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An Exploratory Study of the

Jungian Personality Types of Second Life^{TM} Residents

BY

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Abstract

In virtual worlds such as Second Life^TM, participants can engage in a variety of activities with other online residents. The personality type of the resident inherently guides the activities in which he or she chooses to participate. Choices, such as communication method (i.e., group communication versus one-to-one) and in-world community participation (i.e., exploring new worlds versus building their own), can be directly linked to the personality preferences of the virtual world user. Carl Jung's work entitled "Personality Types" (1921) is regarded as one of the foundational works in understanding the personality preferences of oneself and others. Jung's work is the foundation for extrapolated personality theories and the basis for personality assessments on personality type. Understanding the personality types of virtual world users may help educators when designing online experiential learning activities. This understanding may also help educators understand why some students thrive with online experiential learning activities while others struggle. Utilizing a demographic survey and the Majors^TM Personality Type Inventory, a quantitative analysis of Second Life^TM users was conducted. An examination of a resident sample size (n=91) in relation to population norms will be outlined. Statistically significant differences between the Second Life^TM population and population norms will be discussed. The implications of this study for educators who choose to employ Second Life^TM as an experiential learning tool will also be examined.

Keywords: Second Life^TM, virtual worlds, personality type, education, mental health, Carl Jung

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AN EXPLORATORY STUDY OF THE JUNGIAN PERSONALITY TYPES
OF SECOND LIFE^{TM} VIRTUAL WORLD RESIDENTS

Chapter I: INTRODUCTION

With the development of the Internet, communication and interaction with others has become more accessible and interactive (Laletin, Stolbova, & Stolbov, 2012; McCarthy, Light, & McNaughton, 2007; van den Eijnden, Meerkerk, Vermulst, Spijkerman, & Engels, 2008). New technologies have utilized the Internet to spur communication with others using methods which were not possible in the recent past. These methods range from static forms of communication (i.e. message boards, weblog postings, electronic mail, etc.), simultaneous texting (i.e. interactive chat communications, etc.) to video and voice communications (i.e. Skype) (Michels & Ching-Wen, 2011). An additional method that combines and expands on these types of online communication tools is Second Life™ (SL).

SL is a three-dimensional, virtual world where online residents utilize a three-dimensional character (or avatar) to navigate their interaction with others (Jerry, 2011; Mennecke, Triplett, Hassall, Conde, & Heer, 2011) . Residents can customize their avatar and configure it according to their wishes, ranging from different humanoid (i.e. woman-like, man-like, child-like), para-humanoid (i.e. vampires, zombies, etc.), and non-humanoid like figures (i.e. cars, bears, robots, etc.) (Robbins & Bell, 2008). Residents can utilize these avatars to interact with other residents, and participate in an array of activities such as karaoke, dancing, and role-playing activities (Jerry, 2011).

Depending on a person's personality preferences, one can choose the level of online interaction they wish to participate in when engaging in virtual worlds such as SL. Ranging from solitary activities, such as building a home, to more interactive activities such as role-playing in

simulations with many others (Gregory & Masters, 2012), an individual can personalize their chosen activity to their personal inclination. An individual's personality type can be analysed utilizing personality assessments such as the Myers-Briggs Type Indicator (MBTI) and the Majors Personality Type Inventory (M-PTI). These types of assessments can help define an individual's preferences based on dichotomous scales of four different trait preferences. These type preferences can help better understand the individuals who are attracted to utilizing mediums such as SL or personal and educational purposes.

Significance Statement

Educators and mental health professionals are eager to understand what motivates individuals to participate in virtual worlds. A study of users preferences based on personality traits may provide insight. To date, research of this nature has been unreported. The proposed study will involve investigation of the self-identified personality type preferences of virtual world participants using a quantitative approach. Results may shed light on the challenges identified by educators when virtual worlds are required for course activities. Recognising the distribution of personality types in SL may allow educators to provide more targeted activities for participants. In addition, mental health professionals working with clients who are participants in virtual worlds may benefit from the awareness of the personality trait distribution and use that information to enhance the development of their working alliance with the client.

Purpose of the Study

The purpose of this study was to examine the personality type preferences of virtual world residents. The two questions that guided the study were:

1. What personality type profiles appear in Second Life™ residents using the Majors PTI™ personality assessment tool?; and,

2. Do the profiles that appear in Second Life™ differ from non- Second Life™ norms?

Why this Study is Worthwhile?

There are two main reasons that make this study worthwhile. First, SL has become a growing medium for experiential learning purposes. Several industries have recognised the impact that SL can have with learning. Fields such as nursing, architecture, counselling, have utilized SL for real-time trauma simulations (Skiba, 2009), interactive conceptual designing (Kieran, 2007), and engaging in counselling sessions with novice counsellors (Schiffman, 2011). Understanding the users who appear more often in virtual worlds such as SL can help educators design online activities and present material geared to these individuals.

Secondly, mental health professionals are becoming increasingly aware of the problems associated with online gaming, identity disorders, and Internet addiction (Smahel, Brown, & Blinka, 2012). Tools to understand the population who attracted to this medium could greatly assist with the screening, education, and understanding of the motivations to engage in virtual worlds.

Definition of Terms

A number of terms are used throughout the thesis. Some of the less familiar terms are presented here:

Avatar: A computer generated representation of online residents (Trepte & Reinecke, 2010).

Best-Fit Type: The personality type preference verified through education and personal understanding (Majors, 2012).

Convenience Sampling: Selecting certain participants based on accessibility and availability (Morgan, Gliner, & Harmon, 2006c).

Career Life/Skills Resources ("CLSR"): A Canadian organization that administers and scores the Majors PTI™.

Extravert: A Jungian personality trait defined as someone who has a preference for directing energy toward the outer world of people and objects (Quenk, Hammer, & Majors, 2001).

Feeling: A Jungian personality trait defined as someone who bases conclusions on personal and social values with a focus on understanding and harmony (Quenk, et al., 2001).

Gender-Bending: The practice of a embodying an avatar gender which is different than the gender that the virtual world participant identifies with in the actual world (Lee & Hoadley, 2006).

Intuitive: A Jungian personality trait defined as someone who focuses on seeing patterns and interrelationships (Quenk, et al., 2001).

Introvert: A Jungian personality trait defined as someone who has a preference for directing energy toward the inner world of experiences and ideas (Quenk, et al., 2001).

Judging: A Jungian personality trait defined as someone who prefers decisiveness and closure (Quenk, et al., 2001).

Linden Lab: The organization that created Second Life in 2003 (Atkinson, 2008).

Majors Personality Type Inventory™ ("M-PTI"): A personality assessment tool that assigns respondents a four letter dichotomous code, based on the works of Jung (1921), Myers and Briggs (1995), and Majors (2012).

Perceiving: A Jungian personality trait defined as someone who prefers flexibility and spontaneity (Quenk, et al., 2001).

Second Life™: A multi-user, online, and interactive, virtual world platform (Warburton, 2009).

Virtual Worlds: An online platform which contains many communities, in a global environment (Gilbert, Murphy, & Clementina Ávalos, 2011).

Sensing: A Jungian personality trait defined as someone who focuses mainly on what can be perceived by the five senses (Quenk, et al., 2001).

Thinking: A Jungian personality trait defined as someone who bases conclusions on logical analysis with a focus on objectivity and detachment (Quenk, et al., 2001).

Summary

This manuscript is further divided into five chapters. The second chapter will review literature in relation to virtual worlds, SL, and personality theory/typology. The third chapter will review the study design and methodology to collect data for this thesis project. The fourth chapter will review the results obtained through the demographic survey and assessments. The fifth chapter will discuss the findings found, and the implications and limitations of this research.

Chapter II: LITERATURE REVIEW

Internet Usage and Electronic Gaming

With the advent of the Internet in 20th century, the ability to communicate, interact, and participate in activities with others has become easier to facilitate (Smahel, et al., 2012). Internet usage has grown from industry and business usage, to common home-based activities. According to Statistics Canada survey respondents, the rate of internet usage by Canadians who access the Internet from any location (i.e. from home, work, public locations) the rate has grown from 67.9% in 2005 to 80.3% in 2009 ("Internet use by individuals, by location of access, by province (Canada)," 2010). Additionally, Canadians who utilize the Internet at home for playing games has increased from 38.7% in 2005 to 42.1% in 2009 ("Internet use by individuals, by type of activity ", 2010).

Traditionally, online communication only provided users with static forms of interaction. Message boards, Internet postings, and weblogs provided Internet users with a method to post and relay information online (Gonzales & Hancock, 2008). Over time, technology has permitted more interactive methods of communication. This has included live person-to-person texting, where users could communicate with others with minimal wait times (Tyler, 2002). This expanded to individuals who could participate with other online users with live chat and participate in interactive conversations, educational seminars, and debates. One of the pieces of software that incorporates these live components into interactive chat is virtual worlds.

Virtual Worlds

Virtual worlds are expansive, electronic communities that provide users with a different form of online communication and game play (Gilbert, Murphy, & Clementina Ávalos, 2011). Also called a massively multiplayer online game (MMO), virtual worlds can be created within a

two dimensional platform. This has the advantage of allowing for minimal processing power, run

entirely within an Internet web browser (or minimal download propriety software) while being

interactive and global. Some MMO examples which utilize this two-dimensional technology are

RuneScape (see www.runescape.com), OurWorld (see www.web1.ourworld.com), and

MinyanLand (www.minyanland.com).

Software developers expanded on these two-dimensional MMOs to three-dimensional

versions. These three-dimensional versions allow a user to experience online interactions in a

style that is more representative of the actual world. This type of interaction style is more

experiential in nature, and in turn, more immersive. There are several three-dimensional MMOs

that use three-dimensional technologies in their software development, including World of

Warcraft (http://us.battle.net/wow/), The Lord of the Rings Online (www.lotro.com) and Rift

(www.riftonline.com). This manuscript will examine the virtual world entitled Second Life in

greater detail.

Second Life™

Second Life is another example of a virtual world that utilizes a three-dimensional

platform for residents to participate with other residents. Residents participate within SL by

using an avatar. SL users sign up on their website (see www.secondlife.com) and register a user

name and a display name for their avatar. The participant downloads a viewer, which allows

them to participate in SL. SL provides a default viewer with the initial download, or they may

choose to download a third party viewer such as Firestorm (see www.firestormviewer.org). SL is

free for participants to use; however, there are additional features one can purchase for their

virtual world experience. These features include clothing, building materials, virtual real estate,

animals, etc.

Unlike other online communities, SL does not have an end "goal" for participating. Other online communities and virtual worlds, such as World of Warcraft (see www.battle.net/wow) and The Sims (see www.thesims.com), have quests, storylines, player assigned roles and achievements woven into character profiles and storylines. SL, however, is an open-concept or "sandbox" design. The interaction and purposes of avatar communication are defined by self-determined motivations and reasons. Participants can build and create online communities for like-minded individuals. Recreations of real-world places (such as Paris, France; amusement parks; and underworld locations) exist, and SL residents who enjoy participating in these environments have the opportunity to meet other like-minded residents by travelling to, and interacting with the online community.

One activity which is increasingly popular in SL is role-playing (Broadribb & Carter, 2009). SL is designed in such a way that residents can immerse themselves within SL but limit the amount of information of who they "actually" are. This allows participants to experiment and participate in activities not available to them in actual life, including extreme sports, varying gender identity, and sexual intercourse (Jeng & Teng, 2008).

Personality Theory and Typology

Carl Jung

Carl Jung was born in 1875 in Switzerland. He attended university with the intention of studying and practicing surgical medicine. However, upon reading about psychiatry during his coursework, he garnered an intense interest in, and chose to specialize in psychology and mental health. Along with Sigmund Freud, Jung founded what is now known as modern day psychoanalysis and psychotherapy (C. Jung & Jaffe, 1963).

While Freud and Jung agreed on several concepts of the human psyche, there were some fundamental differences in their theories of the unconscious. While Freud believed in a personalized idea of the unconscious, Jung believed in a deeper level of the unconscious called the "collective unconscious". This collective conscious held the collected experiences and personas collected throughout human existence, and expressed through archetypes (Cann & Donderi, 1986). There are several archetypes that Jung postulated existed within each human being, and all of these archetypes guide our behaviour, appear in dreams, and help provide knowledge for our decision-making processes. For example, Jung postulated on an archetype entitled the shadow. The shadow archetype contains our repressed ideas and desires; specifically desires which are socially unacceptable or frowned upon. The collective unconscious theory is one method that Jung utilized to understanding human behaviour; another theory developed by Jung includes personality typology (Schimel, Pyszczynski, Greenberg, O'Mahen, & Arndt, 2000).

After the aftermath of World War I, Jung longed to understand human motivation and behaviour. One method to do so was to understand the human psyche, and in turn, human personality. In 1921, Carl Jung wrote his foundational book entitled "Personality Types". This work is regarded by many as the establishment of modern personality typology (see C. S. Jung, 1921). Within it, he argued that individuals are born with innate personality preferences, and these preferences help guide decisions, shape relationships, and guide an individuals' method of communication (Quenk, et al., 2001). Jung also argued that people prefer different preferences, which can be viewed on within three separate dimensions. He extended descriptions for three of these dichotomies, and over the years, historians, psychologists, and theorists have built and added to his theory over time (Briggs Myers & Myers, 1995).

Extraverted and introverted. The first dichotomy he outlined theorized one's interaction style with the world. He called this dichotomy the "attitude" (C. S. Jung, 1921) one takes with themselves and others. Within this dichotomy, Jung argued that people innately prefer either an extraverted or an introverted approach. For individuals who prefer the extraverted dichotomy, Jung stated that "the extravert [is] recognizably related to external conditions" (Jung, 1921, p. 183). These individuals are often seen as being gregarious, outgoing, and assertive. They enjoy spending time with large groups of people, with both strangers, and those known to them. They often become recharged when interacting with others (Briggs Myers & Myers, 1995).

For individuals who prefer the introverted personality preference, Jung outlined this attitude preference as someone who "does not, like the extravert, orient himself by the objective data, but by subjective factors" (Jung, 1921, p. 229). Jung argued that individuals who prefer the introverted end of the dichotomy prefers to handle their energy internally. Introverted individuals often appear reserved, reflective, and aloof. They enjoy spending time alone or in smaller groups, and enjoy in participating in inner reflection (Briggs Myers & Myers, 1995).

The terms extraversion and introversion have become part of popular vernacular and are often used to describe personality preferences in day-to-day language. Researchers in various fields have explored this dichotomy by conducting research on the differing responses of individuals who have been exposed to the same circumstances. Studies of the extraverted and introverted personality type preferences and employment (see Berings & Adriaenssens, 2012; Carless & Arnup, 2011), communication styles (see Gonzales & Hancock, 2008; and Cuperman & Ickes, 2009), relationships (see Felmlee, Orzechowicz & Fortes, 2010; and Ahmetoglu & Swami, 2012) and career choices (see Jugovic, Marusic, Ivanec & Vidovic, 2012) are common

areas of research for personality typologists. For example, a study by Pai & Carr (2010) examined the relationship of psychological distress for spousal loss in late in life and personality type. The researchers found that those with an extraverted type preference were better able to cope with depressive symptoms. The authors theorized that extraverted widows were better able to garner support from others and involve themselves in social activities again than their introverted counterparts.

Another study by Ragozzino and Kelly (2011) highlighted the relationship between worry and the extraverted and introverted dichotomy. Their results showed that there was a correlation between the introverted personality type preference and worry. They theorized since individuals with an introverted preference are focussed on the inner world, solitude, and reflection, they become more aware of their inner dialogue thus increasing anxiety and worry.

Sensing and intuition. Jung posited on two functions that worked in conjunction with a person's attitude. He theorized that the functions worked together with the attitudes to create unique personality formation. Specifically, Jung stated that those with a sensing personality preference value objects as far as "they excite sensations" (Jung, 1921, p. 216). This dichotomy relates to how one gathers, discerns, and uses information. Jung called the first of these functions as the sensing and intuition dichotomy. Within this dichotomy, he outlined the sensing type as individuals who trust information they receive through the five senses. They prefer tangible information that was derived from reasonable sources (Briggs Myers & Myers, 1995).

The intuitive type dimension captures the personality traits in line with more abstract and speculative manners. Jung outlined the intuitive type as someone who establishes something not by "what is 'seen'", but "how much was 'read into'" something (Jung, 1921, p. 220-221). They

prefer to rely on possible connections between information and enjoy pulling information together through underpinnings and in a theoretical manner (Briggs Myers & Myers, 1995).

This function is also a well-known and highly researched area. A study by Li and Liu (2008) examined the relationship between risk behaviour and personality type. They examined the responses of undergraduate students and the way they responded to the Asian Disease Problem axiom. The axiom originally postulated by Kahneman and Tversas (1979, as described in Li & Liu, 2008) is as follows:

> **Problem 1**. Imagine that the U.S. is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimates of the consequences of the programs are as follows:
> If Program A is adopted, 200 people will be saved.
> If Program B is adopted, there is 1/3 probability that 600 people will be saved, and 2/3 probability that no one will be saved.
> Which of the two programs would you favor?
>
> **Problem 2**. Imagine that the U.S. is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimates of the consequences of the programs are as follows:
> If Program A is adopted, 400 people will die.
> If Program B is adopted, there is 1/3 probability that nobody will die, and 2/3 probability that 600 people will die.
> Which of the two programs would you favor?

As described above, the axiom is framed in two manners, a risk-adverse method (Problem 1) and risk-seeker method (Problem 2). Tversky and Kahneman (1981, as in Li & Liu, 2008) found that when their participants were given Problem 1, 72% chose Program A. Alternatively, if their participants were given Problem 2, 78% preferred Program B. Participants were then cross-referenced according to their MBTI type, and there was a statistically significant variation between risk-avoiders and risk-seekers. Those participants who had a preference for

intuition had higher scores for risk-seeking, whereas those who had a preference for sensing for risk-aversion regardless of which version of the axiom was given.

Thinking and feeling. The second function and third dichotomy that Jung discussed was the thinking and feeling dichotomy. With this dichotomy, Jung discussed how one goes through the decision making process. For the person who favours the thinking preference, they opt to make decisions through "concrete experience" (Jung, 1921, 237). Individuals who prefer the thinking preference are often viewed as impersonal, logical and rational (Briggs Myers & Myers, 1995).

The feeling counterpart prefers to make decisions through subjective and empathic methods. This dichotomy uses an internal set of values and filters, which she or he acquired though different life experiences. Briggs Myers & Myers (1995) outlines those who have a preference for feeling appear sentimental, naturally friendly and personable.

This dichotomy is often reviewed in literature in relation to how decisions are made in different careers. A study by Fenton-O'Creevy, Soane, Nicholson & Willman (2011) examined the decisions made by investment traders in four City of London investment banks. They found that investors who were better able to regulate their emotions and cognitively change negative situations in pursuit to longer term goals were more successful than those bankers who have difficulty engaging in difficult emotional situations, and partake in avoidant behaviours (i.e. walking away from their desks), or invest significant cognitive attention to their emotional expressions (Fenton-O'Creevy, et al., 2011).

Judging and perceiving. Briggs and Briggs Myers expanded on Jung's foundation, by outlining an additional dichotomy. Although mentioned by Jung, he did not clearly delineate and define the Judging and Perceiving dichotomy (Briggs Myers & Myers, 1995). This dichotomy

focuses on the way one organizes information. The judging dichotomy prefers a systematic and logical approach to information gathering, while the perceiving type prefers to be open to additional information and a free styling method to information gathering.

These personality type preferences are also studied heavily in various fields. One study by Francis, Robbins & Murray (2010), examined the relationship between personality type and churchgoers in England. The researchers found an overwhelming preference for the judging preference (72%). These findings are underrepresented in the general English population, as 58% prefer the judging preference. The authors of this study discuss the relationships between the judging preference and churchgoers as individuals who are characterized by "organization, punctuality, and concern for structure". The authors discuss that the judging personality type preference highlights the "stereotypical" stodgy churchgoer, who utilizes a systematic approach to decisions, whilst being unavailable to new and possibly contradictory information in regards to their spiritual tenets. The researchers comment that this would be an appropriate examination for future studies.

Psychometric assessments. In order to describe what a person's personality preference is, Briggs and Myers Briggs created the "Myers-Briggs Type Indicator" (MBTI). This assessment uses a 93 question, forced-choice format, which evaluates words and statements between the two dichotomies. This instrument is available in several languages and is used internationally in many fields including career counselling, personal counselling and team building exercises (Briggs Myers & Myers, 1995; Quenk, et al., 2001)

Dr. Mark Majors created his own psychometric assessment based on the work of Jung and Myers-Briggs. He chose to create a range of options instead of having a participant choose between the two forced choice options found in the MBTI question set. This allowed a

respondent to choose "neutral" or vary their degree of agreement within a five-point scale. By allowing a gradient scale, participants can vary their responses according to the word choices given in both the direction (i.e. which dichotomy they may have a preference for) as well as the level of similarity or intensity on that scale. This scaling can help understand how natural the chosen response given is; and in turn, the respondents' innate preference type (Majors, 2012).

The M-PTI contains 52 questions, and is currently available in English only. This was completed through the Career Life/Skills Resources ("CLSR") website, the administrators of the M-PTI. The website www.clsrassessments.com requires a login and password to obtain access to the electronic M-PTI assessment. Having had completed the MBTI training in 2007, I was deemed qualified through CLSR's qualification standardizations to administer and evaluate the M-PTI assessment (Majors, 2012).

Current Research with Virtual Worlds and Second Life

Virtual worlds have garnered a lot of interest regarding their usability as an education medium. Various professionals, especially within the fields of education and mental health, have begun to utilize SL to collect and disseminate information within this globalized platform (Gregory & Masters, 2012). Educators have been utilizing SL as an experiential learning tool for their students, creating opportunities for students to practise their skills within an online environment. In addition, mental health professionals have been interested in the individuals who become increasingly dependent on using online media such as SL for communication and game-play uses. This understanding can also provide valuable information on why some users become overly involved in virtual mediums for communication and interactive purposes. This can also help educators understand the users who have more readily gravitated to mediums such as SL. With this knowledge, they may help foster learning, and can identify reasons why others are more reluctant to participate in virtual worlds.

There has been some confusion regarding SL and its software identity. Some argue that it is a gaming interface, while others claim that it is an immersive, three-dimensional platform. I argue that the latter description is more accurate, as SL lacks some of the inherent characteristics of a "game". Games offer elements such as storylines, plots, goals, and achievements. All of these characteristics are either absent or defined by the user. SL can be better described as an "open-ended experience" in which the resident can create, define, and refine their own personal goals for immersion (Kalning, 2007). Also, the three-dimensional environment provides a different type of experience by having the user experience things in an immersive manner, thereby having the user cognitively feel that they are embodying the space they are participating in.

Education and Second Life^{TM.} For many post-secondary institutions, the dissemination of educational material occurs through traditional lecture format, within a physical classroom. With the advent of Internet technology, many institutions are varying the methods they use to deliver course material and engage their students in their educational pursuits. In fact, there organizations and educational institutions have collaborated to offer free, non-credit university level courses to the anyone who has access to the Internet. These massive open online courses (MOOC) allow individuals the opportunity to study, interact, and learn with other students (Tapscott, 2013).

SL has gone one step further than MOOCs, by providing the opportunity for students with the opportunity of becoming immersed in in-depth experiential learning, while being away from a traditional classroom. There are many reasons for educators to adopt SL within their learning environments, as well as some challenges. A review of the literature indicates that experiential learning and student fellowship are some positive aspects of bringing SL to their institutions, while technical issues, steep learning curves and reluctant students are some of the challenges indicated by educators (Warburton, 2009).

Experiential learning. Some institutions have chosen to vary their dissemination methods and include hybrid material, which have included varying degrees of face-to-face, online components, and group tutorials (Renfro-Michel, O'Halloran, & Delaney, 2010). These types of hybrid classes have appealed to students who may not have had the opportunity to attend school in traditional formats. Students with disabilities (Koulikourdi, 2009), employed full-time (Okunuga & Akintayo, 2011), or are found in remote areas (Owens, Hardcastle, & Richardson, 2009) have been attracted to hybrid learning opportunities.

Along with these challenges that students face, education institutions have also found the benefit of engaging in practical scenarios as an additional method of learning. A study by Hagan (2012), discussed an online blending teaching opportunity which allowed students to apply material in a tangible manner. Hagan outlined an experiential learning activity designed for graduate business students, which involved students acting as public relation agencies. The students were required to collaborate with their peers online, and participate in activities which included virtual conferencing, social media presence and presentation development. By participating in more interactive and experiential learning type activities, Hagan argues that students were more engaged, improved their communication skills and learning by participating in this experiential learning activity. Furthermore, students gained a pragmatic understanding of a public relations firm, without the long term commitments that internships or co-operative provide.

Student fellowship. There have been multiple studies that have examined the appeal of non-traditional classroom learning for adult learners [see (Hagan, 2012; Khalid & Hussain, 2013)]. One study by Renfro-Michel, et al. (2010) found that students who preferred hybrid classes fared better when comparing midterm, proposals, and post-test scores in comparison to the control group, when taught by the same professor. The authors argued that students could engage themselves by utilizing different kinesthetic senses and by using their own flexible time schedules; students can optimize their chances of success in the course. A hybrid option that many intuitions have been using has been SL to facilitate these interactive options (Landers & Callan, 2012).

Another example of engaging students with virtual worlds occurred with a cohort of university education students who were placed in an elementary school as part of their field

placement experience requirements. The senior elementary education students each created an instructional unit utilizing a VW for their students. One of the instructional units created by the university students included studying the Great Depression by having residents living and working collaboratively during this time, which allowed them to gain a more immersive experience of living in this period. Another instructional unit included creating a World War II learning environment that allowed students to interact and study different events during this. These events include visiting the beach of Iwo Jima and exploring the Anne Frank house. An additional instructional unit included creating an island in which turtles were going extinct. The elementary students collaborated to discover the reason(s) why the turtles on the island were becoming extinct, and worked together to find ways to re-populate the species ("University, elementary schools partner in virtual world," 2012). These types of immersive and interactive learning experiences allowed both the university students and elementary students to learn more about certain topics, while becoming immersed with other students.

Disadvantages of using Second Life

While some educators have embraced SL as an additional avenue for teaching, others have expressed reservation. An article by Bateman, Pike, Berente & Hansen (2012), documented the top six reasons why some businesses (some of which indicated that they were in the education field) have been hesitant to introduce and/or expand the use of virtual worlds within their corporations. The concerns and comments expressed during this analysis have spanned across various reasons, which can be clustered into two main domains: technological issues and social issues.

Technological issues. Some of the concerns raised stemmed primarily from using the technology associated with VW. In order for VW to operate, a computer with the minimum

system requirements and reliable Internet connection are required. The requirements for VWs are fluid, and participants are encouraged to check with the VW creator to ensure they meet those requirements in order to participate well (Mayrath, Traphagan, Jarmon, Trivedi, & Resta, 2010). Institutions and individuals who do not have the financial ability to upgrade their hardware to higher end platforms, may not be able to fully immerse themselves or experience the VW as it was intended. This may be due to video quality issues, sound difficulties, or time lag between VW residents. These issues can be compounded if the user is utilizing an unreliable Internet connection (Agarwal & Agarwal, 2013).

Another common criticism found with many VWs is the long learning curve to use them effectively. While many VWs come with starter avatars and beginner tutorials, many residents still remark on the measurable amount of time passing before feeling comfortable navigating and utilizing the software in a proficient manner. This learning curve described a large technological resistance to utilizing and training others with this VW software (Childs & Peachey, 2011).

Lastly, the "game-like" feel that VWs inherently hold has become a technological disadvantage too. Businesses and educational institutions have been able to provide immersive engagements through video conferencing, Skype, and other interactive software that carries an intrinsic professional with it. VWs, such as SL which allow you to morph into different creatures, dance around in ballrooms, and float into outer space, carries that "game-like" feel that many businesses and institutions which to avoid (Bateman, et al., 2012).

Social issues. Along with some of the technological complaints found with VW users, there are also social issues to consider as well. Transferring the innate social norms found within today's society into a VW is difficult (if not impossible to do), which translates into a second

domain that businesses and educators have commented on when utilizing VW (Bateman, et al., 2012).

A common complaint found within the Bateman, et al. (2012) article indicated that the demographic age ranges of the end users would be less technologically perceptive than today's average user. In turn, this would relate to little to no benefit to train these users to become proficient in VWs. Companies and educators would have little to no gain in utilizing this type of platform to provide the immersive experience they aim to have.

Additionally, the appropriateness of utilizing VWs within their educational plans was also outlined within this Bateman, et al. (2012) article. As VWs are an open forum for residents, a variety of different activities including foul language, nudity, and violence are commonplace occurrences. There are abilities to password protect and limit the individuals who are able to enter certain areas of VWs, however, as an educator or business owner, you are still relying on individuals applying "real world" social norms into a fictionalized and VW. The ability to control or at least deter these instances from happening during important functions such as workshops or speaking events is difficult, if not impossible, to prevent.

Mental Health and Virtual Worlds

Along with educators, mental health professionals have become increasingly aware of the impact of VWs. In particular, mental health professionals have examined the impact that engaging in these virtual worlds have on the mental health of their clients. This engagement can be categorized into two general themes. Firstly, mental health professionals should be made aware of the engagement and interaction one has with oneself while participating in the VW. These intrapersonal types of interactions would include topics such as self-identity and addiction to online activities. Secondly, mental health professionals should be made aware of the impact

that VWs have on residents of VWs in an interpersonal context. This examination can focus on how VW residents participate and engage with others online in both therapeutic and self-harming ways.

An Intrapersonal Examination of Second Life

A review of current literature indicates that there are several intrapersonal occurrences within residents of VWs. In particular, there have been questions that have surrounded the questions of identity. The issue of identity when it relates to an online presence, and the graphical representation of oneself through an avatar has been studied a great deal. If one were utilize the self-identity concepts found within Mann's work entitled "A Simple Theory of the Self" (1994), the "self" would be comprised of three general phenomena: embodiment, time, and reflexivity. Although Mann's work pre-dates the advent of VWs, his work is often referenced when examining the definition of the self and its utilization within psychopathology.

Mann's description of embodiment outlines humans as physical beings, comprising of a physical entity that takes up and utilizes physical space. Mann describes time as also being an essential part of human identity. Humans, by their very nature, are comprised of a past, a present, and a future. People exist within a plane of time that is historical, continuous and can be planned for into the future. Lastly, Mann describes the concept of reflexivity as part of the human condition. Reflexivity comprises of a person's level of personal reflection and consciousness. How an individual interacts with the world and how they process their experiences through self-reflection are key facets to Mann's concept of reflexivity.

If one were to utilize and accept Mann's model of the self as a valid one, then many aspects of the experience of VWs challenge the concept of a "self". As an individual develops his or her identity to include an avatar, he or she is faced with Mann's category of embodiment.

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Human form avatars have been shown to imitate human behaviour in VWs. For example, Yee, Bailenson, Urbanek, Chang & Merget (2007), noted that individuals will navigate their avatar in a virtual space as if it were in a real space. This included respecting social norms about personal space and nonverbal gestures.

The concept of time, according to Mann, is also an essential part of the human condition. Humans exist within a plane of time that is both remembered, and planned for in the future. With avatars, their existence ceases to exist as soon as the VW participant goes off-line. Avatars may choose to occupy VW space (i.e. buildings, homes, dance floors, etc.), and participate with other VW avatars, however, when the resident terminates their experience in the VW (i.e. goes offline), the avatar no longer exists. This directly challenges Mann's concept of time, as an avatar's time existence is sporadic, limited, and not necessarily future-oriented.

With regards to reflexivity, there are several challenges to Mann's concept of the "self", as an online and virtual presence begins to blur the lines of the actual self and how far that has been extended into the online avatar. When communicating with other online avatars, who is doing the communicating? Is it the resident, or the avatar? Does the avatar have a different persona than the resident, if so, how is that represented? The challenges associated with reflexivity, Mann's concept of the "self" and how one reflects on their own "personal" experience is an evident one.

With the understanding of "the self" utilizing Mann's theory, mental health professionals can become better aware of challenges associated with concept of identity when dealing with their clients. This can become a difficult area to navigate with clients, especially when one takes a closer look at diagnostic criteria for dissociation and depersonalization personality disorders.

Dissociation and depersonalization. An additional study by Garvey (2010) examined the possibility of diagnosis of a dissociative personality disorder for individuals who engage in VWs such as SL. A dissociative disorder, as defined by the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2000) is "The main symptom cluster for dissociative disorders include a disruption in consciousness, memory, identity, or perception." (Heffner, 2002). Specifically, for a diagnosis of depersonalization, the diagnostic criteria include:

- Persistent or recurrent feelings of being detached from one's mental processes
  or body, as if an observer;

- During depersonalization, reality testing is intact;

- Depersonalization causes significant distress, and impairment in social,
  occupational, or other functioning; and

- Depersonalization is not the result of another disorder, substance use, or
  general medical condition

(Garvey, 2010)

Garvey (2010) argues that there are many aspects of SL that may qualify someone as having a disruption in identity, perception, and/or depersonalization. For example, the default view for an avatar and resident is through an "out of body" and higher angle viewpoint. Utilizing the language found in the depersonalization diagnostic criteria, this "out of body" viewpoint could be classified as being "detached of body" and "as an observer". Garvey continues his argument by analysing the language utilized within the DSM and the current uses of VWs, and further argues that there is a "continuum of self-representation", and one that can be recognised within the mental health field going forward. At the very least, a recognition that there is some

question as to the state of VWs and the dissociative state one engages in when participating in VWs.

Addiction to online games. Another examination of an intrapersonal issue with VW residents can be the addiction to online games. SL, as with other VWs has seen a rise in residents who spend a longer than average time engaging in online activities. A study by Gilbert, Murphy & McNally (2011) utilized an Internet addiction test (see Young, 1998) that classified participants as being "addicted" to the Internet. The study revealed that approximately one third of the participants on SL qualify for the test's diagnostic criteria as being addicted to it. These individuals were also found to have had a shorter avatar age than other non-compulsive users, stayed logged on for lengthy periods, indicated that sexual activity was an important reason to participate in online, and self-identified themselves as being more highly immersed than other VW users.

An Interpersonal Examination of Second Life

Along with intrapersonal experiences that occur within SL, many interpersonal events occur as well. Based on the inherent nature of VWs, the experience of participating online occurs with the online presence of other individuals. An examination of current literature indicates that SL has been utilized in both therapeutic and self-harming ways when engaging with other residents. In particular, a review of current literature has revealed how SL has been utilized for the treatment of mental health issues, and how cyberbullying and "griefing" has occurred with other online residents.

Treatment of mental health issues. VWs have also been used to help individuals cope and treat mental health diagnoses. For example, a project reviewed by DeAngelis (2009) examined how SL was being utilized for helping clients immerse in social activities, in a safe

manner with trained professionals. The project was created by Dr. Sandra Bond Chapman, who designed a virtual environment where clients can explore, learn, and reinforce positive behaviours of clients who have high functioning autism and Asperger's syndrome. The program was able to track their emotions and measure their progress over time (Chapman, 2011). While no definitive results were provided on the project, both DeAnglis and Chapman discuss that utilizing SL as a method to engage and assist individuals in an interpersonal method with dealing with their mental health issues has been a positive one.

  Cyberbullying and griefing. In addition to some positive examples of interpersonal interactions in VW environments, there are examples of harmful interactions online. One such example of this harmful interaction which engages individuals in a negative way includes online bullying. A study by Coyne, Chesney, Logan & Madden (2009) examined the impacts of griefers. A griefer, as defined by Warner & Raiter (2005 in Coyne, et al., 2009) is an individual who purposely engage with others for the sole reason of harassing or otherwise cause distress to other online residents. The study by Coyne, et al., (2009) found that 95% of the study participants found that griefing was disruptive to their online experience, 38% classified their experience with griefing as "frequent", and 20% admitted to being a griefer within SL. Some of the reported reasons for being a griefer included the motivation to enhance personal online power, and to dominate other online players. A closer examination yielded four overall motivations for grief play (see Foo & Koivisto, 2004) which included game-influenced (benefitting from the protection due to online anonymity), player-influenced (an intrinsic desire to put others down), griefer-influenced (to maintain or enhance online personas) and self-influenced (need to exert dominance due to a need for attention and enjoying the disruption caused to others).

Utilizing the information found from this literature review, a comprehensive methodology was established. By examining the research questions, and recognising the gap in current literature, this exploratory study's aim was to evaluate the personality typologies of SL users, and comparing them to population norms by conducting an evaluation of a sample of SL users, and evaluating their results.

Chapter III: METHODS

The data collection for this study took place between October 1, 2012 and October 26, 2012. The purpose of this study was to examine the Jungian personality types of SL residents, and determine if there are statistical significant results when comparing the SL norms to population norms.

Based on the literature review, in particular the limited work in relation to Jungian typology and virtual worlds, this is an exploratory study. There was enough initial literature to suggest that a hypothesis related to some statistical difference across all four dichotomies between individuals who are part of the SL virtual world community and the population norms for the Majors MBTI variant. As such, the null hypothesis (or "H_0") states that there will be no statistical difference between the SL community sample and population norms; and my alternative hypothesis (or "H_A") states that there will be a statistical difference between the SL community sample and population norms.

Data was obtained using a three-step methodology. First, a sample of SL residents was recruited. Secondly, their demographic data was obtained. Finally, their Jungian personality type was established using Majors' protocol and MBTI variant assessment. The following sections delineate the specific methodology for each of these three portions.

Recruitment Methods

To obtain participants, I utilized several methods to garner attention for the study. With the assistance of my supervisor, Dr. Paul Jerry, online advertisements with the New World Notes Blog (http://nwn.blogs.com), the SL community forum, with Athabasca University's Graduate Centre for Applied Psychology message board and with different social media outlets (i.e. Facebook, Twitter and LinkedIn). Other methods of recruitment included convenience sampling

(i.e. contacting residents on a one-to-one basis, messaging online friends) and word of mouth from participants who already participated in the study.

After a slow beginning with recruitment, an exponential growth in response occurred after contacting New World Notes (see http://nwn.blogs.com/nwn/2012/10/survey-for-research-on-second-life-user-personalities.html), an internationally-known blog on virtual worlds. Like the other recruitment materials, the blog entry directed clients to an SL landing site, which contained background information about the study, the link to the survey, and contact information for the researcher and supervisor. . A summary of the participant's recruitment methods can be seen on Table 1.

Ethical Considerations

On October 1, 2012, the Athabasca University Ethics Review Board ("REB") provided full ethical approval that was required prior to the commencement of this study. All research and data obtained from this research was conducted according to the Athabasca Policy for Research Involving Humans and the Tri-Council Policy Statement: Ethical Conduct Research Involving Humans (Canadian Institutes of Health Research, 1998 (with 2000, 2002, 2005 amendments)). See Appendix 1 for the memorandum authorizing approval for the research to begin. The informed consent procedure is noted in Appendix 2. The procedure outlines the participants' rights as a participant, what is expected from their participation, the information that their data will be kept for five years in a secure, password protected file, and that all identifying participant information is kept separately from the survey information.

Table 1

Reported Method of Learning About the Research Study

	Frequency	Percent
Word of mouth	46	30.7
Second Life community forum board	15	10.0
In-world advertisements	7	5.3
Graduate Centre of Applied Psychology Moodle board	1	0.7
Other		
Blog	32	21.3
Facebook	30	20.0
Plurk	5	3.3
Direct referral from primary researcher	4	2.7
Twitter	3	2.0
LinkedIn	1	0.7
Unspecified	5	3.3
Total	150	100

Data Collection

Demographic data was tabulated in a password protected spreadsheet and was only shared with my thesis supervisor. All personally identifying information was removed. Upon receipt that a respondent had completed the survey, the participant was assigned an M-PTI assessment. To further aid in the protection of the survey respondents, the respondents were given a participant ID number. That participant ID number was assigned to the "name" portion

for the survey respondent on the CLSR website. The result was that even when accessing the Majors survey on an external website, participants' identities were kept anonymous.

Participant Information

Before recruiting participants, inclusion criteria needed to be created to ensure the participants who were recruited represented the average SL resident as best as possible. I chose a minimum one-hour participation time within SL, and participation within the last month. These values assure that the average user could complete the beginner tutorials, and can participate within SL for a baseline amount of time to determine if it was an Internet program they would continue to participate in. Individuals who indicated that they spent less than one hour within SL or if they participated within SL over a month ago, were excluded from the study.

Using these inclusion criteria as a baseline, a demographic survey was designed and hosted online at www.fluidsurveys.com. The survey comprised of demographic questions such as the participant's actual age, their avatar's age, how long they have participated within the SL virtual world, the country they reside in and their gender. Identifying information ,such as their name, was removed to protect and ensure a participant's anonymity. A copy of the demographic survey is included in Appendix 3.

Jungian Personality Type

The process to determine the participant's personality type required a three-stage process. The method for this process was outlined by the M-PTI to ensure that the instrument was being utilized in a reliable fashion and was replicated within this study. First, the participant was asked four different questions to determine their "best fit". In other words, they were asked which dichotomy of each of four traits they believe they were prior to the administration of the assessment. This included a series of words and phrases describing each dichotomy. Secondly,

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the participant was assigned a M-PTI assessment to each participant upon reviewing that they met the inclusion criteria and if they provided an email address (which was necessary to send them the link for the inventory). Lastly, upon receiving notification that the assessment was complete, the assessment was scored and reviewed. If the "best fit" choices and the assessment revealed different dichotomies, I requested clarification from the participant according to Majors' protocol. As indicated in the clarification email, if the participant did not respond within 48 hours, I would take the M-PTI personality type as the final type for that participant. Otherwise, I would clarify the personality type with the participant and use the value they felt most accurately described them and their preferences, either the Majors or their own pre-assessment type preference.

Jungian Personality Norms

Majors, stated (personal communication, 2012) that there was not enough data to date in the M-PTI database to utilize for population norm comparison. Upon review of the M-PTI instrument and in consultation my supervisor, I employed the norms used in the original MBTI from which the M-PTI is derived. The published MBTI values for the US population were used, as the participant demographics showed that most of the sample came from the United States of America.

Chapter IV: RESULTS

This portion will discuss the data collected from the data collection process, and is in

three sections. The first portion of this section is sub-divided into two subsections. The first

subsection reviews the demographic information as collected from the respondents. The second

subsection reviews the best fit M-PTI selections, as decided by the respondents. The second

section will review the M-PTI results as determined by the M-PTI assessment. The third section

will review the statistical significance of the M-PTI findings in relation to population norms.

Demographic Results

The demographic portion of the study was open online from September 29, 2012 to

October 26, 2012. During this period, 150 responses were received, of which 91 participants

completed M-PTI portion of the study as well. After October 26, 2012, data was transferred from

the www.fluidsurveys.com website to a password-protected Microsoft spreadsheet for analysis.

An analysis of the demographic survey is described in further detail below.

Avatar and Actual Gender

A portion of the demographic survey asked the participants on their gender. Along with

the participants' "actual" gender, I asked the participant what gender their main avatar was as

well. Of the 150 participants, 147 people chose to answer this question. A total of 88 indicated

that they were female, and 59 indicated that they were male. Of the three individuals who did not

respond to this question, one emailed me directly to indicate that they were transgendered and

did not know which answer to choose (personal communication, 2012).

I also asked the participants for their main avatar gender. Of the 150 participants, 148

people chose to answer this question. A total of 99 people indicated that the gender of their main

avatar was female, 47 indicated that the main avatar was male, and 2 chose not to answer the

question. A review of these data indicate that there is some "gender-bending" occurring, as seen by the difference between the participants' reported gender and avatar gender. A summary of the results of this section can be found in Table 2.

Table 2

Reported Gender of Survey Respondents

	Reported gender Frequency (Percentage)	Primary Second Life^{TM} avatar gender Frequency (Percentage)
Female	88 (58.7)	101 (67.3)
Male	59 (39.3)	47 (31.3)
Unspecified	3 (2.0)	2 (1.3)
Total	150 (100)	150 (100)

Respondent's Age

Along with gender, the demographic survey asked the participants their age. Participants were asked to specify their actual age, as well as the age of their main avatar. For the actual age question, all of the participants chose to respond. The most populated age group was the 45-54 age group, which was represented by 47 of the 150 participants, or 31.3%. The age group of 35-44 had 33 respondents, representing 22% of the group. The third largest age group was the 55-64 with 30 participants selecting this group, and that equalled 20% of the sample group. The fourth group had 26 participants, with 17.3% of the sample group. The fifth group had 11 participants, which equates to 7.3% of the sample population. The smallest group was the 65+ group with

three participants responding to this category. This represented 2% of the total sample size. A summary of this information can be found in Table 3.

Table 3

Reported Age of Survey Respondents and Linden Labs Reported Frequencies

Age range	Survey Respondents		Linden Labs Reported Percentage of Total Hours Spent in SL[a]
	Frequency	Percentage	
13-17	n/a	n/a	0.3
18-24	11	7.3	15.1
25-34	26	17.3	34.5
35-44	33	22.0	28.5
45-54	47	31.3	21.1
55-64	30	20.0	
65+	3	2.0	
Unknown			0.5
Total	150	100	100

Notes. [a]From Borst, T. (2009). Know your customers: Second Life demographics. Retrieved February 2, 2013, from http://xdfusion.wordpress.com/2009/04/30/know-your-customers-second-life-demographics/.
[b]Zeros were removed from table in the interest of readability.

Avatar Age

Along with actual age, I asked the respondent to indicate how old their main avatar was, in days. All 150 survey respondents answered this question, which resulted in a wide array of experiences. The fewest amounts of days for a survey participant was one day, and the largest reported amount of days was 4,483. After completing some analysis, I believe this is an inaccurate value, as 4,483 days would represent approximately 12 years. As SL was launched only 11 years ago, it is not a feasible value. As such, this value was deleted from the analysis and has been identified as an outlier.

The calculated mean across the remaining participants was 1,610.64 days, which would be equivalent to logging in everyday for the past 4.4 years. The standard deviation is 760.43, which would be equivalent to logging in everyday for the last two years. Therefore, approximately 66% of the sample survey respondents have participated in SL for approximately two to 6 years. The calculated median for the sample population was 1,715 days, which is close to the calculated mean of 1,610.64 days. The tabulated information can be found on Table 4.

Table 4

Reported Avatar Age of Survey Respondents (in days)

	N	Minimum value	Maximum value	M	SD	Median
Avatar Age	150	1	4,483	1613	718	1,714

Country of Residence

An additional measure of the demographics of my population was the main country of residence. Of the 150 respondents, all 150 participants responded to this question. A large

diversity of countries were reported, with the largest amount of participants, 67, who indicated that their main country of residence was the United States of America. This equates to approximately 44.1% of the sample group. When these values are compared to demographic statistics of www.metaverse-business.com—a website that provides up-to-date information on SL demographic statistics—one can see that the age and gender breakdown is comparable to the results found. A table summarizing the results of the main country of residence can be found in Table 5.

The second most reported country was Canada, with 22 participants indicating that it was their main country of residence. This equates to 14.7% of the total sample group. The third country was the United Kingdom, with 13 participants, or 8.7% of the total sample group. The frequencies of the 48 participants ranged from one to 3 participants, or 0.7 to 6% of the total population.

Estimated Best Fit

The second portion of the demographic portion of the survey, asked the participants to review a series of tables outlining the four dichotomies found within Jungian psychology. The tables were outlined by each dichotomy and a selection of words or phrases found within the literature (see Briggs Myers & Myers, 1995; and Quenk, Hammer, & Majors, 2001) which exemplifies the preferences used. After reading the dichotomies, the participants were asked to make an educated guess of their personality preference.

Table 5

Reported County of Primary Residence of Survey Respondents and Linden Lab's Reported Data

| Country | Survey Respondents | | Linden Labs[a] |
	Frequency	Percentage	Percent
United States of America	67	44.7	39.4
Canada	22	14.7	3.6
Europe	13	8.7	32.9
United Kingdom	9	6.0	1.4
Australia	4	2.7	1.0
Mexico	3	2.0	9.6
South America	3	2.0	2.4
Asia	2	1.3	2.0
Africa	2	1.3	0
Unspecified	2	1.3	7.8
Total	150	100	100

Extroversion Versus Introversion Dichotomy

For the first dichotomy, all 150 survey participants responded and indicated their preference. For the extraverted preference, a total of 66 respondents, or 44% indicated they believed they had a preference for this type. For the introverted preference, 84 respondents or 56% indicated a preference for this type. The expected values, according to the MBTI for the

USA, are 49.3% for the extraversion type preference and 50.7% for the introversion type preference.

Sensing Versus Intuition Dichotomy

For the second dichotomy, 148 of the 150 survey responded and indicated their preference for these traits. For the sensing personality trait, a total of 66 respondent, or 44.6% believed they preferred this trait. For the intuitive preference, a total of 82 respondents, or 55.4% indicated believed they had a preference for this trait. The expected values, according to the MBTI for the USA, are 73.3% for the sensing type preference and 26.7% for the intuition type preference.

Thinking Versus Feeling Dichotomy

For the third dichotomy, 149 of the 150 survey responded and indicated their preference for these traits. For the thinking preference, a total of 97 respondents, or 65.1% indicated believed they had a preference for this trait. For the feeling personality trait, a total of 52 respondents, or 34.9% believed they preferred this trait. The expected values, according to the MBTI in the USA, are 40.2% for thinking type preference and 59.8% for feeling type preferences.

Judging Versus Perceiving Dichotomy

For the fourth dichotomy, 149 of the 150 survey responded and indicated their preference for these traits. For the judging preference, a total of 102 respondents, or 68.5% indicated believed they had a preference for this trait. For the perceiving personality trait, a total of 47 respondents, or 31.5% believed they preferred this trait. The expected values, according to the MBTI for the USA, are 54.1% for the judging type preference and 45.8% for perceiving type preference.

M-PTI Results

This second portion of the study reviews the results provided by the personality type preference according to the M-PTI assessment. All 150 respondents invited to and sent an M-PTI assessment; however, only 91 chose to complete the assessment. As outlined within the methodology section, upon receiving the results, a comparison between the best fit and the assessment results were made. If there was a difference in any of the dichotomies, the respondent was given the opportunity to discuss and change the final assessment result to adequately reflect their true type. A summary of the assessed M-PTI responses, as well as the adjusted trait preferences (if applicable) are discussed below. A table outlining the values found within this section can be found under Table 6. In addition, decision-making tree outlining the method for deciding on the participant's personality type can be found under Appendix C.

Extroversion versus introversion dichotomy. For the extraverted preference, the M-PTI assessed a total of 34 of the 91 respondents as having a preference for extraversion. This equates to approximately 37.4% of the total respondents. For the introverted preference, a total of 57 respondents or 62.6% indicated a preference for this type. Again, the expected values, according to the MBTI for the USA, are 49.3% for extraversion and 50.7% for introversion.

Sensing versus intuitive dichotomy. For the sensing preference, the M-PTI assessed a total of 43 of the 91 respondents as having a preference for sensing. This equates to approximately 47.3% of the total respondents. For the intuitive preference, a total of 48 respondents or 52.7% indicated a preference for this type. Again, the expected values, according to the MBTI for the USA, are 73.3% for sensing and 26.7% for intuition.

Thinking versus feeling dichotomy. For the thinking preference, the M-PTI assessed a total of 56 of the 91 respondents as having a preference for thinking. This equates to

approximately 61.5% of the total respondents. For the feeling preference, a total of 35

respondents or 38.5% indicated a preference for this type. Again, the expected values, according

to the MBTI for the USA, are 61.5% for thinking and 38.5% for feeling.

Judging versus perceiving dichotomy. For the thinking preference, the M-PTI assessed

a total of 40 of the 91 respondents as having a preference for judging. This equates to

approximately 44% of the total respondents. For the perceiving preference, a total of 51

respondents or 56% indicated a preference for this type. Again, the expected values, according to

the MBTI for the USA, are 61.5% for thinking and 38.5% for feeling.

The 16 Overall Dichotomy Types

As an addition to the participant having learned about which dichotomy they had a

preference for, they also obtained their overall four-letter M-PTI code. An overall M-PTI code is

created by combining all four preferences together, and all 16-types have unique personality

traits that are a direct result of their four preferences working together.

A tally of the 16 different types was made as each of the M-PTI assessments came in and

were verified by the participant. Although no direct conclusions can be made on which four-

letter personality type preference occurs more frequently, an overview of which types appeared

was done.

The overall type tallies from the MBTI were placed on the chart, and the tallies calculated

as a result of the participants by completing the M-PTI were placed within the appropriate

section. Utilizing a natural break method in the data, each of the 16 sections were coded

according to the deviation away from the MBTI population norm. This chart can be found on

under Appendix F. Although no direct conclusions can be formed from the chart (based on the

relatively small sample size spread across these 16 types), one can see that those with Intuitive and Thinking type preferences appear more often than Sensing and Feeling types.

Statistical Analysis of Survey Information with Population Norms

Utilizing the information from the data collection process, a tally of all the dichotomies was made. Given that the data was nominal, the Chi Square (X^2) analysis was the most appropriate statistic (Morgan, Gliner, & Harmon, 2006a). The main statistical examination was a comparison of goodness of fit between the MBTI demographic data (the "expected" scores) and the Majors types found in the participants' sample (the "observed" scores.) The values from both sources can be found in Table 6.

As outlined in the methodology section of this work, the null hypothesis stated there will be no statistical difference between the SL community sample and population norms. The alternative hypothesis stated that the trait preferences found within SL participants are statistically different from the population norms. A significance value or alpha value of $\alpha = .01$ indicates that I can be 99% confident that the difference between the SL values and the statistical values is not due by chance. This value was chosen over the traditional $\alpha = .05$ value due primarily to the number of comparisons being run in order to reduce the likelihood of a Type 1 error (Morgan, Gliner, & Harmon, 2006b)

The data was inputted from the tallies found from the demographic survey, the M-PTI assessment results, and the MBTI population norms. The following sub-headings outline the analyses found when utilizing the SPSS data software package (IBM, 2012) and the corresponding statistics that the software package produced. A summary of the results can be found in Table 7.

Table 6

Assessed Dichotomy Preferences between the M-PTI Respondents and MBTI-USA Population

Dichotomy	SL Survey Respondents		USA – MBTI Values[a]	
	Frequency	Percentage	Frequency	Percentage
Extraversion	34	37.3	1483	49.3
Introversion	57	62.6	1526	50.7
Sensing	43	47.3	2206	73.3
Intuitive	48	52.7	803	26.7
Thinking	56	61.5	1210	40.2
Feeling	35	38.5	1799	59.8
Judging	40	44.0	1629	54.1
Perceiving	51	56.0	1380	45.8

Note. Values taken from Quenk, N. L., Hammer, A. L., & Majors, M. S. (2001). *MBTI Step II manual: Exploring the next level of type with the Myers-Briggs Type Indicator Form Q.* Mountain View, CA: CPP Inc.

Extraverted versus Introverted Dichotomy. With this dichotomy, an SPSS analysis was run using the SL values and the USA MBTI values. A chi-square test was performed, and no statistical significant relationship was found between the SL population and the MBTI population, X^2 (1, N=91) = 5.025, p=.025. As such, I cannot state that there is a statistical relationship utilizing $\alpha = 0.01$ value.

Sensing versus Intuitive Dichotomy. With this dichotomy, an SPSS analysis was run using the SL values and the USA MBTI values. A chi-square test was performed, and a statistical significant relationship was found between the SL population and the MBTI population, X^2 (1,

N=91) = 30.122, p<.001. As such, my study shows that there is an overrepresentation of persons who prefer the intuitive personality preference type within the SL virtual world.

Thinking versus Feeling Dichotomy. With this dichotomy, an SPSS analysis was run using the SL values and the USA MBTI values. A chi-square test was performed, and a statistical significant relationship was found between the SL population and the MBTI population, X^2 (1, N=91) = 16.627, p<.001. As such, my study shows that there is an overrepresentation of persons who prefer the thinking personality preference type within the SL virtual world.

Judging versus Perceiving Dichotomy. With this dichotomy, an SPSS analysis was run using the SL values and the USA MBTI values. A chi-square test was performed, and a no statistical significant relationship was found between the SL population and the MBTI population, X^2 (1, N=91) = 3.84, p=.055. Although there appears to be a difference between the SL and MBTI population norms, they are not a statistically significant departure from the expected values. As such, I cannot state that there are differences between the sample and population norms.

Table 7

Chi Square and Calculated p Values

Dichotomy Analysis	Df	Chi Square Values	p value
Extroversion and Introversion	1	5.03	= .03
Sensing and Intuition	1	30.12	< .001
Thinking and Feeling	1	16.63	< .001
Judging and Perceiving	1	3.68	= .06

Chapter V: DISCUSSION

The technical and immersive nature of VWs invites the conversation of identities of the participants using them. What are their personalities like? What are their personal preferences when making decisions, taking in information, and how do they organize information? My aim for this exploratory study was to answer those questions. By finding an overrepresentation of two personality type preferences (i.e. Intuition and Thinking), both educators and mental health professionals can better understand the end users of VWs and some of the reasons why participants are attracted to them.

Implications for Educators.

By having an understanding of personality type preferences, educators can create activities, workshops, and lectures that attract a larger population and engage them in activities to a greater degree. For example, residents who indicate a preference for Intuition inherently prefer abstract, big picture and theoretically designed activities. By utilizing language that attracts intuitive participants, educators may see a greater engagement from their participants.

In addition, participants who prefer the Thinking preference prefer to make decisions utilizing a logical, objective, and rational methodology. As such, for educators, utilizing language that captures this dichotomy type and downplays Feeling preference language, may see an increased engagement in their participants.

Implications for Mental Health Professionals

By becoming better aware of the overrepresentations of Intuitive and Thinking type preferences in VWs such as SL, mental health professionals can use this information and tie it into the intrapersonal and interpersonal aspects of their clients. Intrapersonally, there will be an overrepresented amount of clients who will understand their self-identities within the context of

the Intuitive and Thinking type preferences. Therefore, if and when clients discuss their online identities, utilizing Intuitive and Thinking preference type language can help engage and build a better rapport with their clients.

Additionally, mental health professionals can examine issues such as the therapeutic and griefing issues their clients discuss, whilst knowing that there is an overrepresentation of Intuitive and Thinking preference types. For therapeutic reasons, clients may wish to engage with others online who foster and develop the same type of information gathering and decision making methods. As such, this study can help mental health professionals by being better aware of their clients' preferences. When discussing difficult issues such as cyberbullying and griefing, using Intuitive and Thinking type language can also help build that rapport that professionals long to build with their clients.

Limitations

When designing this exploratory study, an attempt was made to ensure that the design, methodology, and analysis of the study were flawless. There were, however, questions that arose during the study and subsequent analysis that the reader should be made aware of. In particular, the reader should be made aware of some of the recruitment questions, the analysis of the sample versus the general population, and possible confusion between the avatar and resident when participating in this study.

Recruitment of participants. Within the recruitment notice, I requested that residents be over the age of 18, have participated for at least one hour over the last month and were willing to donate approximately 20-30 minutes of their time. There were, however, users who contacted me directly to state that they had started to use SL as part of their academic studies and did not join the VW on their own volition (personal communication, 2012). My original design was to

capture the SL resident who was attracted to VWs on their own accord, and analyse the personality types of those users. As such, it can be argued that individuals who were signed up for and participated in SL for other reasons than their own may not accurately represent the target group. A further stipulation during the recruitment process that requested that participants who were not required to participate in SL for academic or other reasons should have been made from the outset.

In addition, an overwhelming portion of the sample population was recruited through word of mouth, blog postings, and Facebook postings. As such, an argument can be made that the recruitment methods were not truly random in nature, and specialised to individuals who are found reading blog postings or Facebook postings or recruited by someone via one of these methods. As such, there could be some bias regarding the sample group, and the methods they were recruited by.

Population norms analysis. In order to complete a statistical analysis between the sample acquired and the general population, statistical figures were acquired. However, through discussions with the creator of the M-PTI, there has not been enough data collected to utilize as a standard data pool. As such, the results found needed to be compared to a comparable assessment to ensure accuracy. Although the two assessments utilize the same Jungian typology an argument can be made that since two assessments are in existence, and that one uses a forced choice option and another a Likert scale, that there may be differences in the population norms.

Avatar versus resident. An argument can be made that residents create or otherwise impose different personality type traits they would not normally feel comfortable in public into their avatars. As such, I wanted to be sure that the survey participant responded to the survey questions as their authentic selves. Although the survey mentioned that the survey participant

respond as their true selves, it is possible that they did not read these statements clearly, and responded as they thought their avatar would respond. Although a landing site and information about the survey was provided within the SL VW, the participant was required to complete the survey requirements outside of the VW. This was done to aid the participant to transition out of the VW into their authentic selves, and completing the survey in this regard. However, there is no guarantee that the participant responded as their authentic selves. There, an assumption is made that the sample population did respond to the survey and assessment as their true selves.

Areas for Future Research

As this is an exploratory study, there are additional areas for additional research and development that could expand on this study. For example, a study could be done which examines the results between a control group, a group of residents with an intuitive preference and a group of residents with a thinking preference and see if there are differences in their performance of a task. This task can be performed online with educators or in person in session with clients. Additionally, evaluating a group of individuals with a diagnosis for an online mental health condition in relation to a control group and comparing the differences found between these two samples can further provide a foundation, and confirmation of the results found within this study.

Chapter VI: CONCLUSION

The goal of this study was to explore the personality type preferences of virtual world users, in particular the users of Second Life. In particular, the aim was to explore two main questions. Firstly which personality types appear in Second Life, and secondly do the profiles that appear in Second Life differ from non-Second Life norms? By conducting the research, I was able to attain answers to both questions. An examination of the personality profiles from the sample of SL participants were scored and tabulated. In addition, the results were compared against population norms found with the MBTI. These results outlined an overrepresentation of two personality type preferences, the intuitive and thinking types, at the $\alpha = 0.01$ significance level.

Although this study has been an exploratory one, it certainly contains some merit for both educators and mental health professionals. With this study showing an overrepresentation of intuitive and thinking types in SL, both educators and mental health professionals can utilize this information in their respective fields. Firstly, educators who utilize SL or VWs within curricula can benefit from structuring their information, instructions, and activities to target these two overrepresented types. As these two types are overrepresented, educators can enhance the learning of their students by understanding how their students gather information and make their decisions.

In addition, mental health professionals can learn more about their clients in relation to online gaming and virtual worlds. By understanding the personality preferences of online virtual world users, mental health professionals can gain a better insight of the needs and attraction to online gaming that their clients desire. By obtaining this understanding, mental health professionals can prepare for sessions more effectively, understand the motivations for their

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clients with online gaming, and prepare more effective action plans that would target the reasons why clients utilize SL.

<div align="center">**References**</div>

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Appendix A

Athabasca University Research Ethics Board Approval

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MEMORANDUM

DATE: October 1, 2012
TO: Nancy Tavares-Jones
COPY: Dr. Paul Jerry (Research Supervisor)
              Janice Green, Secretary, Athabasca University Research Ethics Board
              Dr. Simon Nuttgens, Chair, Athabasca University Research Ethics Board
FROM: Dr. Jeff Chang, Acting Chair, GCAP Research Ethics Review Committee

SUBJECT: Ethics Proposal #GCAP-12-04: "An exploratory study of Jungian personality traits in Second Life™ residents"

I am pleased to advise that this project has now been awarded **APPROVAL TO PROCEED**. **You may begin your research immediately.**

This approval of your application will be reported to the Athabasca University Research Ethics Board (REB) at their next monthly meeting. The REB retains the right to request further information, or to revoke the approval, at any time.
The approval for the study "as presented" is valid for a period of one year from the date of this memo. If required, an extension must be sought in writing prior to the expiry of the existing approval. **A Final Report is to be submitted when the research project is completed.** The reporting form can be found online at http://www.athabascau.ca/research/ethics/ .

As implementation of the proposal progresses, if you need to make any significant changes or modifications, please forward this information immediately to the GCAP Research Ethics Review Committee via rebsec@athabascau.ca for further review.

If you have any questions, please do not hesitate to contact the Committee Chair (above), or the Research Ethics Administrator at rebsec@athabascau.ca .

Informed Consent Form

INFORMED CONSENT

Research Study Title:
Personality Traits and Second Life™:
An exploratory study of over-representation of Jungian personality traits
in Second Life™ residents

Primary Researcher:
Nancy Tavares-Jones
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Program Director
Graduate Centre for Applied
Psychology
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Research Purpose:
*The purpose of this research study is to explore the personality traits of
virtual world participants. In particular, this study aims to explore if there
are over-representations of Jungian personality traits in Second Life ™ residents.*

As a participant, you are being asked to:
1. Complete a demographic survey.
2. Complete a Majors PTI™ personality assessment inventory.
3. Discuss the results of the demographic survey and the Majors PTI™ with the primary researcher.

Your involvement as a participant in this study is voluntary and this means that you:
1. May verify your answers to the survey and assessment tool to ensure their accuracy.
2. May opt out of answering any question(s) at any point in time.
3. Can withdraw from the study at any time. The information that you have shared with me prior to your withdrawal will be used only with your permission. If you decline this permission, I will destroy all responses collected from you.

Career Life/Skills Resources ("CLSR") have generously donated the Majors PTI™ personality assessment tools. As a condition of the donation, CLSR have requested the Majors PTI™ assessment results. I will use the analysis that results from the data when presenting the research, but individuals will not be identifiable. The information that you share will be used for research and educational purposes only and may be published and/or presented at professional conferences.

As a respondent of this study, you will have the opportunity to ask any questions. These questions will be answered to your satisfaction prior to beginning and throughout your involvement in the study.

There are no known risks to individuals participating in this study. There will be no consequences for withdrawing from the study.

All electronic data will be stored on a secure password protected computer throughout the duration of the study. All electronic data will be permanently deleted on December 31, 2017. Your anonymity and confidentiality will be kept secure throughout the study. For the purposes of analysis, participant identities will be coded as numbers. All of your personally identifiable material (including the link between that number and your identity) will be securely stored offline, in password-protected files.   My supervisor, Dr. Paul Jerry, will have access to the data for supervisory purposes only.

I, _____ certify that I have read (or have been read) and fully understand the expectations noted above. I agree to participate in this research and will print a copy of this form to keep.

Input electronic signature

(Respondent's electronic signature)

Input Date

(Date)

Original signature inserted here

(Researcher's electronic signature)

Date inserted here

(Date)

Appendix C

Demographic and "Best Fit" Survey Questions

Your involvement as a participant in this study is voluntary and this means that you:
1. May verify your answers to the survey and assessment tool to ensure their accuracy.
2. May opt out of answering any question(s) at any point in time.
3. Can withdraw from the study up until data analysis begins (approximately November 1, 2012). The information that you have shared with me prior to this withdrawal date will be used only with your permission. If you decline this permission, I will destroy all responses collected from you.

Career Life/Skills Resources ("CLSR") have generously donated the Majors PTI™ personality assessment tools. As a condition of the donation, CLSR have requested the "best fit" demographic survey results and the Majors PTI™ assessment results. The responses you provide will be provided to CLSR with all self-identifying information removed.

I will use the information collected through the two surveys when presenting the research, but individuals will not be identifiable. The information that you share will be used for research and educational purposes only and may be published and/or presented at professional conferences.

As a respondent of this study, you will have the opportunity to ask any questions. These questions will be answered to your satisfaction throughout your involvement in the study.

There are no known risks to individuals participating in this study, and if you are a student at Athabasca University, this survey will not affect your standing.

All electronic data will be stored on a secure password protected computer throughout the duration of the study. All electronic data will be permanently deleted on December 31, 2017.

I certify that I have read (or have been read) and fully understood the expectations noted above. I agree to participate in this research and have printed a copy of this form to keep.

If you voluntarily agree to the informed consent statement above, please electronically sign here:

By typing your name here, you agree that this constitutes your signature in electronic form and that you have read and understood what it means to participate. You are also consenting to this participation, subject to any limits noted in the consent form which will have been reviewed with you.

| Original signature inserted here |
| Date inserted here |

Demographic Survey

Actual Age
- ○ 18-25
- ○ 26-35
- ○ 35-44
- ○ 45-54
- ○ 55-64
- ○ 65+

Country of Residence

How old is your main avatar (in days)?

Demographic and "Best Fit" Survey Questions (con't)

What is your gender?

○ Male

○ Female

What is the gender of your main avatar *(if you have more than one)*?

○ Male

○ Female

How did you hear about the survey?

☐ Second Life™ Message Board

☐ Word of Mouth

☐ In-world advertising

☐ GCAP message board

☐ Other [   ]

Which email address would you like your Majors PTI™ assessment sent to?

[   ]

Personality "Best Fit" Questions

For the following four questions, you will be asked to make a decision between two alternatives. You are also asked to consider yourself under ordinary circumstances – not in a work, family or other life role. There are no right or wrong answers.
(Questions were formed from information found in Majors, 2012 and Quenk, Hammer & Majors 2001)

An additional note:
You are being asked these questions as your "true self", and not under the guise of your avatar, or other "pseudo-identities" you may have developed through your participation in Second Life™ and other virtual worlds.

Do you agree to respond to these questions as your "true self"?

○ Yes

○ No

Demographic and "Best Fit" Survey Questions (con't)

Extraverted vs. Introverted

Where do you prefer to gain your energy from?

Extraversion	Introversion
Extraverted people prefer the "outer" world	**Introverted people prefer the "inner" world**
They also prefer statements like:	They also prefer statements like:
-Eagerness to interact with others	-Enjoy solitude and privacy
-Openness to new experiences	-Prefer reflecting on experiences
-Action-oriented	-Reflective and contemplative

Based on these two choices, which do you feel most accurately represents you?
- ○ Extraverted
- ○ Introverted

Sensing vs. Intuitive

Where do you prefer to gain information from?

Sensing	Intuitive
Sensing people prefer observable and factual information	**Intuitive people prefer the possibilities and perception**
They also prefer statements like:	They also prefer statements like:
-Present moment	-Future oriented
-Realism	-Theoretical
-Practicality	-Abstract

Based on these two choices, which do you feel most accurately represents you?
- ○ Sensing
- ◉ Intuitive

Thinking vs. Feeling

Where do you prefer to form decisions?

Thinking	Feeling
Thinking people prefer logical connections	**Feeling people prefer weighing values**
They also prefer statements like:	They also prefer statements like:
-Analytical inclination	-Harmony and peace
-Objectivity	-Subjective
-Justice	-Merit of subjective issues

Based on these two choices, which do you feel most accurately represents you?
- ○ Thinking
- ○ Feeling

Demographic and "Best Fit" Survey Questions (con't)

Judging vs. Perceiving

How do you prefer to handle the outside world?

Judging	Perceiving
Judging people prefer planning and organizing activities	**Perceiving people prefer being adaptable to change**
They also prefer statements like:	They also prefer statements like:
-Closure	-Open
-Planning	-Curious
-Here and now	-Future possibilities

Based on these two choices, which do you feel most accurately represents you?

○ Judging

○ Perceiving

Thank you for completing this portion of the survey!

A Majors PTI™ personality assessment will be sent to you within the next 48 hours.

Please check your inbox for an assessment from "CLSR Assessments". If 48 hours have passed and you have not received your assessment, please check your junk mail folder. You are also welcome request the assessment to be re-sent to you through the primary researcher.

Any questions, comments or enquires about this survey can be addressed to one of the following people:

Primary Researcher:
Nancy Tavares-Jones, B.Sc.
Graduate Student, Masters of Counselling
Graduate Centre for Applied Psychology
E-mail: nancy.tavares-jones@gcap.ca

Supervisor:
Dr. Paul Jerry, R. Psych.
Associate Professor & Program Director
Graduate Centre for Applied Psychology
E-mail: paulj@athabascau.ca

Submit

Recruitment Notice

RECRUITMENT NOTICE

RE: Invitation to Participate in a
Research Study about Virtual Worlds and Personality Type

Participants are using virtual worlds such as Second Life ™ for a variety of different educational and communication uses. Although there has been considerable research undertaken about virtual worlds this is not the case about the users who choose to utilize them. In particular, there is a gap in research literature about the personality types of Second Life™ residents.

As partial fulfillment of a Master in Counselling Degree, an exploratory study of the personality types of Second Life™ residents is being undertaken; specifically, a quantitative analysis using the Majors PTI™ personality assessment tool, to examine if there are over-representations of particular personality type preferences. Please contact me if you:

•   Have participated in Second Life™ within the last month, for at least a total of 1 hour

•   Are 18 years of age or older and

•   Are willing to volunteer 20-30 minutes of your time

Participant confidentiality will be maintained throughout the study. All electronic, paper, and related documents will be securely stored and will be destroyed on December 31, 2017.

Career Life/Skills Resources have generously donated the Majors PTI™ assessments being used in this study. As a condition of the donation, the assessment data will be released to them. The data will not contain any self-identifying characteristics.

If you are interested in participating in the study or have any questions about it, please e-mail Nancy Tavares-Jones at her internal Graduate Centre for Applied Psychology ("GCAP") e-mail address (nancy.tavares-jones@gcap.ca) or her external e-mail address (nancytj@gmail.com) by November 30, 2012.
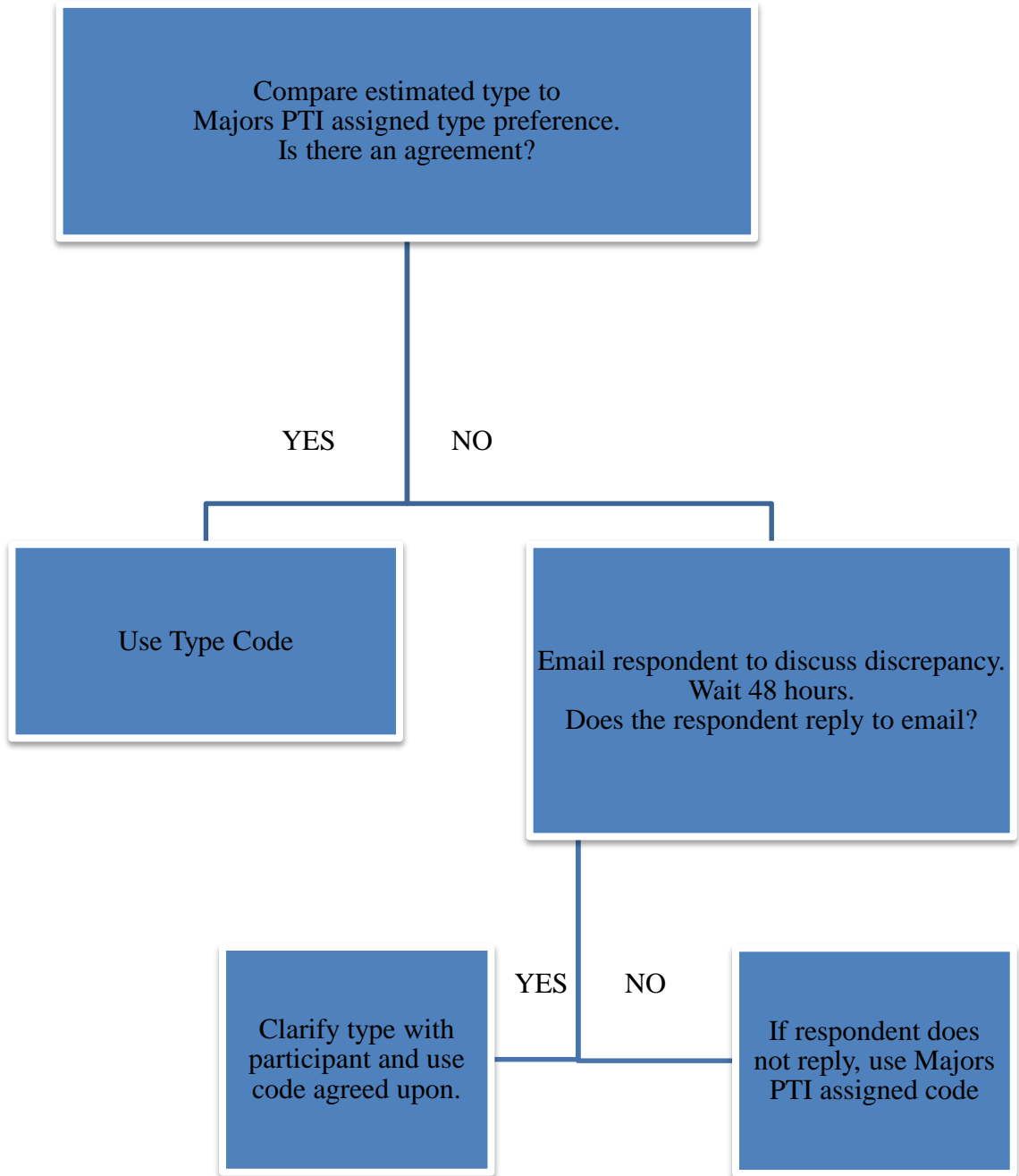

Sincerely,

Primary Researcher: **Research Supervisor:**
Nancy Tavares-Jones, B.Sc.   Dr. Paul Jerry, R.Psych.
Master of Counselling Student   Associate Professor & Director of
Graduate Centre of Applied Psychology   Graduate Centre of Applied Psychology
Athabasca University   Athabasca University

Appendix E

Decision Making Tree for M-PTI Personality Type

Compare estimated type to
Majors PTI assigned type preference.
Is there an agreement?

YES   NO

Use Type Code

Email respondent to discuss discrepancy.
Wait 48 hours.
Does the respondent reply to email?

YES   NO

Clarify type with
participant and use
code agreed upon.

If respondent does
not reply, use Majors
PTI assigned code

Appendix F

Graphical Representation of MBTI Population Norms and SL Survey Respondents

ISTJ	ISFJ	INFJ	INTJ
SL: 12.09% (11)	SL: 2.20% (2)	SL: 5.49% (5)	SL: 5.49% (5)
MBTI-USA: 11.57%	MBTI-USA: 13.08%	MBTI-USA: 1.46%	MBTI-USA: 2.06%
Diff: +0.52%	Diff: -10.88%	Diff: +4.03%	Diff: +3.43%
ISTP	**ISFP**	**INFP**	**INTP**
SL: 9.89% (9)	SL: 3.30% (3)	SL: 9.89% (9)	SL: 14.29% (13)
MBTI-USA: 5.38%	MBTI-USA: 8.77%	MBTI-USA: 4.39%	MBTI-USA: 3.26%
Diff: +4.51%	Diff: -5.47%	Diff: +5.5%	Diff: +11.03%
ESTP	**ESFP**	**ENFP**	**ENTP**
SL: 3.30% (3)	SL: 5.49% (5)	SL: 5.49% (5)	SL: 4.40% (4)
MBTI-USA: 4.29%	MBTI-USA: 8.51%	MBTI-USA: 8.08%	MBTI-USA: 3.19%
Diff: -0.99%	Diff: -3.02%	Diff: -2.59%	Diff: +1.21%
ESTJ	**ESFJ**	**ENFJ**	**ENTJ**
SL: 8.79% (8)	SL: 2.20% (2)	SL: 4.40% (4)	SL: 3.30% (3)
MBTI-USA: 8.67%	MBTI-USA: 12.30%	MBTI-USA: 2.46%	MBTI-USA: 1.79%
Diff: 0.12%	Diff: -10.1%	Diff: +1.94%	Diff: +1.51%

Difference between SL types and MBTI-USA Types

	+1.0 - 3.40 %		- 1.0 - 3.99 %
	+3.41 – 5.5 %		- 4.0 – 9.0 %
	+ 5.6 – 12 %		- 10.0 – 12.0 %