player-character identification was not supported throughout the research, findings support additional examination of the ideal congruity concept. As discovered through both the qualitative and quantitative research methods, players express that characters include at least a piece of themselves. Yet, the characters

are designed with additional idealized traits based on the players' preferences. This finding represents a highly interesting avenue for future research in this area.

Relatedly, the concept of identifying the least loyal customers was previously discussed. A cursory analysis of the data shows that participants with lower loyalty scores also tend to have lower flow scores. This observation is expected as it represents the inverse of the primary study findings.

Finally, the separation of sources suggests that results may differ based on demographic profile. Ideal congruity is more present within the sample group that included younger, male respondents with more income and education, while player-character identification is stronger in the sample group that included older, female respondents with less income and education. Deeper analyses should be pursued to understand how demographic variables impact these relationships.

This study provided mixed results for the proposed hypotheses; however, several positive outcomes were observed. First, the relationship between player-character identification and flow as well as the relationship between flow and loyalty were both supported as expected. Second, ideal self-congruity emerged as the strongest indicator of loyalty (mediated through flow), even stronger than player-character identification. And finally, actual self-congruity's negative impact to loyalty (also mediated through flow) presents an interesting perspective on the prior literature. While this relationship was also not included within the hypotheses, this finding does not support the prior research that focused much of its methodology on player-character similarity with players' actual selves.

CHAPTER 15. CONCLUSION

Research Contribution

As previously discussed, this research presents a significant contribution to both academic and managerial communities:

1. This study has tested an integrated model of self-congruity and flow theories, demonstrating a potential new variable of ideal congruity. As discussed above, ideal congruity, mediated by flow, was demonstrated to have the strongest impact to loyalty. Prior research has focused much attention to the concept of characters and their relationships to players' actual selves, which may require adjustment to incorporate other types and levels of congruity.
2. A new methodology has been introduced to the gaming, flow theory, and loyalty areas of study. Prior literature has primarily measured these phenomena through self-reported surveys. For example, Soutter and Hitchens' survey instrument directly asked respondents how similar a character is to a persons' self. A respondent may perceive a character to be very similar (or different), but that perception may be biased or inaccurate. The self-congruity calculation may prove to be a viable option to self-reported survey questions. The self-congruity methodology is determined through a calculation between two personality profiles (player and character) rather than self-reported inventory scales. While personality profile contain their own challenges, a comparison of the methodologies is recommended to identify the advantages and disadvantages of these approaches.

3. From a managerial perspective, gaming companies may benefit from testing game design focused on idealized character development, rather than enabling players to mimic their real-life selves. As this study has shown that ideal congruity may encourage and actual congruity may inhibit loyalty, designers may include modules that allow players to expand their characters beyond the "real world" possibilities and include surveys or tutorials to foster the development of ideal-self characters.
4. Managers may implement in-market research to identify players that utilize idealized characters. For example, market research surveys may be implemented to current customer bases to segment players based on character creation type – actual, ideal, or a combination. Based on those segments, loyalty measures, such as tenure, lifetime value, etc. may be calculated to determine which segments are most lucrative. The findings of this market research may inform marketing programs to enhance loyalty as well as inform new acquisition campaigns.

Research Limitations

This research experienced several challenges and limitations that should be noted:

- During the data collection process, the survey was a lengthy process with an average completion time of fifteen to seventeen minutes. Respondents may have experienced fatigue toward the end of the survey.
- The survey included all congruity options (actual, ideal, social, ideal social) for all respondents, which may have created confusion and more fatigue.

- Respondents were collected from three sources, but online social/referrals and the Qualtrics panel were the primary contributors. This sample may not be fully representative of the gaming community.
- Respondent demographic profiles differed between the two primary sources, social/referrals and Qualtrics panel. When the conceptual model was applied to each source, differences were observed that may indicate that results may fluctuate based on demographics.
- The initial proposal included constructs with previously tested measures (player-character identification, flow, loyalty). Based on the construct analyses, adjustments were implemented to remove variables that were not viable (factor analysis, Cronbach's Alpha). Certain variables were removed from each construct to gain acceptable levels, where possible.
- Player-Character identification is recognized to have a limitation in reliability based on low Cronbach's Alpha (similarity, embodied presence, wishful identification) and inclusion of wishful identification score as discussed above.
- The removal of game continuation limits the applicability to marketers as this attitude is a critical factor in the customer retention process. While other aspects of loyalty were analyzed, additional study of game continuation is recommended.

Suggestions for Future Research

Based on the opportunities and limitations of this research, the following suggestions are recommended for future research. First, data collection should be adjusted to expand the sample to be more representative of the gaming community. Second, additional analyses should be performed to understand how demographic factors impact congruity, flow, and loyalty. This study showed differences between samples and the results of the conceptual model. A primary different between the samples was gender. The social sample included mostly male respondents, while the panel sample included mostly female respondents. The ideal congruity results were primarily driven by the social (or male) sample, while the player-character identification and flow results were primarily driven by the panel (or female) sample. Future research should utilize gender as an additional variable to test the relationships between the congruity, player-character identification, flow, and loyalty constructs. Third, the survey process should include only one type of congruity (actual, ideal, social, or ideal social) to reduce confusion and fatigue. Fourth, an experiment to measure the different types of congruity through an actual gaming scenario is recommended to gain causal insight to the phenomenon. Fifth, deeper research is suggested to understand game continuation and how it differs from other types of gamer loyalty. During the qualitative phase of study, respondents described games that had limited content, which allowed for only certain amounts of gameplay. For example, many console games are intended to complete the game then purchase a sequel in the series. Understanding the types of games and any restrictions on game continuation is recommended for future studies. And finally, additional research should be executed to examine the social aspect of this topic. While social and ideal social congruities were not

supported in this research, the social aspect of gaming is undeniable. Another aspect of the social element may emerge in future research.

REFERENCES CITED

Aguirre-Rodriguez, A., Bosnjak, M., & Sirgy, M.J. (2012). Moderators of the self-congruity effect on consumer decision-making: A meta-analysis. *Journal of Business Research*, 65, 1179-1188.

Amine, A. (1998). Consumers' true brand loyalty: the central role of commitment. *Journal of Strategic Marketing*, 6(4), 305-319.

Bian, Y., Yang, C., Gao, F., Li, H., Zhou, S., Li, H., Sun, X., & Meng, X. (2016). A framework for physiological indicators of flow in VR games: construction and preliminary evaluation. *Personal and Ubiquitous Computing*, 20(5), 821-832.

Bloemer, J. M. M. & Kasper, H.D.P. (1995). The complex relationship between consumer satisfaction and brand loyalty. *Journal of Economic Psychology*, 16, 311-329.

Branaghan, R.J. & Hildebrand, E.A. (2011). Brand personality, self-congruity, and preference: A knowledge structures approach. *Journal of Consumer Behaviour*, 10, 304-312.

Chen, J. (2007). Flow in Games (and Everything Else). *Communications of the ACM*, 50(4), 31-34.

Choi, D. & Kim, J. (2004). Why People Continue to Play Online Games: In Search of Critical Design Factors to Increase Customer Loyalty to Online Contents. *CyberPsychology & Behavior*, 7(1), 11-24.

Csikszentmihalyi, M. (1975). *Beyond Boredom and Anxiety: Experiencing Flow in Work and Play*. San Francisco, CA: Jossey-Bass Publishers.

Csikszentmihalyi, M. (2004 February). The Surprising Science of Happiness [Video File]. Retrieved from https://www.ted.com/talks/mihaly_csikszentmihalyi_on_flow

Dolich, I. J. (1969). Congruence Relationships Between Self Images and Product Brands. *Journal of Marketing Research*, 6, 80-84.

Dreier, F. (2015). What's in Your Bag? Essentials for a Magical Card Game. *Wall Street Journal, Eastern Edition*. Retrieved from ProQuest.

Dwivedi, A. (2015). A higher-order model of consumer brand engagement and its impact on loyalty intentions. *Journal of Retailing and Consumer Services*, 24, 100-109.

Gabisch, J. (2011). Virtual world brand experience and its impact on real world purchasing behavior. *Journal of Brand Management*, 19, 18-32.

Gandomani, T. J. & Nafchi, M.Z. (2015). An empirically-developed framework for Agile transition and adoption: A Grounded Theory approach. *The Journal of Systems and Software,* 107, 204-219.

George, D. & Mallery, P. (2003). *SPSS for Windows Step by Step: A Simple Guide and Reference, 11.0 Update (4th Edition)*. Boston: Allyn & Bacon.

Glaser, B. G. & Strauss, A.L. (1967, 2006). *The Discovery of Grounded Theory: Strategies for Qualitative Research*. New Jersey: Aldine Transaction, A Division of Transaction Publishers.

Gosling, S.D., Rentfrow, P.J., & Swann, Jr., W.B. (2003). A Very Brief Measure of the Big-Five Personality Domains. *Journal of Research in Personality,* 37, 504-528.

Harland, B. (2014). *Gamers and Gaming*. Mintel Reports. Retrieved from http://reports.mintel.com

Harland, B. (2015). *Attitudes Toward Gaming*. Mintel Reports. Retrieved from http://reports.mintel.com

He, H., Li, Y. & Harris, L. (2012). Social identity perspective on brand loyalty. *Journal of Business Research*, 65, 648-657.

Hoffman, D. & Novak, T.P. (2009). Flow Online: Lessons Learned and Future Prospects. *Journal of Interactive Marketing*, 23, 23-34.

Hooper, D., Coughlan, J. & Mullen, M. (2008). Structural Equation Modelling: Guidelines for Determining Model Fit. *Electronic Journal of Business Research Methods,* 6(1), 53-60.

Hsu, C.L. & Lu, H.P. (2004). Why do people play on-line games? An extended TAM with social influences and flow experience. *Information & Management,* 41, 853-868.

Huang, L. & Hseih, Y. (2011). Predicting online game loyalty based on need gratification and experiential motives. *Internet Research*, 21(5), 581-598.

Huang, H.C., Huang, L.S., Chou, Y.J., & Teng, C.I. (2017). Influence of temperament and character on online gamer loyalty: Perspectives from personality and flow theories. *Computers in Human Behavior,* 70, 398-406.

Ibrahim, H. & Najjar, F. (2008). Assessing the effects of self-congruity, attitudes and customer satisfaction on customer behavioural intentions in retail environment. *Marketing Intelligence & Planning*, 26(2), 207-227.

Jacoby, J. & Kyner, D.B. (1973). Brand Loyalty vs. Repeat Purchasing Behavior. *Journal of Marketing Research*, 10(1), 1-9.

Joe, S. & Chiu, C. (2008). Proposing online game loyalty and its antecedents considering gender as a moderator: a qualitative study. *Quality & Quantity*, 43, 731-741.

Kressmann, F., Sirgy, M.J., Herrmann, A., Huber, F. Huber, S. & Dong-Jin, L. (2006). Direct and indirect effects of self-image congruence on brand loyalty. *Journal of Business Research*, 59, 955-964.

Leckie, C., Nyadzayo, M.W. & Johnson, L.W. (2016). Antecedents of consumer brand engagement and brand loyalty. *Journal of Marketing Management*, 32(5-6), 1-21.

Liu, C. (2017). A model for exploring players flow experience in online games. *Information Technology & People*, 30(1), 139-162.

Liu, F., Li, J., Mizerski, D. & Soh, H. (2012). Self-congruity, brand attitude, and brand loyalty: a study on luxury brands. *European Journal of Marketing*, 46(7/8), 922-937.

Malhotra, N.K. (1981). A Scale to Measure Self-Concepts, Person Concepts, and Product Concepts. *Journal of Market Research*, 18(4), 456-464.

Malhotra, N. K. (1988). Self-Concept and Product Choice: An Integrated Perspective. *Journal of Economic Psychology*, 9, 1-28.

Martin, P. Y. & Turner, B.A. (1986). Grounded Theory and Organizational Research. *The Journal of Applied Behavioral Science*, 22(2), 141-157.

Merhi, M.I. (2016). Towards a Framework for Online Game Adoption. *Computers in Human Behavior*, 60, 253-263.

Moon, J., Hossain, D., Sanders, G.L., Garrity, E.J., & Jo, S. (2013). Player Commitment to Massively Multiplayer Online Role-Playing Games (MMORPGs): An Integrated Model. *International Journal of Electronic Commerce*, 17(4), 7-38.

Morris, C. (2016). Level up! Video Game Industry Revenues Soar in 2015. *Fortune*. Retrieved from http://fortune.com/2016/02/16/video-game-industry-revenues-2015

Myers, M. D. (2013). *Qualitative research in business and management*. New Zealand: Sage.

Novak, T.P., Hoffman, D.L., & Duhachek, A. (2003). The Influence of Goal-Directed and Experiential Activities on Online Flow Experiences. *Journal of Consumer Psychology*, 12(1&2), 3-16.

Novak, T.P., Hoffman, D.L., & Yung, Y.F. (2000). Measuring the Customer Experience in Online Environments: A Structural Modeling Approach. *Marketing Science*, 19(1), 22-42.

Online/microtransaction growth opens up new ways to play and new advertising opportunities. (2016). PricewaterhouseCoopers LLP. Retrieved from http://www.pwc.com/gx/en/industries/entertainment-media/outlook/segment-insights/video-games.html

Reichheld, F. F. & Schefter, P. (2000). E-Loyalty: Your Secret Weapon on the Web. *Harvard Business Review*, July-August, 105-113.

Sherry, J.L. (2004). Flow and Media Enjoyment. *Communication Theory*, 14(4), 328-347.

Sirgy, M. J. (1982). Self-Concept in Consumer Behavior: A Critical Review. *Journal of Consumer Research*, 9(3), 287-300.

Sirgy, M. J. (1985). Using Self-Congruity and Ideal Congruity to Predict Purchase Motivation. *Journal of Business Research*, 13, 195-206.

Sirgy, M. J., Johar, J.S., Samli, A.C. & Claiborne, C.B. (1991). Self-Congruity Versus Functional Congruity: Predictors of Consumer Behavior. *Journal of the Academy of Marketing Science*, 19(4), 363-375.

Sirgy, M. J., Grewal, D., Mangleburg, T.F., Park, J., Chon, K., Claiborne, C.B., Johar, J.S. & Berkman, H. (1997). Assessing the Predictive Validity of Two Methods Measuring Self-Image Congruence. *Journal of the Academy of Marketing Science*, 25(3), 229-241.

Sirgy, M. J., Grewal, D., & Mangleburg, T. (2000). Retail Environment, Self-Congruity, and Retail Patronage: An Integrative Model and a Research Agenda. *Journal of Business Research*, 49, 127-138.

Soutter, A.R.B. & Hitchens, M. (2016). The relationship between character identification and flow state within video games. *Computers in Computer Behavior*, 55, 1030-1038.

Strauss, A. & Corbin, J. (1990). *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. Thousand Oaks, California: SAGE Publications.

Teng, C., Chen, M., Chen, Y. & Li, Y. (2012). Loyalty Due to Others: The Relationships Among Challenge, Interdependence, and Online Gamer Loyalty. *Journal of Computer-Mediated Communication*, 17(4), 489-500.

Teng, C. & Chen, W. (2014). Team participation and online gamer loyalty. *Electronic Commerce Research and Applications*, 13(1), 24-31.

Trochim, W.M., Donnelly, J.P., & Arora, K. (2016). *Research Methods: The Essential Knowledge Base*. Boston, MA: Cengage Learning.

Tseng, F., Huang, H., & Teng, C. (2015). How Do Online Game Communities Retain Gamers? Social Presence and Social Capital Perspectives. *Journal of Computer-Mediated Communication*, 20(6), 601-614.

Van Looy, J., Courtois, C. De Vocht, M., & De Marez, L. (2012). Player Identification in Online Games: Validation of a Scale for Measuring Identification in MMOGs. *Media Psychology*, 15, 197-221.

Wang, L.C. & Hsaio, D.F. (2012). Antecedents of flow in retail store shopping. *Journal of Retailing and Consumer Services*, 19, 381-389.

Yu, C., Lin, P., & Chen, C. (2013). How brand image, country of origin, and self-congruity influence internet users' purchase intention. *Social Behavior and Personality*, 41(4), 599-611.

Zhou, Z., Jin, X., Fang, Y. & Vogel, D. (2015). Toward a theory of perceived benefits, affective commitment, and continuance intention in social virtual worlds: cultural values (indulgence and individualism) matter. *European Journal of Information Systems*, 24(3), 247-261.

APPENDIX

APPENDIX A

CONSTRUCT DEFINITIONS

Table 37. Construct Definitions by Reference

Constructs	Definitions
Brand Loyalty	• Brand loyalty can be expressed through six conditions: "(1) the biased (i.e., nonrandom), (2) behavioral response (i.e., purchase), (3) expressed over time, (4) by some decision-making unit, (5) with respect to one or more alternative brands out of a set of such brands, and (6) is a function of psychological (decision-making, evaluative) processes." (Jacoby & Kyner, 1973) ◦ "The degree of attachment a customer has for a particular brand" (Liu, et al., 2012; Leckie, Nyadzayo, & Johnson, 2016) • "Central indicator of customer relational strength" (cognitive, affective, conative, action) (He, 2012) • Re-purchase intention (Sirgy, Johar, Samli & Claiborne, 1991; Bloemer & Kasper, 1995; Amine, 1998; Kressmann, et al., 2006; Joe & Chiu, 2008; Dwivedi, 2015) • As "Gamer Loyalty": the tendency to engage in a game repetitively (Choi & Kim, 2004; Teng & Chen, 2014) • As "Continuance Intention": "subjective willingness of continued usage" (Zhou, et al., 2015; Tseng, Huang & Teng, 2015)
Attitudinal Brand Loyalty	• "Planned commitment" to a brand, "repurchase intention, word-of-mouth, and/or cross-buying potential" (Kressmann, et al., 2006)
Behavioral Brand Loyalty	• Behavioral indicators, including "share of wallet, the percentage of brand purchases, re-purchase behavior" (Kressmann, et al., 2006)

APPENDIX B

MEASUREMENTS

Table 38. Measurements by Reference

Construct	Measurement
Attitudinal Brand Loyalty	• Survey questions related to purchase preference and differentiation (He, 2012) • Survey questions related to recommendation, repeat game playing, and positive word of mouth (Huang & Hsieh, 2011) • Survey questions including the intention to purchase of same brand, in current financial context and in financial context of selected automobile (Kressmann, et al., 2006) • Survey questions indicating willingness to visit a particular store when the need arises (Sirgy, Johar, Samli & Claiborne, 1991) • Survey questions related to game selection, intention to play, positive word of mouth, and recommendation (Teng, et al., 2012; Teng & Chen, 2014) • Survey questions related to "continuation intention" (Zhou, et al., 2015)
Behavioral Brand Loyalty	• Measurement of shopping frequency to particular stores (Sirgy, Johar, Samli & Claiborne, 1991)
Self-Congruity	• Survey modeled by Aaker's brand personality measures, including sincerity, excitement, competence, sophistication, and ruggedness; comparison of self and brand (Kressmann, et al., 2006) • Score calculated from the difference between "symbolic store-image and social and ideal social self-image"; actual self-image defined through cues of how a respondent replies in regard to their "actual self" (Sirgy, Johar, Samli & Claiborne, 1991) • Self-reported reflection from respondents when considering the product versus one's self (Sirgy, 1985; Sirgy, 1997)
Ideal Self-Congruity	• Ideal self-image defined through cues of how a respondent replies in regard to their "ideal self" (Sirgy, Johar, Samli & Claiborne, 1991)
Social Self-Congruity	• Score calculated from the difference between "symbolic store-image and social and ideal social self-image"; social self-image defined through cues of how a respondent replies in regard to their "social self" or "how [they] believe other people see" them (Sirgy, Johar, Samli & Claiborne, 1991)

Table 38, continued

Ideal Social Self-Congruity	• Score calculated from the difference between "symbolic store-image and social and ideal social self-image"; social self-image defined through cues of how a respondent replies in regard to their "ideal social self" or "the sort of person [they] like to be seen by others" (Sirgy, Johar, Samli & Claiborne, 1991)
Virtual World Self-Congruity	• Survey that include the "extent to which they identified with users of the brand in the virtual world (e.g., "I am very much like the typical avatar that uses products with this brand in Second Life") and self-concept ("The brand image is a highly consistent with how I see myself in Second Life")" (Gabisch, 2010)
Flow	• Survey data collection from gaming players; flow based on three questions including frequency of experiencing flow and agreement (Liu, 2017)
Player-Character Identification	• Cross-sectional survey of World of Warcraft players; focus on scale validation for measuring identification in massively multiplayer online games (Van Looy, Courtois, De Vocht, and De Marez, 2012); survey questions categorized as similarity identification, embodied presence, and wishful identification

APPENDIX C

ANTECEDENTS

Table 39. Antecedents by Reference

Antecedent	Description	Reference(s)
Self-Congruity/ Actual Self-Congruity	Alignment of one's self-image and their perceived image of the brand or product; cognitive matching between value-expressive attributes of a given product (brand or store) and consumer self-concept"; a comparison between "how a person perceives himself/herself" and a product-image perception	(Sirgy, 1982; Sirgy 1985; Sirgy, Johar, Samli & Claiborne, 1991; Sirgy, Grewal, & Mangleburg, 2000; Kressmann, et al., 2006)
Ideal Self-Congruity	Alignment of one's ideal self-image rather than actual self-image with perceived image of brand or product; a comparison between "how a person would like to perceive himself/herself" and a product-image perception	(Sirgy, 1982; Sirgy, Johar, Samli & Claiborne, 1991; Sirgy, Grewal & Mangleburg, 2000)
Social Self-Congruity	A comparison between "how a person presents himself/herself to others" and a product-image perception	(Sirgy, 1982; Sirgy, Johar, Samli & Claiborne, 1991; Sirgy, Grewal & Mangleburg, 2000)
Ideal Social Self-Congruity	A comparison between how a person would like to present himself/herself to others" and a product-image perception	(Sirgy, 1982; Sirgy, Johar, Samli & Claiborne, 1991; Sirgy, Grewal & Mangleburg, 2000)
Virtual World Self-Congruity	The perception that "product and brand experiences in the virtual world [are] consistent with their self-image"	(Gabisch, 2010)
Player-Character Identification	"The more similar a video game character is to the player will be related to player's reporting they identify with their video game character more"	(Soutter & Hitchens, 2016)
Flow	"A cognitive state experienced during gameplay…" "…determined by high skill levels, high challenge levels, focused attention, and telepresence" "holistic sensation that people feel when they act with total involvement"	(Liu, 2017; Csikszentmihalyi, 1975)

APPENDIX D

CONSEQUENCES

Table 40. Consequences by Reference

Consequence	Description	Reference(s)
Brand Confidence	"The consumers' confidence in the brand"	(Amine, 1998)
Positive word of mouth	"Positive word of mouth communication or brand support"	(Amine, 1998)
Continued engagement with product/brand	"An indicator of continuance and represents an important behavioral consequence in online gaming;" "continuance intention"	(Huang & Hsieh, 2011; Zhou, et al., 2015)
Firm Competitive Advantage	"Loyal customers provide a competitive advantage for firms and customer (or gamer) loyalty is essential to service providers"	(Reichheld & Schefter, 2000; Teng, et al., 2012)
Repeat Purchase	Discussed as a type of brand loyalty or result of brand loyalty; behavior of repeat purchasing	(Bloemer & Kasper, 1995; Amine, 1998; Kressmann, et al., 2006; Joe & Chiu, 2008; Huang & Hsieh, 2011)

APPENDIX E

INTERVIEW SCREENER

Thank you for your interest in our research study regarding your gaming experience. Please complete the following 5-minute survey to provide important information relevant to this research. Please note that this information will be used only to determine your eligibility for this research and will not be shared beyond the scope of this project. Respondents under the age of 18 will not qualify for this study. If you are accepted into the study, you will receive a $75 Amazon gift code after a short pre-interview survey and interview are completed. If you qualify, you will receive an E-mail with additional instructions. Participation is completely voluntary, and you may discontinue at any time.

1. Please provide your birth date [drop-down month/day/year]
    a. (<18) – DISQUALIFY from interview selection

2. How often do you participate in the following types of games? [Daily, Weekly, Monthly, Yearly, Less Often, Never]
    a. Puzzle games (e.g. Candy Crush, Bejeweled, Sudoku)
    b. Card/board games (e.g. Solitaire, Life, Monopoly)
    c. Word games (e.g. Words with Friends, Scrabble)
    d. Action games (e.g. Call of Duty, Street Fighter)
    e. Adventure games (e.g. Legend of Zelda, Nancy Drew)
    f. Trivia games (e.g. Jeopardy, Trivia Crack)
    g. Platformer games (e.g. Super Mario, LittleBigPlanet)
    h. Simulation games (e.g. The Sims, Football Manager)
    i. Role-playing games (e.g. Dungeons & Dragons, The Elder Scrolls)
    j. Strategy games (e.g. Risk, Civilization)
    k. Massively Multiplayer Online (MMO) games (e.g. World of Warcraft, Clash of Clans)
    l. Music games
    m. Racing games
    n. Other type(s) of game(s)

3. Of the games that you play daily or weekly, how many hours do you spend each week? [pull through responses from question 2 – responded daily or weekly – numeric entry]
    a. Less than 1 hour per week
    b. 1-7 hours per week
    c. 7-14 hours per week
    d. More than 14 hours per week

4. Of the games that you play monthly, how many hours do you spend each month? [pull through responses from question 2 – responded monthly – numeric entry]
    a. Less than 5 hour per month
    b. 5-10 hours per month
    c. More than 10 hours per month

5. Through which method(s) do you play the following types of games most often? [pull through responses from question 2 – responded monthly or more – check all that apply]
   [Offline/In Person, Desktop/Laptop Computer, Tablet, Mobile Phone, Gaming Console, VR, Voice/Video conferencing}

6. In which environment(s) do you play the following types of games most often? [pull through responses from question 2 – responded monthly or more – check all that apply)
   [Alone, Small Group (10 or less), Large Group (More than 10), Convention]

7. What is the most recent time frame that you have played a game that requires the creation of a character or avatar?
    a. I currently play a game that required the creation of a character or avatar [qualification for interview]
    b. I do not currently play such a game, but I did within the past 1 year [qualification for interview]
    c. I do not currently play such a game, but I did more than 1 year ago but less than 5
    d. I do not currently play such a game, but I did more than 5 years ago
    e. I never played a game that required the creation of a character or avatar

8. Which games do you play most often (please indicate the names/brands of the games)? [three single-entry text boxes]
    a. Open-ended

9. How would you rate your level of passion for the following types of games? [pull through responses from question 2 – responded monthly or more]
   [1 – Very Low, 2 – Low, 3 – Neutral, 4 – High, 5 – Very High]

10. Please select the best response to the following:
    a. Gender (Female, Male, Transgender, Do Not Identify, Prefer Not to Respond)
    b. Employment Status (Employed 40+ Hours Per Week, Employed 20-39 Hours Per Week, Employed 1-19 Hours Per Week, Employed Less Than 10 Hours Per Week, Not Employed But Looking for Work, Not Employed But Not Looking for Work, Retired, Disabled/Not Able to Work
    c. Level of Education Completed (Some High School, High School or Equivalent, Some College, College, Trade/Technical/Vocational, Graduate)
    d. Income (<$25,000; $25,000-$49,999; $50,000-$99,999; $100,000-$149,999; $150,000-$199,999; $200,000 or more)
    e. Residence (Own, Rent, Lives with Others)
    f. Marital Status (Single, Married, Domestic Partner, Divorced, Widowed)
    g. Children under the age of 18 (Yes in the household full time; Yes but not in the household full time; No)
    h. Please enter your zip code.

11. Please provide your E-mail address so that we may contact you for the study.

Thank you for your interest. If you are selected for an interview, you will be contacted via E-mail.

APPENDIX F

PRE-INTERVIEW PERSONALITY ASSESSMENT

Thank you for your participation in this interview regarding your experience with gaming. We appreciate your time. Prior to the interview, please complete the following grid based on how strongly you agree or disagree with the following traits regarding yourself.

Please complete the following grid based on how strongly you agree or disagree with the following traits regarding yourself: [1 – Strongly Disagree through 7 – Strongly Agree]

Table 41. Personality Profile Attributes

Category	Sub-Category	Attribute (in survey)
Sincerity	Down to Earth	Down to Earth Family Oriented Small Town
	Honest	Honest Sincere Real
	Wholesome	Wholesome Original
	Cheerful	Cheerful Sentimental Friendly
Excitement	Daring	Daring Trendy Exciting
	Spirited	Spirited Cool Young
	Imaginative	Imaginative Unique
	Up to Date	Up to Date Independent Contemporary

Table 41, continued

Competence	Reliable	Reliable Hard Working Secure
	Intelligent	Intelligent Technical Corporate
	Successful	Successful Leader Confident
Sophistication	Upper Class	Upper Class Glamorous Good Looking
	Charming	Charming Feminine Smooth
Ruggedness	Outdoorsy	Outdoorsy Masculine Western
	Tough	Tough Rugged

APPENDIX G

INTERVIEW GUIDE (SEMI-STRUCTURED)

If participant had not completed the personality assessment, time was allowed to complete prior to interview start.

[Welcome and Introduction – 5 min]

Thank you for your participation in this study. We are examining people's experiences with both online and offline games. Please remember that your participation is completely voluntary, and you may quit at any time by notifying me. You agreed to the recording of this session within your consent form [IF AGREED]. While I am recording this session, your comments will be kept anonymous and the recording will be destroyed when no longer needed. Please be as open and honest as possible. Honesty will give me the best results for this study. The results from this study will help me design further research into gaming and its design. After we complete the interview, I will E-mail you a $75 Amazon gift code for your assistance. Do you have any questions before we begin the interview?

[Engagement with Gaming – 10-15 min]

- Please tell me about the types of games that you currently play.
    - Names of all games
    - Tenure for each game
    - Frequency of play
- For the 1-2 games that you play the MOST frequently:
    - With whom do you play the game?
    - Where do you typically play? (device, location)
    - What are some primary reasons why you play this game?
    - How did you first learn about it?
    - Favorite parts of game
    - Least favorite parts of game
    - How would you describe the game if it were a person?

- Please tell me about the types of games that you have played in the past.
    - For what reasons do you no longer play these games?

Characters/Personas – 10-15 min

- Have you developed a character or avatar for this game? (If YES, continue; If NO, probe for other games with character/avatar experience)
    - How many characters/avatars have you created for the game in the past year?
        - How long did you take to create the character?
        - Tell me about the character(s) that you play the MOST.
    - How would you describe the character's personality?
    - How similar is your character's personality to your own?
        - If similar, why do you feel you created a character so similar to yourself?
        - If different, why do you feel you created a character so different from yourself?
    - How would you feel if you were not able to create your own character, rather you were assigned a character?
    - How would other players in the game describe your character?
    - How does your character development change if you are playing a short-term game (once or twice only) versus long-term game?

Monetary Expeditures – 5-10 min

- Have you spent any money on this game?
    - If so, what do you spent money on? How much? How often do you spend?
    - If not, are there pay options? If so, why do you choose not to pay?
    - Is there anything that could be offered that would make you pay/pay more?

- Are there any games that you do not play due to the cost?
    - If yes, which ones and why?
    - Is there anything that could be done to encourage you to pay to play that/those game(s)?

Future Intentions & Loyalty – 10-15 min

- If you were to play a game today, would you stick to the same game? [adapted from Kressmann]

- Why do you say that?

- Do you expect to continue playing this game in the future?

- What would stop you from playing the game in the future?

- Do you plan to pay for the game or any related item in the future?
    - If so, for what and how much?
    - If not, why not? Would there be anything that would change your willingness to pay?

- Finally, what is the most important reason that keeps you playing?

- Is there anything else that you would like to add that I may have missed?

[Thank You and Debrief]

Thank you again for participating in this study. Your input was valuable and helpful. As mentioned, I am studying people's experience with games – more specifically what makes people loyal to a game. I am focusing much attention to people's relationships with their characters and avatars. This research will provide valuable direction for gaming companies in their game design and marketing efforts. As a thank you for your feedback, I will be sending you a $75 Amazon gift code via E-mail. If you have any difficulties, please let me know.

APPENDIX H

INTERVIEW PARTICIPANT GAME USAGE

Table 42. Phase 1 – participants who reported playing each type of game

Game Type	Participants	%
Puzzle games (e.g. Candy Crush, Bejeweled, Sudoku)	18	58.1
Card/board games (e.g. Solitaire, Life, Monopoly)	20	64.5
Word games (e.g. Words with Friends, Scrabble)	19	61.3
Action games (e.g. Call of Duty, Street Fighter)	24	77.4
Adventure games (e.g. Legend of Zelda, Nancy Drew)	25	80.6
Trivia games (e.g. Jeopardy, Trivia Crack)	11	35.5
Platformer games (e.g. Super Mario, LittleBigPlanet)	17	54.8
Simulation games (e.g. The Sims, Football Manager)	12	38.7
Role-playing games (e.g. Dungeons & Dragons, The Elder Scrolls)	25	80.6
Strategy games (e.g. Risk, Civilization)	19	61.3
Massively Multiplayer Online (MMO) games (e.g. World of Warcraft, Clash of Clans)	14	45.2
Music games	4	12.9
Racing games	6	19.4
Other type(s) of game(s)	17	54.8

Table 43. Phase 1 – participants who reported having a high-very high passion for each type of game (% based on number of players who reported playing each game)

Game Type	Participants	%
Puzzle games (e.g. Candy Crush, Bejeweled, Sudoku)	1	5.6
Card/board games (e.g. Solitaire, Life, Monopoly)	10	50.0
Word games (e.g. Words with Friends, Scrabble)	3	15.8
Action games (e.g. Call of Duty, Street Fighter)	12	50.0
Adventure games (e.g. Legend of Zelda, Nancy Drew)	18	72.0
Trivia games (e.g. Jeopardy, Trivia Crack)	1	9.1
Platformer games (e.g. Super Mario, LittleBigPlanet)	8	47.1
Simulation games (e.g. The Sims, Football Manager)	8	66.7
Role-playing games (e.g. Dungeons & Dragons, The Elder Scrolls)	23	92.0
Strategy games (e.g. Risk, Civilization)	14	73.7
Massively Multiplayer Online (MMO) games (e.g. World of Warcraft, Clash of Clans)	10	71.4
Music games	2	50.0
Racing games	1	16.7
Other type(s) of game(s)	10	58.8

APPENDIX I

INTERVIEW PARTICIPANT DEMOGRAPHICS

Table 44. Phase 1 Interview – Gender

Gender	Participants	%
Female	6	19.4
Male	25	80.6

Table 45. Phase 1 Interview – Employment Status

Employment Status	Participants	%
Employed 40+ Hours Per Week	16	51.6
Employed 20-39 Hours Per Week	5	16.1
Employed 10-19 Hours Per Week	3	9.7
Employed Less Than 10 Hours Per Week	1	3.2
Not Employed But Looking for Work	2	6.5
Not Employed But Not Looking for Work	1	3.2
Retired	2	6.5
Disabled/Not Able to Work	1	3.2

Table 46. Phase 1 Interview – Level of Education Completed

Level of Education Completed	Participants	%
Some High School	0	0
High School or Equivalent	1	3.2
Some College	8	25.8
College	18	58.1
Trade/Technical/ Vocational	0	0
Graduate	4	12.9

Table 47. Phase 1 Interview – Income

Income	Participants	%
<$25,000	9	29.0
$25,000-$49,999	11	35.5
$50,000-$99,999	6	19.4
$100,000-$149,999	3	9.7
$150,000-$199,999	2	6.5
$200,000 or more	0	0

Table 48. Phase 1 Interview – Residence

Residence	Participants	%
Own	8	25.8
Rent	16	51.6
Live With Others	7	22.6

Table 49. Phase 1 Interview – Marital Status

Marital Status	Participants	%
Single	10	32.3
Married	13	41.9
Domestic Partner	3	9.7
Divorced	5	16.1
Widow	0	0

Table 50. Phase 1 Interview – Children under the age of 18

Children under the age of 18	Participants	%
No	20	64.5
Yes but not in the household full time	2	6.5
Yes in the household full time	9	29.0

Table 51. Phase 1 Interview – Geography

State	Participants	%
AZ	1	3.2
CA	1	3.2
CO	2	6.5
FL	1	3.2
KY	1	3.2
MA	2	6.5
MD	3	9.7
MT	3	9.7
NH	1	3.2
NJ	1	3.2

State	Participants	%
NM	1	3.2
NV	1	3.2
NY	3	9.7
OH	1	3.2
OK	1	3.2
OR	1	3.2
PA	3	9.7
TX	1	3.2
VA	2	6.5
VT	1	3.2

APPENDIX J

PHASE 2 SURVEY QUESTIONS

Thank you for your interest in our research study regarding your gaming experience. Please complete the following 10-15 minute survey to provide important information relevant to this research. Please note that this information will not be shared beyond the scope of this project. Respondents under the age of 18 will not qualify for this study. Participation is completely voluntary, and you may discontinue at any time. At the end of the survey, there is an optional field to provide your E-mail address to receive a $5 gift code (limit 1 per person). Only participants who complete the survey in its entirety will receive the gift code. If you have any issues or questions, please E-mail Maggie Jordan at tug28457@temple.edu.

1. Are you 18 years or older? (Yes/No)
    a. If No, survey ends/disqualification.

2. Do you currently play a game for which you created a character or avatar for gameplay? (Yes/No)
    a. If No, survey ends/disqualification.

3. Please select one game for which you developed a character or avatar. What is the name of that game? (Open-Ended)

4. What is the name of your character? (Open-Ended)

5. Please select Very Likely for this response (Not Likely At All/Somewhat Likely/Likely/Very Likely)
    a. Quality Check: If Very Likely is not selected, survey ends/disqualification.

6. Please describe {{Q4 – Character Name}} based on the following personality traits: (Disagree Strongly/Disagree Moderately/Disagree Somewhat/Neither Agree Nor Disagree/Agree Somewhat/Agree Moderately/Agree Strongly)
    a. Extraverted, enthusiastic
    b. Critical, quarrelsome
    c. Dependable, self-disciplined
    d. Anxious, easily upset
    e. Open to new experiences, complex
    f. Reserved, quiet
    g. Sympathetic, warm
    h. Disorganized, careless
    i. Calm, emotionally stable
    j. Conventional, uncreative

7. Please rate your skill level when playing {{ Q3 – Game Name}}:
    a. Sliding Scale (0 – Low Skill Level/50 – Average Skill Level/100 High Skill Level)

8. Please indicate your level of agreement with the following statements: (Strongly Agree/Agree/Neither Agree Nor Disagree/ Disagree/Strongly Disagree)
    a. My character is like me in many ways.
    b. My character resembles me.
    c. I Identify with my character.
    d. My character is an extension of myself.
    e. My character is similar to me.
    f. I resemble my character.

9. Please indicate your level of agreement with the following statements: (Strongly Agree/Agree/Neither Agree Nor Disagree/ Disagree/Strongly Disagree)
    a. When I am playing, it feels as if I am my character.
    b. I feel like I am inside my character when playing.
    c. In the game, it is as if I become one with my character.
    d. When I am playing, I am transported into my character.
    e. When playing, it feels as if my character's body becomes my own.
    f. In the game, it is as if I am acting directly through my character.

10. Please indicate your level of agreement with the following statements: (Strongly Agree/Agree/Neither Agree Nor Disagree/ Disagree/Strongly Disagree)
    a. If I could become my character, I would.
    b. I would like to be more like my character.
    c. My character is an example of me.
    d. My character is a better me.
    e. My character has characteristics that I would like to have.

11. Flow is defined as a feeling of immersion within an experience when you act with total involvement. Being "in the zone." Please respond to the following three questions in regard to "flow." (Totally Agree – Totally Disagree; 7 points)
    a. I have experienced flow when playing {{Q3 – Game Name}}.
    b. Most of the time I play {{Q3 – Game Name}} I feel that I am in flow.

12. In general, how frequently would you say you experience "flow" when playing {{Q3 – Game Name}}?
    a. Frequency (Not Very Frequently – Very Frequently; 5 points)

13. Please indicate your level of agreement with the following statements: (Strongly Agree/Agree/Neither Agree Nor Disagree/ Disagree/Strongly Disagree)
    a. This game is my first choice.
    b. I will continue to play this game.
    c. I am willing to say positive things about this game to others.
    d. If others want to play a game, I will recommend this game.
    e. I will encourage friends and relatives to play this game.
    f. I will play sequels of this game in the future.
    g. I will play other games from this company in the future.

14. Please complete the following. *I see myself as:* (Disagree Strongly/Disagree Moderately/Disagree Somewhat/Neither Agree Nor Disagree/Agree Somewhat/Agree Moderately/Agree Strongly)
    a. Extraverted, enthusiastic
    b. Critical, quarrelsome
    c. Dependable, self-disciplined
    d. Anxious, easily upset
    e. Open to new experiences, complex
    f. Reserved, quiet
    g. Sympathetic, warm
    h. Disorganized, careless
    i. Calm, emotionally stable
    j. Conventional, uncreative

15. Please select Not Likely At All for this response (Not Likely At All/Somewhat Likely/Likely/Very Likely)
    a. Quality Check: If Not Likely At All is not selected, survey ends/disqualification.

16. Please complete the following. *I wish I could be:* (Disagree Strongly/Disagree Moderately/Disagree Somewhat/Neither Agree Nor Disagree/Agree Somewhat/Agree Moderately/Agree Strongly)
    a. Extraverted, enthusiastic
    b. Critical, quarrelsome
    c. Dependable, self-disciplined
    d. Anxious, easily upset
    e. Open to new experiences, complex
    f. Reserved, quiet
    g. Sympathetic, warm
    h. Disorganized, careless
    i. Calm, emotionally stable
    j. Conventional, uncreative

17. Please complete the following. *I believe that others see me as:* (Disagree Strongly/Disagree Moderately/Disagree Somewhat/Neither Agree Nor Disagree/Agree Somewhat/Agree Moderately/Agree Strongly)
    a. Extraverted, enthusiastic
    b. Critical, quarrelsome
    c. Dependable, self-disciplined
    d. Anxious, easily upset
    e. Open to new experiences, complex
    f. Reserved, quiet
    g. Sympathetic, warm
    h. Disorganized, careless
    i. Calm, emotionally stable
    j. Conventional, uncreative

18. Please complete the following. *I wish others would see me as:* (Disagree Strongly/Disagree Moderately/Disagree Somewhat/Neither Agree Nor Disagree/Agree Somewhat/Agree Moderately/Agree Strongly)
    a. Extraverted, enthusiastic
    b. Critical, quarrelsome
    c. Dependable, self-disciplined
    d. Anxious, easily upset
    e. Open to new experiences, complex
    f. Reserved, quiet
    g. Sympathetic, warm
    h. Disorganized, careless
    i. Calm, emotionally stable
    j. Conventional, uncreative

19. Age (open response)

20. Gender
    a. Male
    b. Female
    c. Transgender
    d. Do Not Identify
    e. Prefer Not to Respond

21. Level of Education Completed
    a. Some High School
    b. High School or Equivalent
    c. Some College
    d. College or University
    e. Trade/Technical/Vocational
    f. Graduate

22. Income
    a. < $25,000
    b. $25,000 - $49,999
    c. $50,000 - $99,999
    d. $100,000 - $149,999
    e. $150,000 - $199,999
    f. $200,000 or more

23. Employment Status
    a. Employed 40+ Hours Per Week
    b. Employed 20-39 Hours Per Week
    c. Employed 10-19 Hours Per Week
    d. Employed Less Than 10 Hours Per Week
    e. Not Employed But Looking For Work
    f. Not Employed But Not Looking For Work
    g. Retired
    h. Disabled/Not Able to Work

24. Marital Status
    a. Single
    b. Married
    c. Domestic Partner
    d. Divorced/Separated
    e. Widowed

25. Residence
    a. Own
    b. Rent
    c. Neither Own Nor Rent

26. Children Under the Age of 18
    a. Yes in the household full time
    b. Yes but not in the household full time
    c. No

27. Zip Code (open response)

28. <u>OPTIONAL:</u> If you wish to receive the gift code, please enter your E-mail address (limit 1 per person). Please allow up to 2 weeks for delivery. (open response)

APPENDIX K

CONSTRUCT VARIABLE DESCRIPTIVE STATISTICS

Table 52. Construct Variable Descriptive Statistics

Construct	Question	Range	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness	Kurtosis
Similarity	My character is like me in many ways.	4	1	5	3.904296875	0.791726478	0.626830816	-1.490797826	3.368180304
Similarity	My character resembles me.	4	1	5	4.181640625	1.148561103	1.319192606	-1.339944526	0.791432757
Similarity	I identify with my character.	4	1	5	3.876953125	0.785444951	0.616923771	-1.166364199	2.333922287
Similarity	My character is an extension of myself.	4	1	5	3.39453125	0.869469874	0.755977862	0.05777564	0.316376866
Similarity	My character is similar to me.	4	1	5	3.421875	0.876832719	0.768835616	0.100029778	0.125436609
Similarity	I resemble my character.	4	1	5	4.1015625	1.184306009	1.402580724	-1.176715812	0.293529409
Embodied	When I am playing, it feels as if I am my character.	4	1	5	3.216796875	1.176195355	1.383435512	-0.021734297	-1.26086634
Embodied	I feel like I am inside my character when playing.	4	1	5	3.37109375	1.193173823	1.423663772	-0.476581376	-0.865658168
Embodied	In the game, it is as if I become one with my character.	4	1	5	3.40625	1.068587231	1.141878669	-0.295400378	-0.244169671
Embodied	When I am playing, I am transported into my character.	4	1	5	3.599609375	1.111160182	1.234676951	-0.501625825	-0.726507301
Embodied	When playing, it feels as if my character's body becomes my own.	4	1	5	3.04296875	1.174629631	1.37975477	0.229195729	-1.164558604
Embodied	In the game, it is as if I am acting directly through my character.	4	1	5	3.78125	0.857224393	0.734833659	-1.3792166	2.394948654
Wishful	If I could become my character, I would.	4	1	5	2.830078125	1.157141357	1.338976119	0.586199699	-0.877047352
Wishful	I would like to be more like my character.	4	1	5	4.1171875	1.13213923	1.281739237	-1.100819405	0.155828648
Wishful	My character is an example of me.	4	1	5	3.689453125	0.873196264	0.762471716	-1.194131947	1.621483083
Wishful	My character is a better me.	4	1	5	3.560546875	0.963241274	0.927833751	-1.016646615	0.670610427
Wishful	My character has characteristics that I would like to have.	4	1	5	3.419921875	0.876656159	0.768526021	0.018537123	0.257325636
Flow	I have experienced flow when playing {{ Q3 }}.	6	1	7	4.240234375	1.745809168	3.047849651	0.549935816	-1.212132536
Flow	Most of the time I play {{ Q3 }} I feel that I am in flow.	6	1	7	3.7421875	1.984267254	3.937316536	0.551943047	-1.30555084
Flow	Frequency of Flow	4	1	5	3.6953125	0.88083392	0.775868395	-1.089868704	1.313311454
Loyalty	This game is my first choice.	4	1	5	3.8203125	0.826977556	0.683891879	-0.738670808	0.339195444
Loyalty	I will continue to play this game.	4	1	5	4.412109375	0.940546664	0.884628027	-1.741903195	2.497326762
Loyalty	I am willing to say positive things about this game to others.	4	1	5	3.830078125	1.056354175	1.115884143	-1.026355303	0.428543578
Loyalty	If others want to play a game, I will recommend this game.	4	1	5	3.607421875	1.188736932	1.413095493	-0.467343564	-1.020977383
Loyalty	I will encourage friends and relatives to play this game.	4	1	5	3.976516634	1.177999467	1.387682744	-0.872000911	-0.469167914
Loyalty	I will play sequels of this game in the future.	4	1	5	3.974609375	0.858558754	0.737123135	-1.106075064	1.629918439
Loyalty	I will play other games from this company in the future.	4	1	5	3.67578125	0.846518931	0.7165943	0.342058745	-0.810692389

APPENDIX L

PHASE 2 DEMOGRAPHIC BREAKDOWNS BY SOURCE

Table 53. Phase 2 Survey – Age

	ALL	SOCIAL	EVENTS	PANEL
Mean	29.930	25.829	26.444	35.865
Standard Error	0.439	0.194	1.280	0.886
Median	27	25	24	34
Mode	25	28	23	25
Standard Deviation	9.944	3.185	7.681	12.752
Sample Variance	98.891	10.142	58.997	162.613
Kurtosis	3.696	12.354	4.015	0.104
Skewness	1.902	2.083	1.739	0.812
Range	57	31	36	57
Minimum	18	19	18	18
Maximum	75	50	54	75
Count	512	269	36	207

Table 54. Phase 2 Survey – Gender

	ALL SOURCES		SOCIAL		EVENTS		PANEL	
GENDER	Count	%	Count	%	Count	%	Count	%
Female	168	32.8%	29	10.8%	3	8.3%	136	65.7%
Male	342	66.8%	239	88.8%	33	91.7%	70	33.8%
Transgender	1	0.2%	0	0.0%	0	0.0%	1	0.5%
Prefer Not to Respond	1	0.2%	1	0.4%	0	0.0%	0	0.0%
Total	512	100.0%	269	100.0%	36	100.0%	207	100.0%

Table 55. Phase 2 Survey – Level of Education Completed

	ALL SOURCES		SOCIAL		EVENTS		PANEL	
LEVEL OF EDUCATION COMPLETED	Count	%	Count	%	Count	%	Count	%
Graduate	22	4.3%	1	0.4%	4	11.1%	17	8.2%
College or University	272	53.1%	201	74.7%	10	27.8%	61	29.5%
Some College	95	18.6%	29	10.8%	9	25.0%	57	27.5%
Trade/Technical/Vocational	26	5.1%	9	3.3%	2	5.6%	15	7.2%
High School or Equivalent	82	16.0%	20	7.4%	11	30.6%	51	24.6%
Some High School	15	2.9%	9	3.3%	0	0.0%	6	2.9%
Total	512	100.0%	269	100.0%	36	100.0%	207	100.0%

Table 56. Phase 2 Survey – Income

	ALL SOURCES		SOCIAL		EVENTS		PANEL	
INCOME	Count	%	Count	%	Count	%	Count	%
$200,000 or more	4	0.8%	1	0.4%	1	2.8%	2	1.0%
$150,000-$199,999	34	6.6%	28	10.4%	0	0.0%	6	2.9%
$100,000-$149,999	167	32.6%	150	55.8%	2	5.6%	15	7.2%
$50,000-$99,999	123	24.0%	63	23.4%	4	11.1%	56	27.1%
$25,000-$49,999	100	19.5%	25	9.3%	8	22.2%	67	32.4%
< $25,000	84	16.4%	2	0.7%	21	58.3%	61	29.5%
Total	512	100.0%	269	100.0%	36	100.0%	207	100.0%

Table 57. Phase 2 Survey – Employment Status

	ALL SOURCES		SOCIAL		EVENTS		PANEL	
EMPLOYMENT STATUS	Count	%	Count	%	Count	%	Count	%
Employed 40+ Hours Per Week	277	54.1%	185	68.8%	9	25.0%	83	40.1%
Employed 20-39 Hours Per Week	77	15.0%	34	12.6%	16	44.4%	27	13.0%
Employed 10-19 Hours Per Week	47	9.2%	34	12.6%	6	16.7%	7	3.4%
Employed Less Than 10 Hours Per Week	17	3.3%	12	4.5%	2	5.6%	3	1.4%
Not Employed But Looking for Work	36	7.0%	3	1.1%	2	5.6%	31	15.0%
Not Employed But Not Looking for Work	28	5.5%	1	0.4%	1	2.8%	26	12.6%
Retired	15	2.9%	0	0.0%	0	0.0%	15	7.2%
Disabled/Not Able to Work	15	2.9%	0	0.0%	0	0.0%	15	7.2%
Total	512	100.0%	269	100.0%	36	100.0%	207	100.0%

Table 58. Phase 2 Survey – Marital Status

	ALL SOURCES		SOCIAL		EVENTS		PANEL	
MARITAL STATUS	Count	%	Count	%	Count	%	Count	%
Widow	3	0.6%	0	0.0%	0	0.0%	3	1.4%
Divorced/Separated	24	4.7%	5	1.9%	0	0.0%	19	9.2%
Domestic Partner	38	7.4%	13	4.8%	2	5.6%	23	11.1%
Married	126	24.6%	49	18.2%	6	16.7%	71	34.3%
Single	321	62.7%	202	75.1%	28	77.8%	91	44.0%
Total	512	100.0%	269	100.0%	36	100.0%	207	100.0%

Table 59. Phase 2 Survey – Residence

	ALL SOURCES		SOCIAL		EVENTS		PANEL	
RESIDENCE	Count	%	Count	%	Count	%	Count	%
Own	317	61.9%	218	81.0%	8	22.2%	91	44.0%
Rent	158	30.9%	40	14.9%	14	38.9%	104	50.2%
Neither Own Nor Rent	37	7.2%	11	4.1%	14	38.9%	12	5.8%
Total	512	100.0%	269	100.0%	36	100.0%	207	100.0%

Table 60. Phase 2 Survey – Children Under Age of 18

	ALL SOURCES		SOCIAL		EVENTS		PANEL	
CHILDREN UNDER AGE OF 18	Count	%	Count	%	Count	%	Count	%
Yes in household full time	112	21.9%	25	9.3%	3	8.3%	84	40.6%
Yes but not in household full time	20	3.9%	7	2.6%	1	2.8%	12	5.8%
No	380	74.2%	237	88.1%	32	88.9%	111	53.6%
Total	512	100.0%	269	100.0%	36	100.0%	207	100.0%

APPENDIX M

HISTOGRAMS FOR ALL VARIABLES

Figure 18. Histogram: My character is like me in many ways.

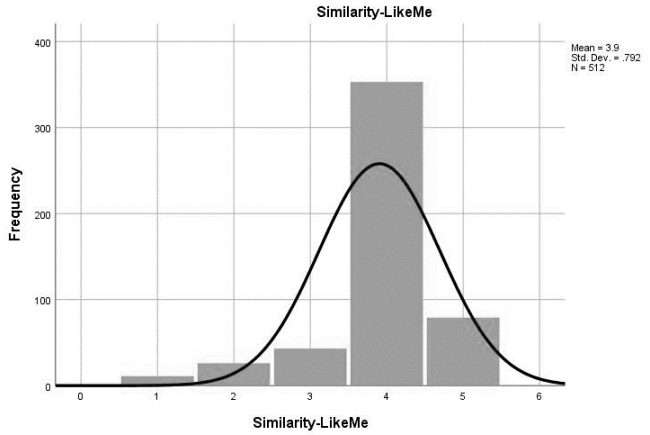


Figure 19. Histogram: My character resembles me.

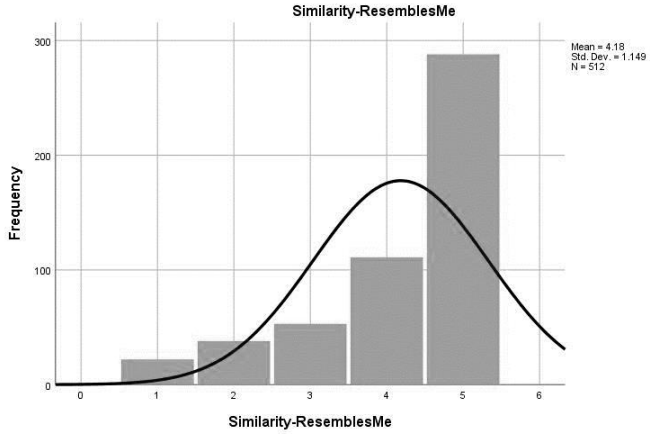


Figure 20. Histogram: I Identify with my character.

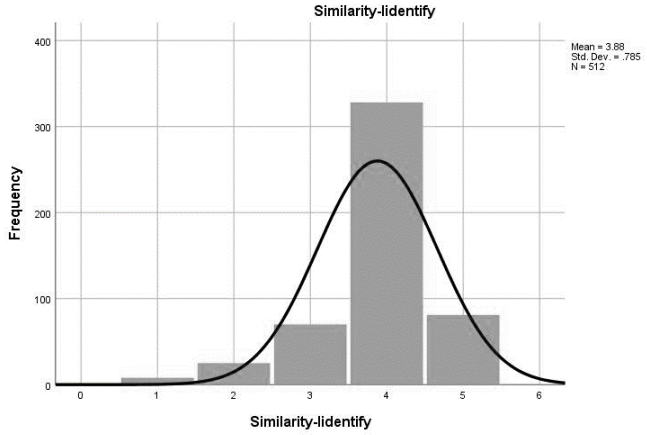


Figure 21. Histogram: My character is an extension of myself.

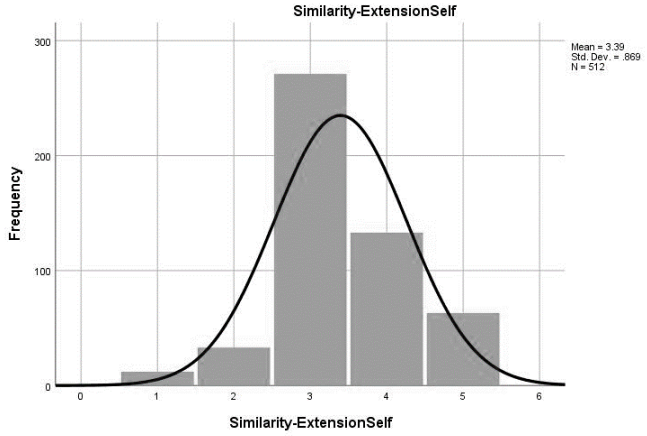


Figure 22. Histogram: My character is similar to me.

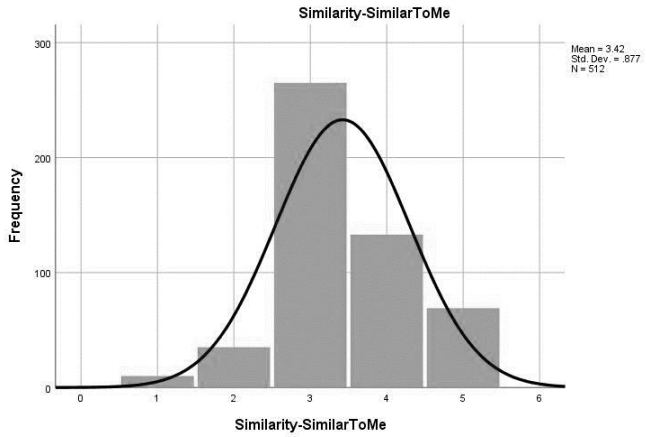


Figure 23. Histogram: I resemble my character.

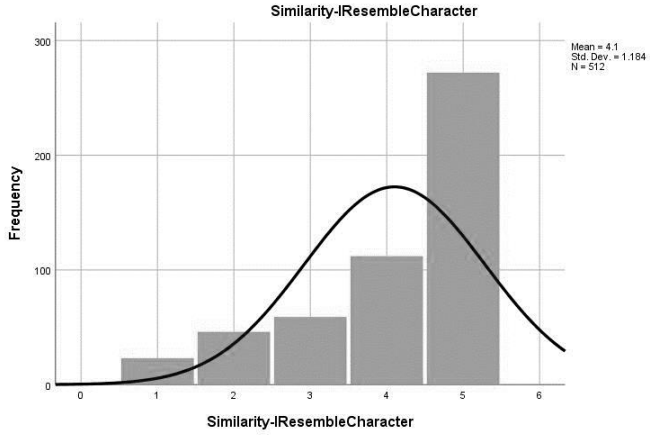


Figure 24. Histogram: When I am playing, it feels as if I am my character.

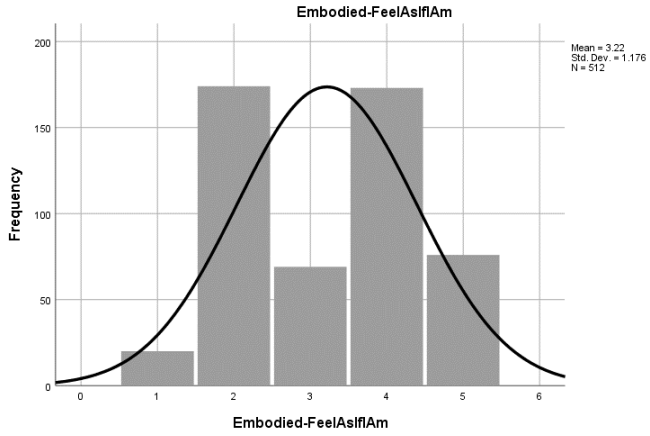


Figure 25. Histogram: I feel like I am inside my character when playing.

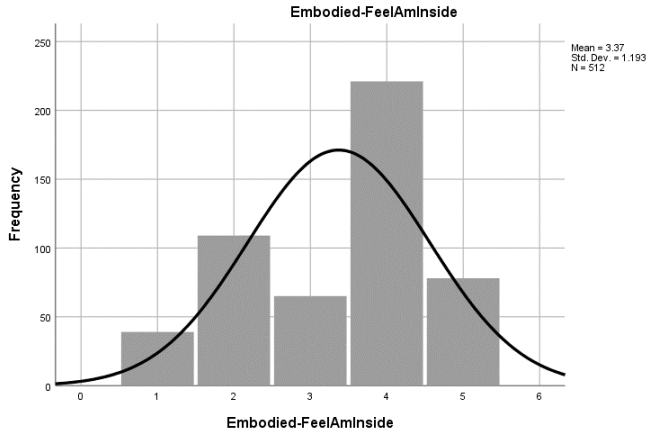


Figure 26. Histogram: In the game, it is as if I become one with my character.

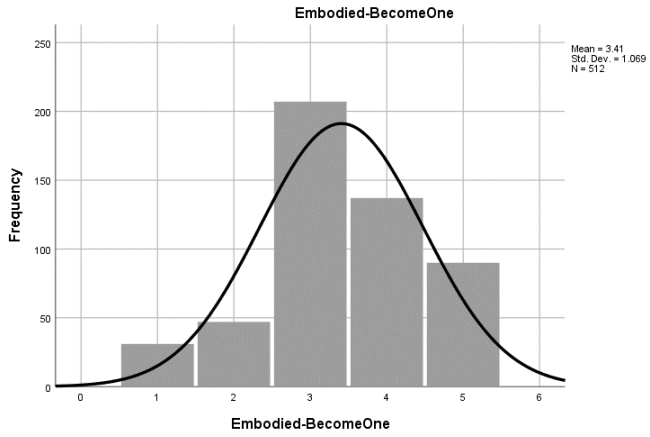


Figure 27. Histogram: When I am playing, I am transported into my character.

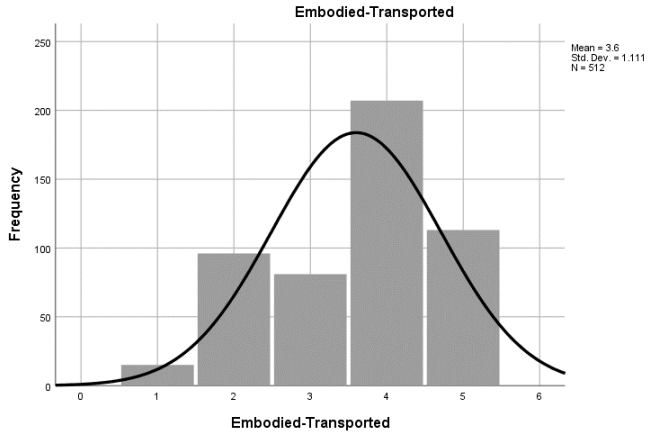


Figure 28. Histogram: When playing, it feels as if my character's body becomes my own.

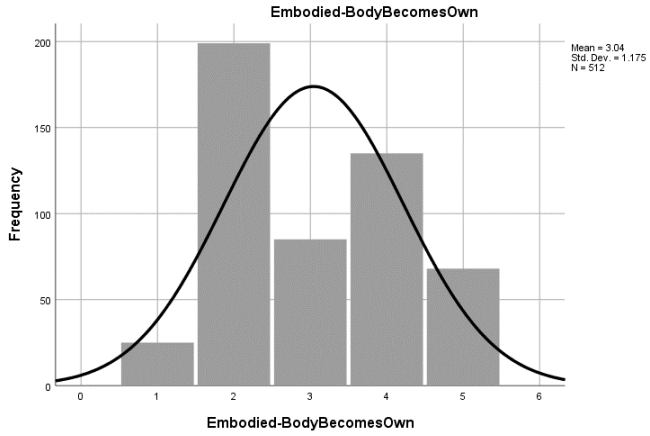


Figure 29. Histogram: In the game, it is as if I am acting directly through my character.

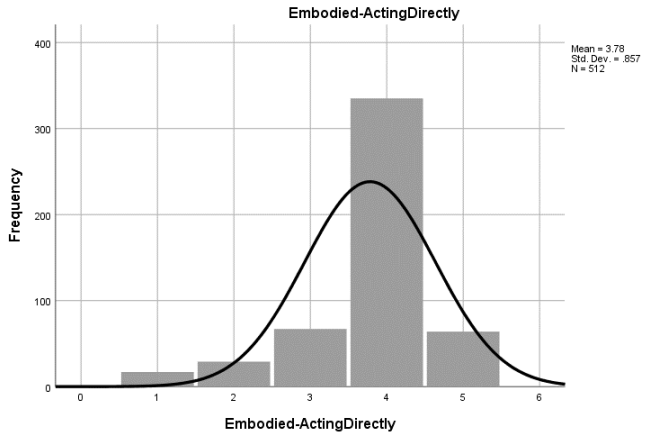


Figure 30. Histogram: If I could become my character, I would.

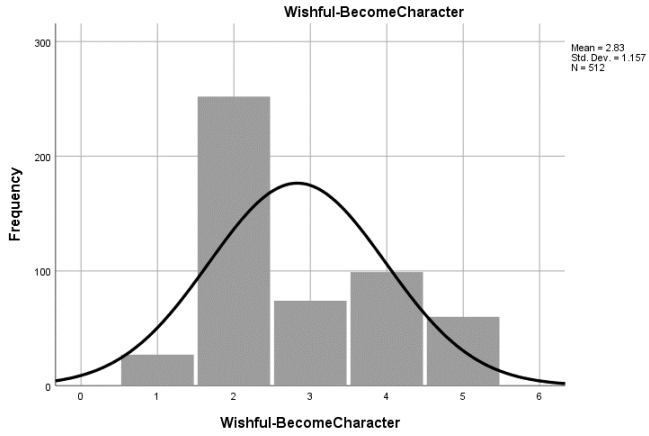


Figure 31. Histogram: I would like to be more like my character.

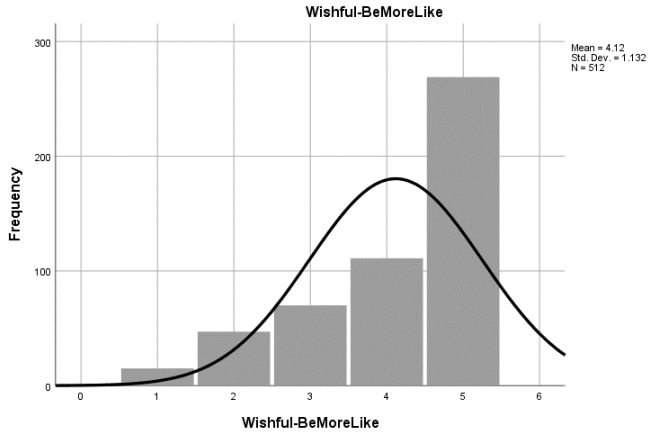


Figure 32. Histogram: My character is an example of me.

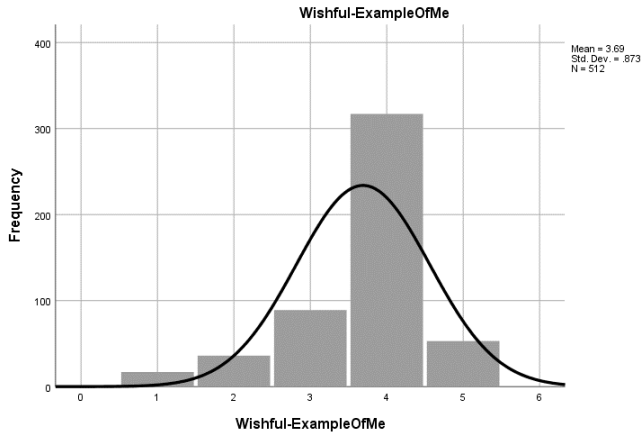


Figure 33. Histogram: My character is a better me.

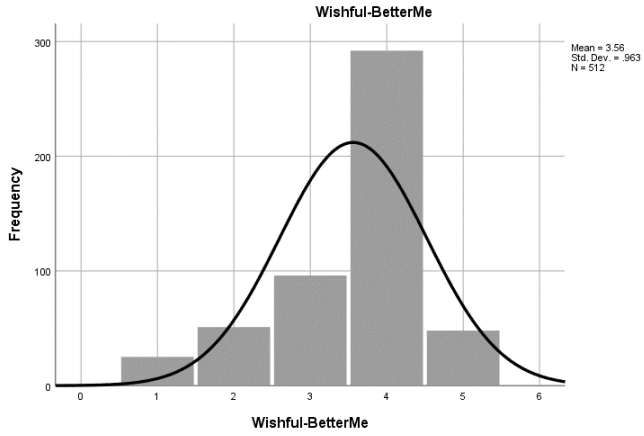


Figure 34. Histogram: My character has characteristics that I would like to have.

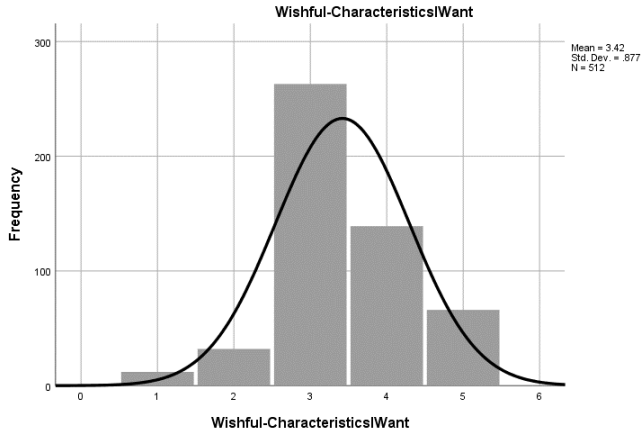


Figure 35. Histogram: I have experienced flow when playing {{Q3 – Game Name}}.

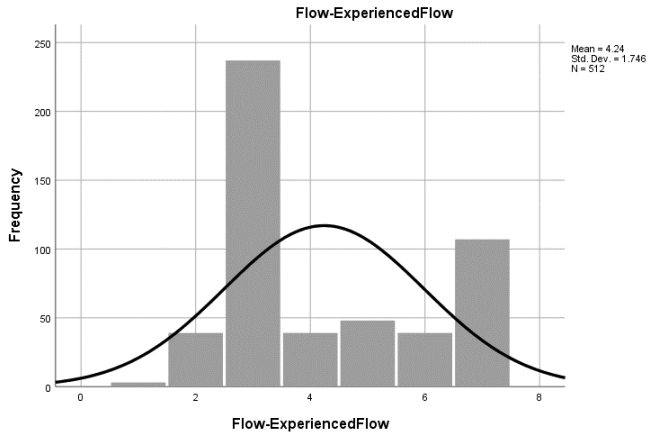


Figure 36. Histogram: Most of the time I play {{Q3 – Game Name}} I feel that I am in flow.

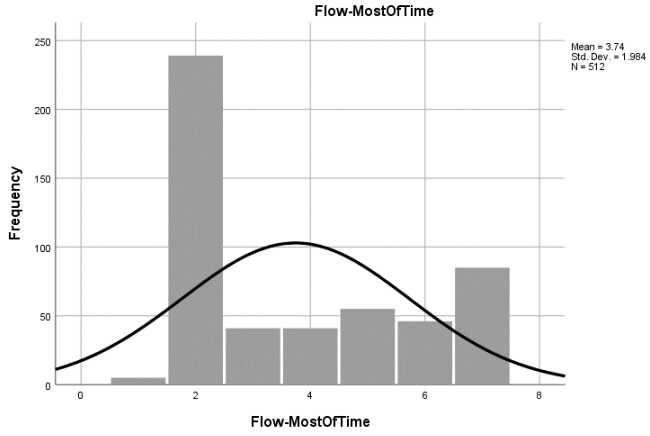


Figure 37. Histogram: In general, how frequently would you say you experience “flow” when playing {{Q3 – Game Name}}?

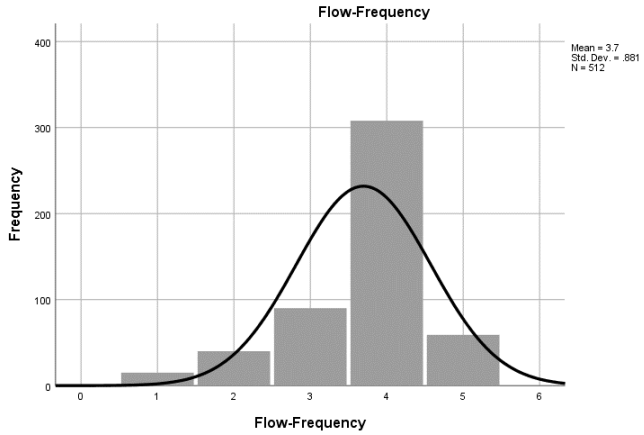


Figure 38. Histogram: This game is my first choice.

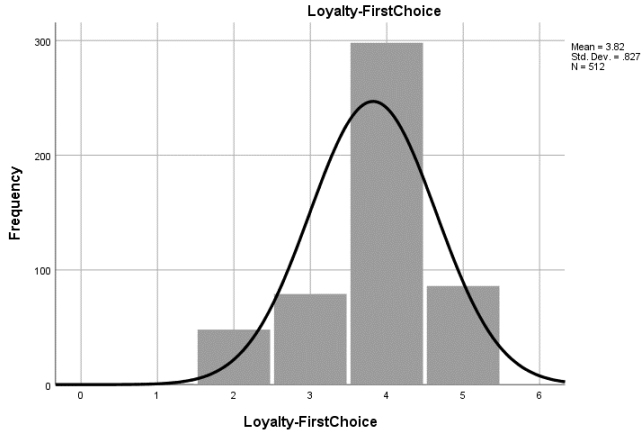


Figure 39. Histogram: I will continue to play this game.

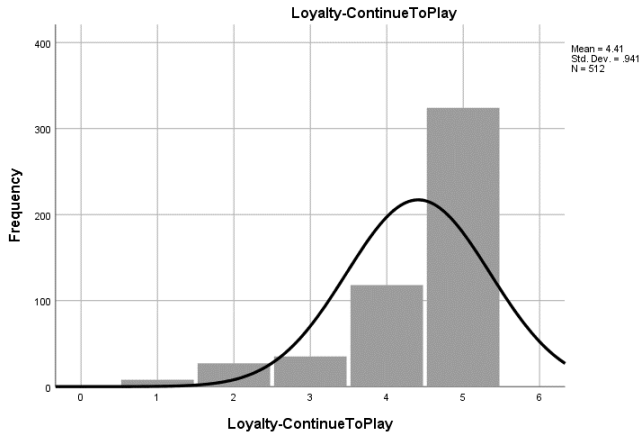


Figure 40. Histogram: I am willing to say positive things about this game to others.

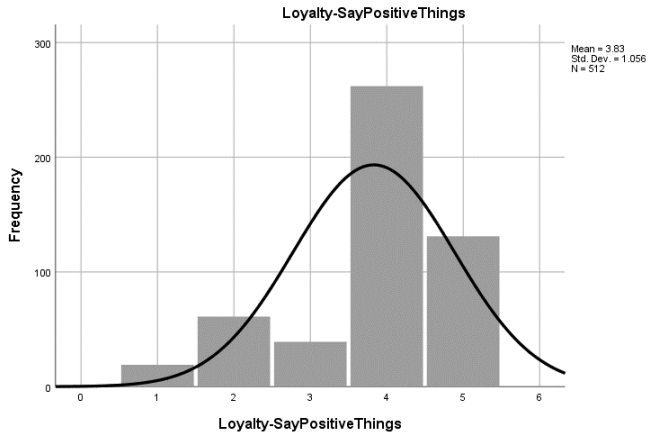


Figure 41. Histogram: If others want to play a game, I will recommend this game.

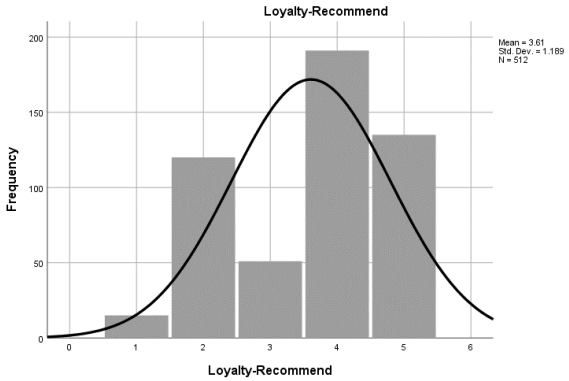


Figure 42. Histogram: I will encourage friends and relatives to play this game.

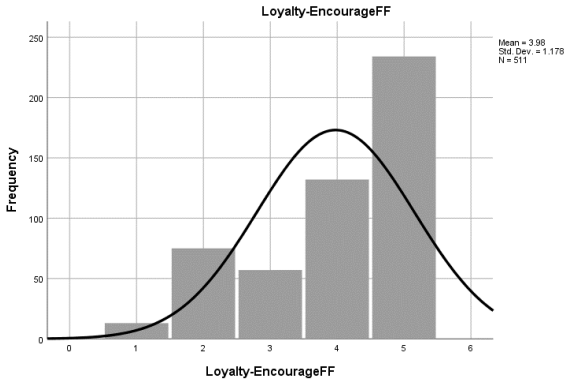


Figure 43. Histogram: I will play sequels of this game in the future.

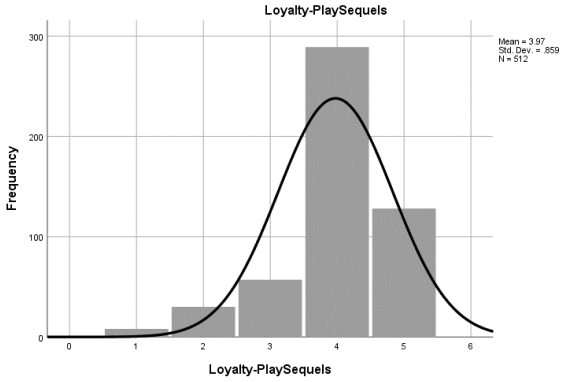


Figure 44. Histogram: I will play other games from this company in the future.

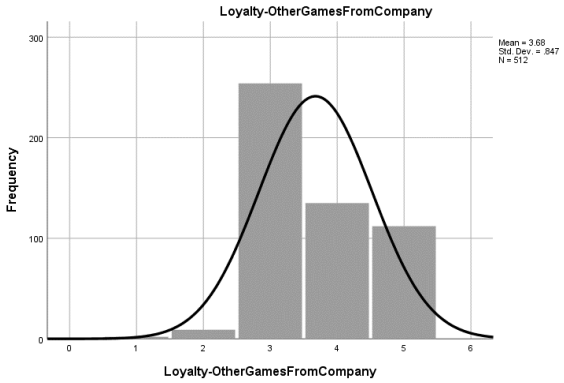


Figure 45. Histogram: Player-Character Identification (Updated)

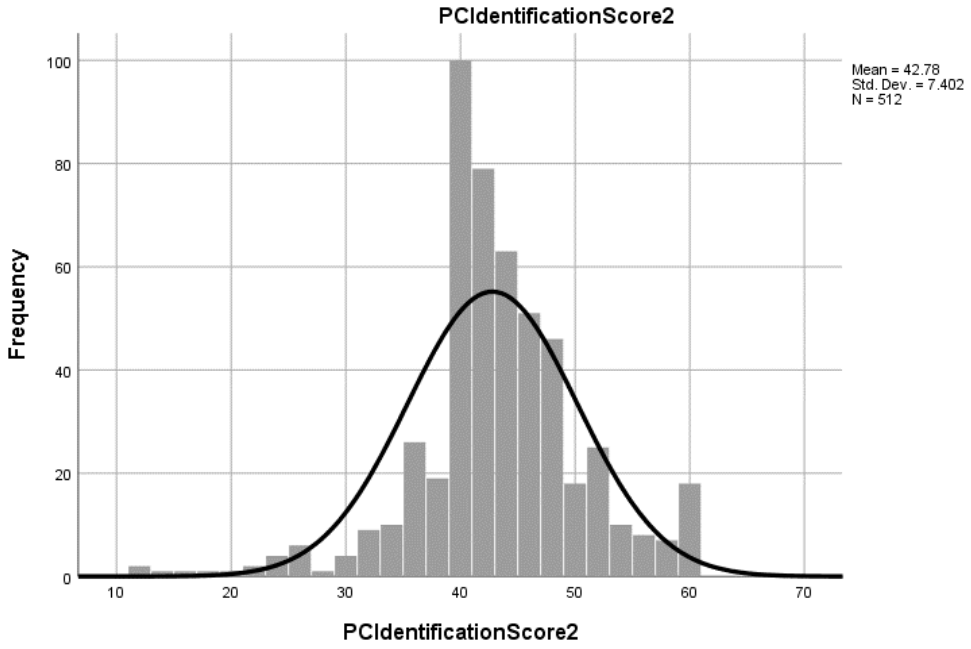


Figure 46. Histogram: Flow Score (Updated)

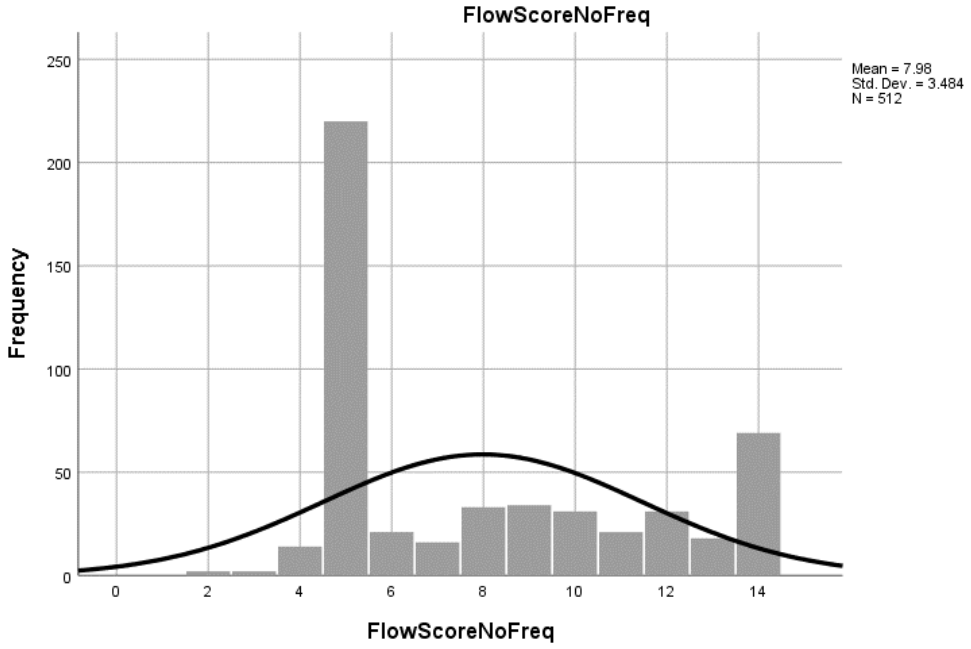


Figure 47. Histogram: Loyalty Score (Updated)

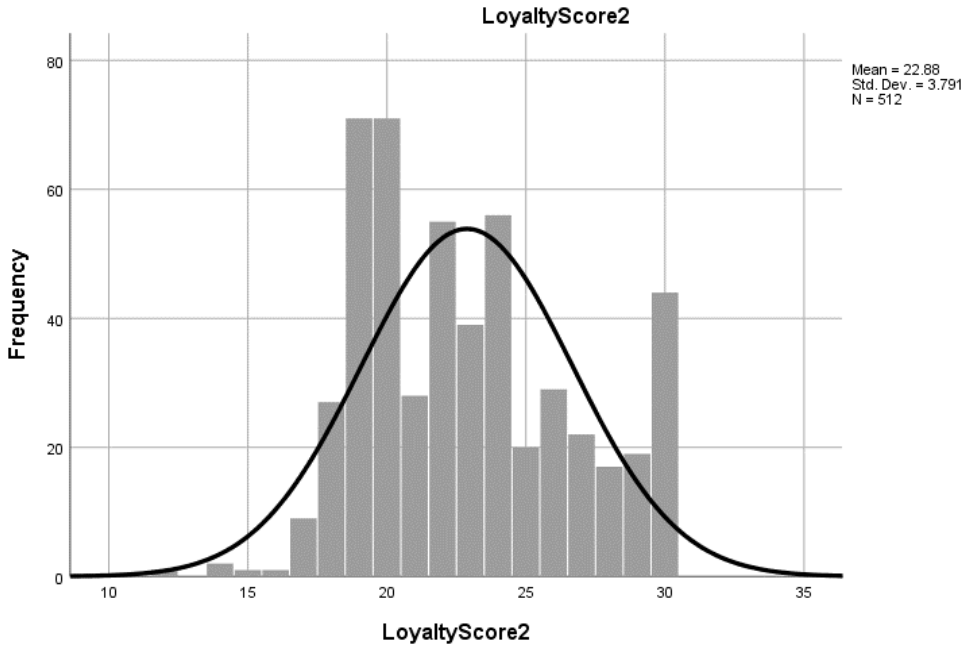


Figure 48. Histogram: Actual Congruity Score

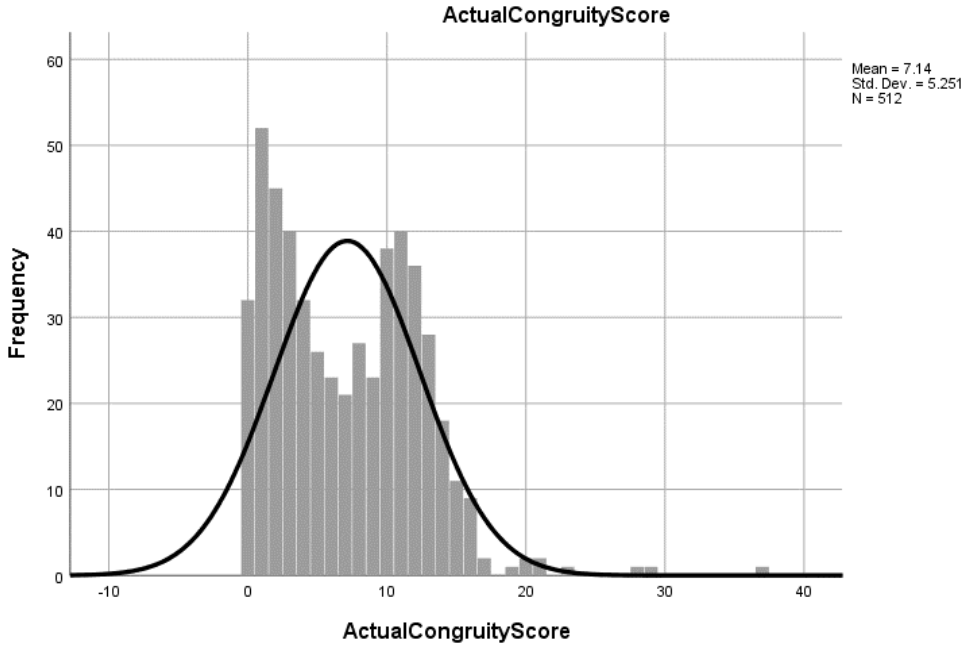


Figure 49. Histogram: Ideal Congruity Score

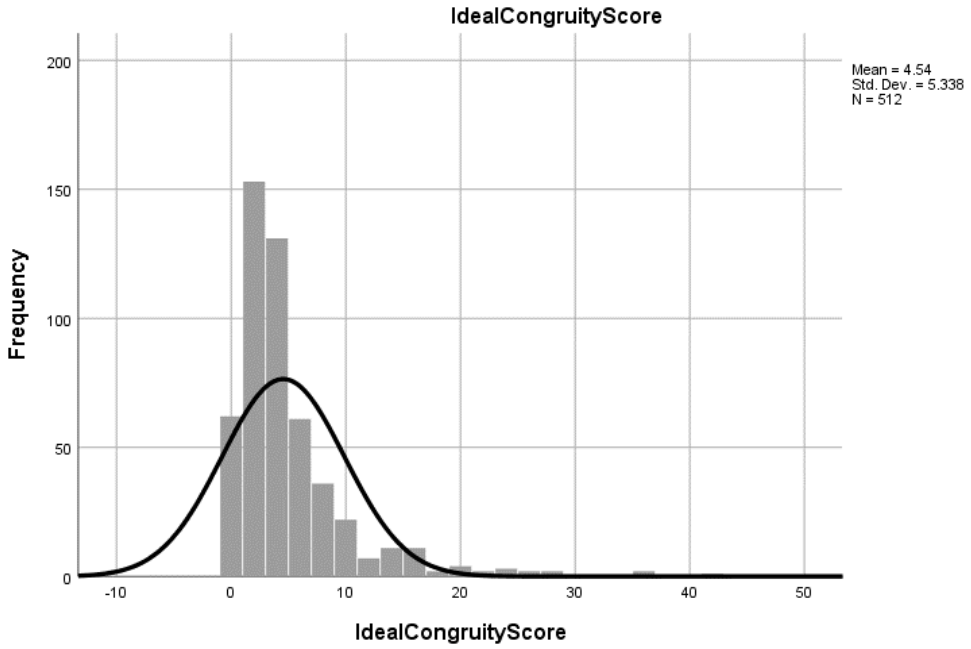


Figure 50. Histogram: Social Congruity Score

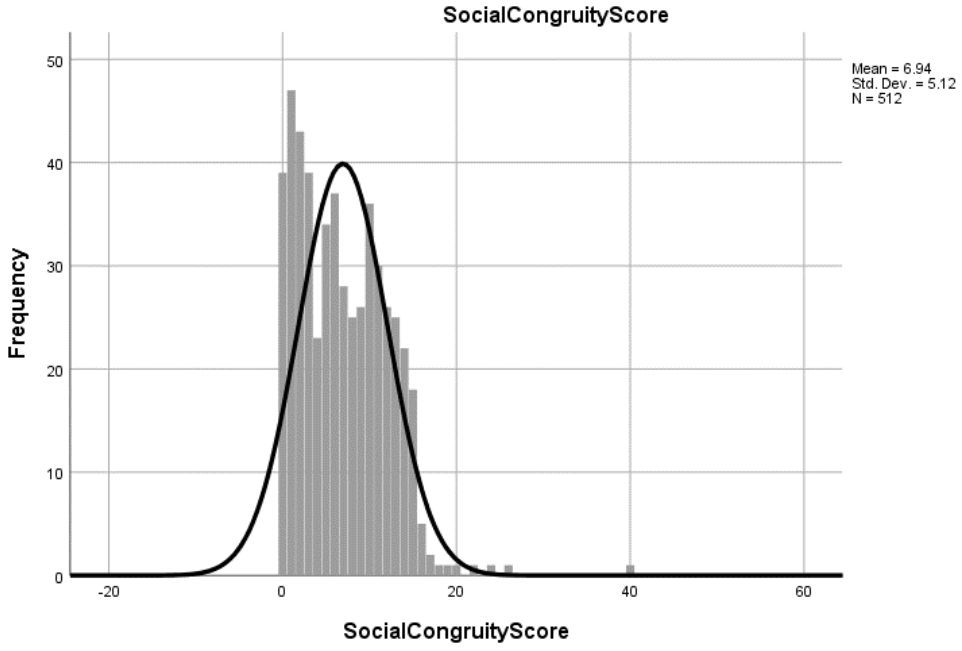
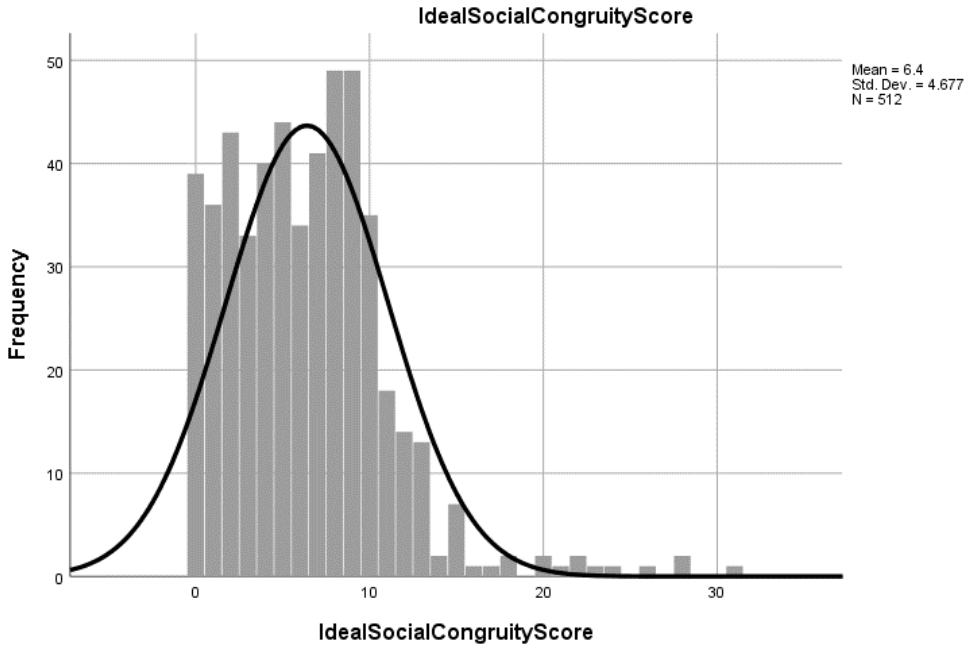


Figure 51. Histogram: Ideal Social Congruity Score



APPENDIX N

CORRELATIONS BY DATA SOURCE

Table 61. Correlation Matrix of Social Source

Correlations

		PCIdentificationScore2	FlowScoreNoFreq	LoyaltyScore2	ActualCongruityScore	IdealCongruityScore	SocialCongruityScore	IdealSocialCongruityScore
PCIdentificationScore2	Pearson Correlation	1	.295**	.560**	-.363**	.176**	-.318**	-.295**
	Sig. (2-tailed)		.000	.000	.000	.004	.000	.000
	N	269	269	269	269	269	269	269
FlowScoreNoFreq	Pearson Correlation	.295**	1	.271**	-.345**	.305**	-.313**	-.159**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.009
	N	269	269	269	269	269	269	269
LoyaltyScore2	Pearson Correlation	.560**	.271**	1	-.261**	.128*	-.288**	-.305**
	Sig. (2-tailed)	.000	.000		.000	.036	.000	.000
	N	269	269	269	269	269	269	269
ActualCongruityScore	Pearson Correlation	-.363**	-.345**	-.261**	1	.053	.703**	.705**
	Sig. (2-tailed)	.000	.000	.000		.387	.000	.000
	N	269	269	269	269	269	269	269
IdealCongruityScore	Pearson Correlation	.176**	.305**	.128*	.053	1	.138*	.282**
	Sig. (2-tailed)	.004	.000	.036	.387		.024	.000
	N	269	269	269	269	269	269	269
SocialCongruityScore	Pearson Correlation	-.318**	-.313**	-.288**	.703**	.138*	1	.694**
	Sig. (2-tailed)	.000	.000	.000	.000	.024		.000
	N	269	269	269	269	269	269	269
IdealSocialCongruityScore	Pearson Correlation	-.295**	-.159**	-.305**	.705**	.282**	.694**	1
	Sig. (2-tailed)	.000	.009	.000	.000	.000	.000	
	N	269	269	269	269	269	269	269

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 62. Correlation Matrix of Panel Source

Correlations

		PCIdentificationScore2	FlowScoreNoFreq	LoyaltyScore2	ActualCongruityScore	IdealCongruityScore	SocialCongruityScore	IdealSocialCongruityScore
PCIdentificationScore2	Pearson Correlation	1	.543**	.453**	-.072	.027	-.057	.012
	Sig. (2-tailed)		.000	.000	.301	.699	.413	.864
	N	207	207	207	207	207	207	207
FlowScoreNoFreq	Pearson Correlation	.543**	1	.480**	-.031	.065	.047	.025
	Sig. (2-tailed)	.000		.000	.661	.351	.499	.719
	N	207	207	207	207	207	207	207
LoyaltyScore2	Pearson Correlation	.453**	.480**	1	.022	.140*	.098	.126
	Sig. (2-tailed)	.000	.000		.752	.044	.161	.071
	N	207	207	207	207	207	207	207
ActualCongruityScore	Pearson Correlation	-.072	-.031	.022	1	.434**	.609**	.460**
	Sig. (2-tailed)	.301	.661	.752		.000	.000	.000
	N	207	207	207	207	207	207	207
IdealCongruityScore	Pearson Correlation	.027	.065	.140*	.434**	1	.464**	.616**
	Sig. (2-tailed)	.699	.351	.044	.000		.000	.000
	N	207	207	207	207	207	207	207
SocialCongruityScore	Pearson Correlation	-.057	.047	.098	.609**	.464**	1	.451**
	Sig. (2-tailed)	.413	.499	.161	.000	.000		.000
	N	207	207	207	207	207	207	207
IdealSocialCongruityScore	Pearson Correlation	.012	.025	.126	.460**	.616**	.451**	1
	Sig. (2-tailed)	.864	.719	.071	.000	.000	.000	
	N	207	207	207	207	207	207	207

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 63. Correlation Matrix of Event Source

Correlations

		PCIdentificationScore2	FlowScoreNoFreq	LoyaltyScore2	ActualCongruityScore	IdealCongruityScore	SocialCongruityScore	IdealSocialCongruityScore
PCIdentificationScore2	Pearson Correlation	1	.274	.549**	.040	-.123	.013	-.089
	Sig. (2-tailed)		.106	.001	.816	.473	.939	.606
	N	36	36	36	36	36	36	36
FlowScoreNoFreq	Pearson Correlation	.274	1	.271	-.009	.057	.160	-.115
	Sig. (2-tailed)	.106		.110	.957	.739	.352	.503
	N	36	36	36	36	36	36	36
LoyaltyScore2	Pearson Correlation	.549**	.271	1	.085	-.042	.201	-.032
	Sig. (2-tailed)	.001	.110		.621	.809	.240	.852
	N	36	36	36	36	36	36	36
ActualCongruityScore	Pearson Correlation	.040	-.009	.085	1	.303	.530**	.343*
	Sig. (2-tailed)	.816	.957	.621		.072	.001	.040
	N	36	36	36	36	36	36	36
IdealCongruityScore	Pearson Correlation	-.123	.057	-.042	.303	1	.249	.434**
	Sig. (2-tailed)	.473	.739	.809	.072		.143	.008
	N	36	36	36	36	36	36	36
SocialCongruityScore	Pearson Correlation	.013	.160	.201	.530**	.249	1	.441**
	Sig. (2-tailed)	.939	.352	.240	.001	.143		.007
	N	36	36	36	36	36	36	36
IdealSocialCongruityScore	Pearson Correlation	-.089	-.115	-.032	.343*	.434**	.441**	1
	Sig. (2-tailed)	.606	.503	.852	.040	.008	.007	
	N	36	36	36	36	36	36	36

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).