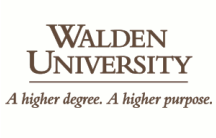

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Gender and Modification of Self-Traits in Online Dating: The Impact of Anonymity, Social Desirability, and Self-Monitoring

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has been found to be complete and satisfactory in all respects,
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Abstract

Modification of self-traits is defined as a user's modification of his or her physical self-description between real life and online dating profiles. Personality traits may impact this modification in online dating. The purpose of this study was to examine the relationship of gender and modification of self-traits on measures of anonymity, social desirability, and self-monitoring to identify factors that contributed to deception in online dating. The theoretical framework used in this study was Paulhus' social desirability model to explain changes in social interactions with the inclusion of anonymity and the desire to be perceived in a favorable light. The research questions concerned the differences in anonymity, social desirability, and self-monitoring between men and women, and the differences in anonymity, social desirability, and self-monitoring between high- and low-level modified self-traits. Archival data of 80 participants were obtained from a 2008 study conducted by Toma, Hancock, and Ellison. A factorial MANOVA was employed to determine the significance of gender and level of modified self-traits on anonymity, social desirability, and self-monitoring. Nonsignificance was found in anonymity, social desirability, and self-monitoring between gender and high- and low-level modified self-traits. Educators could benefit from the result of this study by informing new online daters of the existing digital landscape to include risky and questionable online dating conditions and predators. Likewise, law enforcement officers could benefit from this study by identifying and pursuing deceptive online daters who commit criminal acts or civil crimes against other online daters.

Abstract

Gender and Modification of Self-Traits in Online Dating: The Impact of Anonymity, Social Desirability, and Self-Monitoring

by

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Dedication

This dissertation is dedicated to my beautiful daughter Grace and my ever-so-loving and supportive husband Wil. This document is written to honor Grace, the daughter who fought the good fight, and may she be proud of me as her mother. Grace, I will always remember you as the beautiful soul who loved life, the courageous soul who charged forward without hesitation, and the fearless soul who taught me so much in such a short period of time. Rest in peace; Grace, I love you.

Acknowledgments

In this journey to pursue a higher degree, I observed that accomplishing this goal is not about knowing how to dedicate oneself to a specific objective over an extended period of time. It is about learning whom I am in the process, realizing why obtaining a doctoral degree became a lifelong goal, and knowing how to prioritize life's obstacles. I want to acknowledge and thank my husband: without you, this degree would not have been possible. I want to thank my beloved daughter Grace, for teaching me what it means to live, to fight, and to love life's obstacles. Thank you, Randy, for supporting me through the initial couple years; I would not have started this journey without your leadership. Last but not least, I want to acknowledge and thank my committee members Dr. Michael Plasay and Dr. Cathy Thompson, for being so patient with my impediments and encouraging me through the darkest days of my life.

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Chapter 1: Introduction to the Study

Introduction

The impact of Internet-induced anonymity on human behavior has received little attention in the psychological community compared to Internet-induced risks such as exposure to sexual material, victimization through harassment and bullying, and Internet addiction (Burgess, Mahoney, Visk, & Morgenbesser, 2008; Chen, Tu, & Wang, 2008; Esen & Siyez, 2011; Ko, Yen, & Yen, 2008; Patchin & Hinduji, 2006; Young, 1998). For the purpose of this study, the term Internet addiction applies to the pathological and persistent use of electronic media. Because addiction implies the cause has a disease etiology, negative behavioral consequences of Internet addiction have not reached the threshold to be earmarked as a mental disorder by the *Diagnostic and Statistical of Mental Disorders, Fourth Edition-Text Revision* (APA, 2000; Block, 2008; Pies, 2009). The interactive nature of technology and the Internet provide convenience, flexibility, and access to information that otherwise is not easily obtainable. Similarly, technology's interactive nature, combined with anonymity, frequently creates fertile ground for deception.

Research literature related to the scope of this study topic included scholars who used either qualitative or quantitative methodology to examine factors of technology, self-presentation, physical proximity, and warranting effect that contributed to online deception. While previous scholars have contributed to a wealth of knowledge on the topic of deception in online dating, I addressed a combination of variables (e.g., gender, modified self-traits, anonymity, social desirability, and self-monitoring). In this study, I

applied Paulhus' (1984) social desirability model to analyze behaviors expressed in online dating environment. I used Paulhus' model to explain changes in social interactions that were affected by Internet-induced anonymity. Deception can be impacted by factors such as gender and modified self-traits, which is defined by a user's modification of his or her physical self-description between real life and online dating profiles (Toma et al., 2008). Within the literature reviewed for this study, most modification of self-traits was done in a manner that could benefit the user in a social situation. While it is possible that some self-traits can be modified to make a user appear less appealing, it is less likely for that to happen in the online dating environment due to social desirability. Evolutionary psychologists explained why gender plays a role in deception in online dating; socially desirable responding can explain why people would modify their self-traits in online dating profiles (Buss & Schmitt, 1993; Evans & Brase, 2007; Kenrick, Gorth, Trost, & Sadalla, 1993; Toma et al., 2008). Deceptive behavior, as the result of Internet-induced anonymity, requires the attention of many social actors. Psychologists can contribute to the investigation of this phenomenon by conducting evidence-based research and providing empirically supported data. This chapter includes the following sections: (a) introduction, (b) problem statement, (c) purpose of the study, (d) design of the study, (e) research questions and hypotheses, (f) theoretical framework, (g) definitions of terms, (h) significance of the study and implications for social change, (i) limitations of the study, and (j) summary.

Problem Statement

Researchers who examined the impact of Internet on human behavior have focused on the categories of self-esteem, loneliness, and addiction (Chen & Park, 2005; Pullmann, Allik, & Realo, 2009; Yee, Bailenson, Urbanek, Chang, & Merget, 2007). Furthermore, more scholars have examined the relationship between personality characteristics and face-to-face deception rather than investigate the relationship between personality characteristics and deception in online settings. As technology advances, available interactive Internet platforms (i.e., social networking sites and virtual worlds) diminish geographic boundaries and serve as moderators for people across different cultures, gender, and age groups (Riva & Galimberti, 2001). Internet and technology influence human behavior all over the world; they serve as mediums that connect people and they change the way people think about their current and potential use. Online deception is a growing social problem, and it needs to be researched and studied in order to determine why users deceive others in online environments. While there are numerous types of online deception (i.e., identity deception, financial deception, and dating deception), I examined how personality traits can impact deception in online dating. Findings of this study can assist educators, law enforcement officers, parents, and all those who are interested in protecting themselves from unsafe and questionable online dating predators and situations.

Online deception is a phenomenon that occurs over the Internet, and is facilitated by the lack of strategies to verify information (Stieger, Eichinger, & Honeder, 2009). Because pertinent information such as identity and intent are communicated in the textual form, Stieger et al. (2009) found that age, gender, and appearance are the most commonly

deceived self-identifying attributes. Deception in online dating is a growing social problem. Computer-mediated social interaction differs in many ways from face-to-face interaction, and online dating is a prime example. In the past decade, the use of online dating blossomed and played a role in the social lives of many people around the world (Ridings & Gefen, 2004). Establishing an online identity is required to participate in online dating. Ellison, Heino, and Gibbs (2006) suggested that there exists a physical space between online identities and real life identities; deception, mistrust, and misleading online profiles impact the overall reputation of online communities and dating websites. The instantaneous, interactive nature of the Internet has changed the way people meet, and it added an element of mistrust by facilitating false and deceptive identities to flourish in the cyberspace.

Because online identity is a necessity for individuals to operate in the digital world, deception in online identity generation is more prevalent as more activities take place in the online arena. Donath (1999) defined identity deception as people's intent to provide false information due to a lack of method for verification. Moreover, Ellison et al. (2006) proposed that identity deception ranges from the misrepresentation of gender, age, ethnicity, and physical appearance to extreme cases of child pornography, sexual predators, and pedophiles. While there has not been any reported cases of identity deception that led to consequences such as death, deceit, mistrust, frustration, and anger derived from misrepresented online identity profiles have the potential to emotionally and psychologically damage an individual (Sztompka, 1999). Nevertheless, Mitchell, Finkelhor, and Wolak (2005) indicated that online deception may never exceed the level

of destruction that real life deception can cause by highlighting that Internet-based communities have yet to produce massacres or genocides as have occurred throughout history.

Financial harm can also be a byproduct of identity deception when there is a lack of strategy to verify pertinent information. Mills (2007) specified three elements that comprised individual identity: physical attributes (e.g., fingerprints), attributed data (e.g., information acquired at birth), and biographical data (e.g., education profile, employment history). While most online dating websites do not require users to fill out all three aspects of identity that Mills identified, related information are often included in a free-form, descriptive format such that users can paint a favorable portrait of themselves even when it is far from reality. Hence, when these elements of identity are fictitiously created, omitted, or augmented in online dating profiles, a perception of an individual is developed with false and skewed information, and in turn, such false perception can contribute to financial disadvantages if an individual becomes romantically involved with a fake identity profile and provides assistance to unwarranted financial solicitation. The analysis of literature concerning Internet-induced anonymity and its impact on personality characteristics and deception are discussed in Chapter 2.

Purpose of the Study

The purpose of this quantitative study was to investigate the relationship between gender, modified self-traits in online dating profiles, and personality characteristics that can lead to online deception. Examples of the relationship between gender, modified self-traits, and personality characteristics included the assumptions that males are less

likely to engage in acts of self-monitor in online dating environments, females are more likely to engage in behaviors that make them appear more socially desirable, and those who score high in modified self-traits also score high in perceived anonymity. Results of this study provided foundational data for future longitudinal studies on trend and pattern analysis of behavior in online environments. The findings provided additional information on how factors related to anonymity, social desirability, and self-monitoring contribute to deception in online dating. Hence, I investigated whether people's tendency to modify self-traits in online dating profiles played a role in deception in online dating compared to gender. To conclude, the objectives of this study were

1. To determine the relationship between gender and the three personality characteristics: perceived anonymity, social desirability, and self-monitoring.
2. To determine the relationship between the tendency to modify self-traits in online dating profiles and the three personality characteristics: perceived anonymity, social desirability, and self-monitoring.

Design of the Study

In this quantitative study, I used secondary data collected by Toma, Hancock, and Ellison in 2008. Permission to use the data was granted by Toma et al. (2008) via e-mail correspondence. Toma et al. collected information from New York City residents who used online dating services. Data were obtained from four popular online dating services in the United States: Match.com, Yahoo! Personals, Webdate, and American Singles. Detailed information on the study design, data collection, and methods used can be found

in *Separating Facts From Fiction: An Examination of Deceptive Self-Presentation in Online Dating Profiles* (Toma et al., 2008). Toma et al. focused on deceptive self-presentation in online dating profiles and did not examine the potential impact that gender and modified self-traits may have on anonymity, social desirability, and self-monitoring in respect to deception in online dating. The role that gender played in deception in online dating was explained through theories of evolutionary psychology. Modified self-traits, for the purpose of this study, were defined by a user's modification of his or her physical self-description between real life and online dating profiles (Toma, et al., 2008). Therefore, I expanded upon Toma et al.'s finding and added to the existing literature on the relationship between personality characteristics and deception in online dating.

In Toma et al.'s (2008) study, participants were recruited through print and online advertisements in a prominent local weekly newspaper, the *Village Voice*, as well as Craigslist.org, a popular online classifieds website. Recruitment criteria included (a) residence of New York City and (b) member to Match.com, Yahoo! Personals, Webdate, or American Singles. Toma et al. provided an additional filter that only included online daters whose account name and e-mail address can be matched to one of the listed online dating services. Therefore, while a total of 479 online daters signed up to participate, only 251 of them matched Toma et al.'s additional criterion and received invitations for in-person interviews. Finally, 80 online daters (40 males and 40 females) made appointments and participated in the study.

Research Questions and Hypotheses

This study was designed to answer the following questions: Is there a significant difference in perceived degree of anonymity, total scores of social desirability, and total scores of self-monitoring for males and females in online dating profiles? Is there a significant difference in perceived degree of anonymity, total scores of social desirability, and total scores of self-monitoring in high and low level of modified self-traits in online dating profiles? Toma et al. (2008) hypothesized the following: (a) engagement in online dating deception is frequent but the magnitude is small, (b) males will lie about indicators of social status (i.e., education and occupation), (c) females will lie about indicators of physical appearance (i.e., age and weight), and (d) a profile is more accurate if the relationship between online and offline personae is strong. Toma et al. showed that all four hypotheses were true. Given that Toma et al. focused on the relationship between online dating deception and self-presentation and did not include personality characteristics such as perceived anonymity, social desirability, or self-monitoring that potentially may also have an impact on deception in online dating, I focused on the impact that gender and modified self-traits had on anonymity, social desirability, and self-monitoring in deception in online dating.

Variables in this study included two categorical independent variables ([IVs] i.e., gender and high versus low level of modified self-traits in online dating profiles) and quantitative dependent variables ([DVs] i.e., perceived degree of anonymity, social desirability, and self-monitoring).

1. Is there a significant difference in perceived anonymity, total scores of social desirability, and total scores of self-monitoring between males and

females in online dating profiles? Below were the hypotheses that investigated the relationship between gender in online dating profiles and the three DVs:

$H_1$1: Women would score significantly lower in perceived degree of anonymity than men.

$H_0$1: Women would not score significantly lower in perceived degree of anonymity than men.

$H_1$2: Women would score significantly higher in the total social desirability score than men.

$H_0$2: Women would not score significantly higher in the total social desirability score than men.

$H_1$3: Women would score significantly higher in the total self-monitoring score than men.

$H_0$3: Women would not score significantly higher in the total self- monitoring score than men.

2. Is there a significant difference in perceived anonymity, total scores of social desirability, and total scores of self-monitoring between high and low level of modified self-traits in online dating profiles?

Below were the hypotheses that investigated the relationship between high and low level of modified self-traits in online dating profiles and the three DVs:

$H_1$4: Individuals who are high in modified self-traits would score significantly higher in perceived degree of anonymity than those who do not.

$H_0$4: Individuals who are high in modified self-traits would not score significantly higher in perceived degree of anonymity than those who do not.

$H_1$5: Individuals who are high in modified self-traits would score significantly higher in the total social desirability score than those who do not.

$H_0$5: Individuals who are high in modified self-traits would not score significantly higher in the total social desirability score than those who do not.

$H_1$6: Individuals who are high in modified self-traits would score significantly higher in total self-monitoring score than those who do not.

$H_0$6: Individuals who are high in modified self-traits would not score significantly higher in total self-monitoring score than those who do not.

Theoretical Framework

I employed Paulhus' (1984) social desirability model as the theoretical framework and examined the relationship between personality characteristics and deceptive behaviors in online environments. In the social desirability model, Paulhus' talked about an individual's likelihood to falsify truth in an attempt to impress others in social environments. Social desirability is driven by behaviors that are perceived to be publicly acceptable so that positive impressions can be made for the purpose of obtaining beneficial outcomes. In addition, social desirability can also create inconsistent behavior from one platform to the next as the behavior required to appear tough in a work setting is different from the behavior required to appear sensitive and tender in a romantic setting (Heerwegh, 2009; Massara, Ancarani, Costabile, & Ricotta, 2012). Due to individual desires to be liked and accepted in social environments, Paulhus' social desirability

model can be used to introduce anomalous or harmful behavior that is abnormal to a typical situation.

Nature of the Study

I chose a quantitative design for this study so that I could investigate the relationship between gender, modification of self-traits in online dating profiles, and personality characteristics that could lead to online deception. I used the quantitative research design because I intended to analyze the relationship and significant changes between two IVs (i.e., gender, high and low level of modified self-traits), and three DVs (i.e., perceived anonymity, social desirability, and self-monitoring behavior). I used archival data collected by Toma et al. (2008). Toma et al. advertised their study through online and print ads in New York City and their final sample size was 80 after applying four recruitment criteria. I employed factorial MANOVA to analyze the archival data with two categorical IVs and three quantitative DVs.

Definitions of Terms

The definition of terms is provided below for reference and guidance for the reader:

Emoticon: An emoticon is an emotional icon that individuals use to convey facial expressions in text-based environments (Aretz, 2010). Emoticons are useful in text-based environments that lack visible facial cues when expressing emotions. For example, an expression of happiness is often emphasized with a smiley face :) compared to an expression of sadness that is represented by a frowning face :(.

Internet-induced anonymity: A form of ambiguity and secrecy that develops when a person interacts/communicates with another over a computer-mediated platform (Wodzicki, Schwammlein, Cress, & Kimmerle, 2010). This computer-mediated platform minimizes face-to-face interaction that generally takes place when people communicate to each other. Furthermore, due to the lack of face-to-face interaction, nonverbal expressions fail to transmit and hence create a sense of privacy and seclusion. This perceived sense of seclusion is often understood as Internet-induced anonymity, whereby the inability to physically see the other person, or to be seen by others, produces a perceived sense of anonymity (Hertlein, 2010).

Online dating: Internet-based dating rituals that mimic the protocols of face-to-face dating practices (Barraket & Henry-Waring, 2008). Online dating allows geographically dispersed people to meet, for romantic purposes, while minimizing the cost of travel.

Online dating service: A company that provides Internet-based dating services. People who subscribe to online dating services can create profiles describing themselves for the purpose to contact, and be contacted by, others whom they find attractive (Toma et al., 2008). Due to the increased use of Internet and Internet-based technologies, online dating services have become a popular choice for romantic encounters (Egan, 2003).

Online behavior: Online behavior includes the use of written communication (e.g., self-description, emoticon), observable physical appearance through profile photos, and any other action that takes place in the online environment (Aretz, 2010).

Self-monitoring: A construct of behavior that changes based on an individual's orientation to his/her close relationships. The application of self-monitoring varies by an individual's motivation, ability, and attention to detail (Leone & Hawkins, 2006). Self-monitoring is more frequently employed in social settings than in private to achieve social appropriateness. People who conduct high level of self-monitoring strategize to provide a positive self-presentation and those who perform low level of self-monitoring are consistent with their behavior and attitude across a multitude of situations and circumstances (Leone & Hawkins, 2006).

Self-presentation: A description of oneself that can change based on the intended audience and the context of the social interaction in which one is involved (Toma et al., 2008). When an individual narrates his/her self-presentation, the environment, goal, and motivation are often taken into consideration so that information to include, exclude, augment, or distort is cognitively organized and planned (Schlenker, 2002; Toma et al., 2008).

Online self-traits: Descriptions of an individual's physical and emotional characteristics that are frequently asked in online dating profiles (Aretz, 2010; Barraket & Henry-Waring, 2008). An example of self-trait in this study includes adjectives to describe oneself (e.g., outgoing, quiet, intelligent, humorous).

Social desirability: The internal desire of an individual to be likeable in social settings (Dodaj, 2012). The display of high level of social desirability projects an individual's longing to be seen in a positive light by shaping and modifying his/her behavior based on perceived socially acceptable norms.

Warranting effect: The likelihood of online daters to accurately portray their profile description and photo (Toma et al., 2008). Warranting effect depicts the connection between the real-world self and the self-presentation available in online dating profiles. A higher warranting effect of an online dating profile is often an indicator for lower risk of deception because it connects an individual's online persona to his real world persona (Toma et al., 2008).

Assumptions

I assumed that the participants answered the self-report questionnaires used in this study honestly and without bias. I also assumed that the participants had enough self-awareness and self-insight to portray themselves in the most truthful manner, in online dating profiles. Furthermore, because the archival data were collected as a sample of the online dating scene in a dense and diverse metropolitan city, the data were assumed to be specific to the population of that community, and that generalization could be made to other communities that shared similar characteristics.

Scope and Delimitations

In this study's problem statement, I identified a gap in the literature on the relationship between personality characteristics and face-to-face deception. I analyzed if significant differences existed between gender and modification of self-traits in online dating profiles and personality characteristics (i.e., anonymity, social desirability, and self-monitoring). I focused on personality characteristics that could contribute to deception in online dating because access to the Internet and online dating services had grown exponentially in the last decade (Riva & Galimberti, 2001). Most of the general

population had accepted this exponential growth; Internet and online dating services have become accepted mediums that connect people, and they are slowly changing the way people think about themselves and their self-presentation in online environments.

Toma et al. (2008) recruited a total number of 80 participants. Four criteria were employed during the recruitment process, and the original researchers focused on the online dating community in New York City. In addition to a geographic criterion, Toma et al. also desired their participants to be above a certain age, they wanted to include only heterosexual online daters, and they limited the participant pool to online daters who had a membership to at least one of the four preidentified online dating services. These criteria were most likely set due to Toma et al.'s limitation of access to a large number of online dating websites, their ability to obtain consent forms (i.e., age criterion), and ease of access to a dense and diverse metropolitan city. Without knowing the intent of the original researchers, I could not provide justification as to why they excluded candidates of nonheterosexual orientation.

The term generalizability applies to a researcher's assumption that the participant pool could represent the general population of that community, and that the study findings could also be used to apply to the general population. Given the sample size of the archival data used and the number of recruitment criteria employed, I could not express in good faith that the sample size was a representation of the general population of New York City or that the study results would have generalizability.

Significance of the Study and Implications for Social Change

Results of this study could offer professional applications on how deceptive behaviors are motivated by goals and intent. Marsella (1998) proposed that changes in the global community will evolve, and psychologists need to understand and work with issues that arise from this evolving phenomenon. As technologies develop and simultaneously diminish geographic boundaries of the global community, psychologists must seek and understand whether technology changes the way people perceive themselves, how technology impacts social interactions in online environments, and whether Internet-induced anonymity contributes to the urge to exploit others for self-gain, compared to other environments where anonymity is less likely to be present.

Technology is changing the way people perceive access to information and this trend will continue to evolve and modify the way people think and interact with each other (Badhwar, 2009). Researchers of psychology play a role in this developing phenomenon by driving critically- and empirically-supported research and producing data. Evidence-based research related to the effects of Internet-induced anonymity (i.e., deception and exploitation) is necessary to observe changes in people's self-presentation. Furthermore, gathering data to either support or fail to support this phenomenon across cultures, age groups, and gender can provide insight to this evolving trend. Sustaining an anonymous presence on the Internet is made possible by the lack of accountability and requirement for true identity (Wodzicki et al., 2010). As a result, individuals who exploit this anonymity may believe that their actions in online environments are not likely to have real world consequences (Hertlein, 2010).

Future researchers could also examine the relationships between personality traits and deception in online environments. This type of investigation could help discover personality traits that have the potential to contribute to deception. An experiment of this nature could be structured so that participants from different age groups, ethnic backgrounds, and education levels perform certain actions over the Internet under anonymity. Results could be cross examined with deception scales that have reliability and validity scores as a secondary analysis. Future researchers and professionals interested in this area must note that there should not be a formula to determine people's likelihood to deceive, but numerous factors could contribute to deceptive tendencies under Internet-induced anonymity. If a set of personality traits were shared by a group of individuals who are deceptive during an online activity, researchers need to understand that these personality traits are not definitively correlated to deception, and consider that the same set of personality traits, under different environmental and situational factors, would not contribute to deceptive acts. Therefore, psychologists are responsible for adhering to the American Psychological Association's (2002) Ethics Code to prevent misuse of any participant information and also to avoid inflicting unnecessary harm to the general public.

While different actions can be taken to ameliorate this social concern (i.e., educate the general public about the potential danger of the Internet and technologies, or restrict the amount of personal information that is shared over computer-mediated communication platforms), evidence-based psychological studies are necessary, and it is one of few methods that only researchers in the field of psychology are qualified to

conduct. Research is a necessity to comprehend a combination of possible factors that can contribute to deceptive tendencies in online environments. With research designs that can generate a set of psychological or personality profiles, professional, ethical, and legal ramifications must be examined. I did not intend to showcase a set of personality characteristics that should be used for profiling. Rather, research results should be understood as reference points, and future researchers who wish to use them must do so with caution. While some commonly shared personality characteristics may contribute to online deception and exploitation, situational, environmental, and other unforeseeable factors can also impact people's behavior in online environments.

Positive social change as a result of this study included the discovery of information on how technology and anonymity impact human behavior. Knowledge expansion in this area can help psychologists, teachers, parents, and criminal investigators understand the positive and negative influence of technology and anonymity. Furthermore, these insights could foster the development of strategies to eliminate factors that contribute to an individual's desire to deceive in online environments. Understanding which social, environmental, and interactive factors trigger exploitive and deceptive behaviors can provide insight to persons in authority so that they can prevent foul-play, protect the young and the innocent, and educate the masses on safety measures.

Limitations of the Study

Because the analysis of this study was based on data collected by Toma et al. (2008), I expected that similar limitations would be present. Toma et al.'s limitations

were mostly related to the type of participants recruited. Specifically, because Toma et al. examined the relationship between deception and self-presentation, online daters who engaged in more severe forms of deception were not willing to take part in the study. Secondly, Toma et al. only examined the relationship between self-reported and observed accuracies of three variables (i.e., age, weight, and height).

The main limitation to use the same data to analyze the research questions presented in this study was the type and depth of data collected from the participants. For example, information obtained on perceived anonymity was buried in the midst of other unrelated survey questions such as the number of online relationships, marriages, and awareness of other online dating sites (Toma et al., 2008). This limitation was challenging in the current study as it did not include information such as if the participant would use the perceived anonymity to alter their online dating profile, if they would consider their perceived anonymity to be beneficial to achieve their goals, or if their perceived anonymity was a hindrance to their self-presentation. Therefore, if the scope of perceived anonymity were assessed further, it would increase the possibility that anonymity played a role in its relationship to online deception.

A second limitation was that the evaluations of modified self-traits, social desirability, and self-monitoring were obtained based on self-reported questionnaires. The reliance on self-report style questionnaire is a limitation for deception related research regardless if it is in face-to-face or online settings. DePaulo, Kashy, Kirkendol, Wyer, and Epstein (1996) noted that self-report methods are particularly biased because the participants are ultimately asked to be honest about lying. Future researchers should

account for these limitations by developing interactive questionnaires where the data collected are not solely based on self-report methods, and broadening the scope of investigation by testing variables the research question intends to address.

Summary

To summarize Chapter 1, I introduced this study's focus on the impact of Internet-induced anonymity on deception in online dating. I provided an overview of existing literature that addressed the impact of Internet on human behavior and highlighted the gap in the literature that pertained to deception in online dating. I gave a summary on the purpose and objectives of the study, the genesis of the study design, this study's research questions and hypotheses, and the application of Paulhus' (1984) social desirability model as the theoretical framework. Chapter 1 also included the definition of terms used specifically in this study, the significance of the study, the study's implication for social change, and limitations of the study.

In Chapter 2, I review relevant literature related to deception in online dating that has a different point of view, outcome, and the relationship between those studies and the current research effort. I continue the chapter by applying Paulhus' (1984) social desirability model as the theoretical framework. In the next section, I provide a detailed literature review on the research variables (i.e., gender, modified self-traits, perceived anonymity, social desirability, self monitoring), followed by a thorough outline and description of the archival data used in this study. Chapter 2 concludes with a review of literature relevant to the chosen statistical analysis of factorial MANOVA.

In Chapter 3, I present a detailed methodology of the study to include descriptions of the research design, setting, population, instruments used, and the chosen statistical analysis. In Chapter 4, I illustrate the results of the study to include an examination of the finding and future exploration of different hypotheses. Finally, in Chapter 5, I provide an overview of the dissertation findings, interpret significant results, and show how these results relate to other findings in the literature that are relevant to the topic of online deception.

Chapter 2: Literature Review

Introduction

In this chapter, I will review and investigate existing literature related to deception in online dating. In order to accomplish this task, the strategy for searching the literature included Internet and Walden library searches for key terms ranging from 1990 to present (e.g., *Internet*, *cyber*, *online deception*, *online anonymity*, *self-monitoring*, *social desirability*, *self-traits*). I obtained online articles from Walden library databases, including PsycINFO, Psychology SAGE database, Business Source Complete, Academic Search Complete, and PsycARTICLES, and reviewed reference sections of peer-reviewed journal articles to incorporate relevant literature. I used and acquired applicable course material and books written by recognized experts in the field of cyberpsychology and online dating. Moreover, I obtained the archival dataset used in a study conducted by Toma et al. (2008). The organization and content of this chapter are as follow: (a) study objective, (b) compare and contrast existing research related to this study, (c) theoretical framework, (d) literature review of research variables, (e) literature review of archival data, and (f) summary.

Study Objective

The purpose of this study was to investigate the relationship between gender, modified self-traits in online dating profiles, and personality characteristics, such as perceived anonymity, social desirability, and self-monitoring, that can lead to deception in online dating. Deception in online dating for the purpose of this study included the following factors: perceived anonymity in the context of data generation and

communication through the Internet, display of behavior that is different from the norm and inconsistent based on the social environment, and users' manipulation of their self-presentation and identity (Hancock, Curry, Goorha, & Woodworth, 2008; Toma & Hancock, 2010). The goal of this study was to investigate if a person's gender and tendency to modify self-traits in online dating profiles played roles in deception in online dating.

Literature Review Relevant to Deception in Online Dating

Numerous scholars are interested in the phenomenon of online dating and how technologies facilitate romance. Barraket and Henry-Waring (2008) conducted a qualitative study between 2004 and 2005 in Australia to examine the phenomenon of online dating with respect to how online technologies mediate intimate connections. Barraket and Henry-Waring interviewed 23 participants who claimed to have experience using online dating websites. Barraket and Henry-Waring conducted these interviews through face-to-face meetings, synchronous question and answer sessions through instant message, and asynchronous surveys through e-mail. Demographics of the sample pool were as follows: participants' age ranged from 25 to 62; gender divide yielded five males and 18 females; sexual orientation showed 19 heterosexual, one homosexual, and three fluid sexual orientation; and level of education ranged from high school graduates to postgraduates.

Barraket and Henry-Waring (2008) made three general conclusions. First, Barraket and Henry-Waring claimed that the advancement of technology and technical convergence between the Internet, smart phones, and personal data widened the dating

market and made it possible for online dating services to reach a broader and more diverse population. Secondly, Barraket and Henry-Waring disputed the phenomenon that physical proximity is a key factor to dating consideration. Instead, Barraket and Henry-Waring found that online technologies allowed participants to expand their social interactivity and existing social network for potential mates. The freedom to explore avenues of intimacy and sexuality is another element of online dating that made online dating an attractive method compared to the traditional of real world dating rituals. Moreover, participants learned and enjoyed the byproduct of online technologies (e.g., anonymity, instantaneous gratification of responses, and elimination of geographic limitations) and some online dating etiquette remained the same as the dating rituals required in the real world dating. In addition, there was room to construct new norms of relationship building and rules of engagement. Barraket and Henry-Waring suggested that participants found opportunities for self-reflection, disclosure, and honed self-presentation in online technologies. These opportunities generated in online daters the belief that they can dispose of their mates without attachment or guilt, and these opportunities were inevitably reshaping the definition of intimacy in the digital era.

While some scholars focus on the impact that technologies have on online dating, others analyzed the relationship between the levels of self-esteem of online daters. Aretz, Demuth, Schmidt, and Vierlein (2010) conducted a quantitative study to determine if online daters have lower self-esteem compared to face-to-face daters, and if online daters express higher rates of contact when the desire to obtain partnership is high. Aretz et al. recruited 437 daters by placing an online questionnaire on two popular German online

dating portals and by forwarding the same questionnaire to friends and family of the authors. Demographics of the sample pool were as follows: 223 participants were online dating users, 214 participants were not; participants' ages ranged from 17 to 69; and gender divide showed 280 (64%) females and 157 (36%) males. Aretz et al. found no significant difference in the level of self-esteem between online daters and real world daters. Furthermore, online daters who had lower levels of self-esteem used online dating services more intensely than those with higher levels of self-esteem because the asynchronous environment allowed them to have better control over self-presentation and to convey crafted messages.

Online dating is similar to real world dating in many ways; one way in particular is the trust threshold and information sharing. Gibbs, Ellison, and Lai (2011) conducted a quantitative study to examine online daters' desires to share information while securing their privacy, the level of self-disclosure necessary to be seen as a favorable mate, and the asymmetric communication nature of the Internet that contributed to misrepresentation of the self. Gibbs et al. applied the uncertainty reduction theory to explain online daters' need to both seek and provide information to assess the truthfulness of their counterparts as well as their self-presentation. Gibbs et al. introduced the uncertain reduction theory such that people's initial interaction with strangers was motivated by the desire to minimize uncertainty, with a goal to understand each other's behavior. While the asynchronous nature of online dating delays information exchange, computer-mediated communication allows participants to engage in selective self-disclosure in an attempt to present a better or ideal self. Ideation of the self is often judged as deception in online

dating because augmenting an individual's physical, social, and educational attributes can make an individual appear more favorable to a potential mate. Gibbs et al. also applied the warranting principle to evaluate online daters' judgments between adequate self-disclosure and misrepresentation. Henceforth, the warranting principle addressed the relationship between online and offline identity claims and methods that people would use to verify online identity claims.

Furthermore, Gibbs et al. (2011) examined 562 online daters who were active daters for a minimum of 1 month, not married, at least 18-years-old, and participated in one of the following online dating websites: eHarmony, Match.com, and Yahoo! Personals. Demographics of the participants were as follow: participants' ages ranged from 18 to 60 with 60% of them between the ages of 30-40; gender divide showed 55% were males and 45% were females; ethnic data indicated 78% were Caucasian; sexual orientation showed 80% were heterosexual; and education data indicated 79% had at least a bachelor's degree. Gibbs et al. found that participants used uncertainty reduction strategies (e.g., use of search engines to verify a potential mate's professional association, cross-validate information presented on one dating website to another) as security measures to assess deception, misrepresentation, and in return, these participants disclosed more personal information as a gesture of good faith to gain the trust of others. Gibbs et al. concluded that the warranting principle and the uncertainty reduction strategies were used frequently by online daters to validate information provided by their potential mate regardless of their Internet experience. Results from these strategies (i.e., John Smith claimed to be a financial consultant on an online dating website and a

potential mate validated that profile attribute by locating his business profile on LinkedIn and Facebook) were often sufficient for online daters to decide if a potential mate is trustworthy.

In addition to analyzing the impact of technologies, self-esteem, and trust on online dating, physical attractiveness became an important factor to consider for deception in online dating. As a follow-on study to Toma et al. (2008) research, Toma and Hancock (2010) used the 2008 dataset and examined the impact of physical attractiveness on deception in online dating. Toma et al. focused on accuracy, social acceptability of deception in online dating profile, and the warranting effect; Toma and Hancock honed in on the correlation between participants' physical attractiveness (i.e., photographs taken at the researchers' lab) and deception found in participants' physical descriptions (i.e., height, weight, and age). With a sample pool of 80 participants, Toma and Hancock showed that 69 participants were deceptive in their online dating profiles. Toma and Hancock obtained independent judges to rate the attractiveness of these photographs and showed a correlation between participants who appeared less attractive to the independent judges and deception in the participants' physical descriptions. Deception only occurred in these participants' physical descriptions and nowhere else in their online dating profile (e. g., social status, beliefs, habits and interests). Deception was strategic as supported by evolutionary theories (Buss & Schmitt, 1993; Evans & Brase, 2007; Kenrick, Gorth, Trost, & Sadalla, 1993), and deception was made possible due to the asynchronous nature of computer-mediated communication (Hancock et al., 2008; Walther, 2007).

Once again using the same 2008 dataset, Ellison, Hancock, and Toma (2011) employed qualitative methodology to focus on the level of impact that reduced cues, asynchronicity, and context-specific expectation have on online daters in their assessment of their own online dating profile discrepancies and discrepancies in others' profiles. With the same sample pool of 80 participants, Ellison et al. interviewed the first 37 participants and the demographics of these participants were as follows: gender divide showed 12 men and 25 women; participants' ages ranged from 18 to 47; and the length of time spent on online dating ranged from 2 months to 7 years. The sample pool was limited to 37 participants due to saturation and because Ellison et al. were no longer receiving new insights from participants. The study procedure was similar to Toma et al. (2008) study where the participants were given a copy of their own online dating profile and asked to assess the acceptability of deception on their profile items (e.g., age, height, occupation, religion). Ellison et al. included an additional requirement of a survey and an individual interview.

In Ellison et al. (2011) study, each interview was approximately 30 minutes and the interviews were semistructured where protocols were in place, but the interviewer had the flexibility to dive into any area of interest. The interview questions were designed to extract the rationale behind participants' acceptability of misrepresentation in theirs and others' online dating profiles. Ellison et al. found that participants were forced to explain or describe themselves with reduced cues, which is different from face-to-face environments where physical attributes could be easily observed (e.g., body type, hair color, attractiveness). Ellison et al. interpreted that participants' misrepresentation of

themselves in the online dating profiles stemmed from the lack of self-knowledge or insight. In addition, technical limitation of profile construction of the online dating websites played a role (e.g., close-ended questions, multiple choice options to select an individual's body type), and it enabled the participants to choose the better option when in fact a medium choice would have been more accurate but was not available.

Ellison et al. (2011) indicated that asynchronous environments do affect how self-presentations are crafted when participants believed the profile information would be read in the future. With that perception, Ellison et al.'s participants felt it was acceptable to craft self-presentations that incorporated the past, present, and the future/ideal self. As a result, these participants judged that while self-presentations on the profile may not be 100% accurate, the discrepancies found were acceptable because those discrepancies were still part of whom the participants were, are, and will be in the future. Lastly, because people follow certain dating rituals in the real world, Ellison et al. found a concept in the online dating culture: a certain level of misrepresentation is expected and accepted by most, but not all, of their participants. Self-presentation in online dating profiles became a promise that the online dater made to his/her potential mate because it was a combination of the dater's past, present, and future. The onus to make a sound transition from online dating to face-to-face interaction rested on the online dater to follow through with that initial promise (i.e., self-presentation). This finding was interesting because while it specified how certain dating rituals from the real world were expected in online dating, the reverse was not true and that there were specific online dating behaviors that would not be accepted in the real world.

Toma and Hancock (2012) examined deception in online dating by employing linguistic analyses on the textual self-description portion of participants' online dating profiles. Using the same dataset that Toma et al. collected in 2008, there were two parts to Toma and Hancock's study: computerized linguistic analyses to identify linguistic cues that correlated to deception in online dating profile; and human coding to analyze linguistic cues that correlated to deception in online dating profiles. From the 80 participants in the 2008 dataset, Toma and Hancock eliminated two participants from this study because the textual self-description portion of their online dating profile was left empty.

Toma and Hancock (2012) made the following hypotheses: highly deceptive profiles would contain fewer self-references, highly deceptive profiles would have lower word count, and highly deceptive profiles would avoid deceptive topics and would optimize accurate aspects of the self. Toma and Hancock employed computerized linguistic analyses on three different types of data from the online daters' profiles: close-ended questions such as height, age, and occupation; open-ended questions such that the participants described themselves; and photographs. Using regression models built for each hypothesis, Toma and Hancock found that deceptive profiles did contain fewer self-references, some of the deceptive profiles contained lower word count, and deceptive profiles did avoid deceptive topics and amplified accurate aspects of the self. Results from this portion of the study supported conclusions from previous studies where deceptive online daters psychologically distanced themselves from their profiles so that

less self-references were made, and deception was strategically placed in the profiles to hide their shortcomings and augment their strengths.

Toma and Hancock (2012) examined whether human judges were able to identify deceptive cues found in the same textual self-descriptions of the profiles in the second portion of their study. Toma and Hancock recruited 62 graduate students as human judges and each of them rated 22 out of the total 78 online dating profiles. The human judges were asked to evaluate trustworthiness – were the daters telling the truth about themselves in their profiles – of online daters based on their textual self-description. In order to test trustworthiness, Toma and Hancock hypothesized the following: longer self-descriptions were viewed as more trustworthy, shorter and more concise self-descriptors were viewed as more trustworthy, and self-descriptions with frequent use of articles were viewed as more trustworthy. Toma and Hancock found that human judges were not able to assess trustworthiness based on online daters' textual self-descriptions. While the human judges did perceive longer self-descriptions as more trustworthy, none of the linguistic cues the human judges used to predict deception were significant predictors of online daters who severely lied on their profiles. Toma and Hancock found that human judges' assessment of deception was unreliable because linguistic cues analysis conducted by human judges leaned more towards credibility assessment than deception detection. While deception can sometimes be detected by computerized linguistic analyses and almost never by human coding, Toma and Hancock concluded that trustworthiness can be evaluated by how information was constructed and conveyed just as much as what information was disclosed.

Previous related studies that examined online dating focused on personality traits such as the Big Five, linguistic analyses, self-presentation, and self-disclosure. These studies were excellent sources and foundation for the current study because they provided a wealth of knowledge in understanding the environment of online dating. These studies examined how online dating differed from real world dating, under what circumstances different or similar dating strategies were used in online dating, and how the construction and content of self-presentation were predictors of deception albeit human attempts at using linguistic cues to detect deception had not been proven useful. The limitation sections of related studies requested future researchers to examine the relationship between different combinations of factors that could contribute to deception in online dating: this study took existing knowledge and examined the level of effects that gender and self-traits have on anonymity, social desirability, and self-monitoring behavior in online dating. I used archival data collected by Toma et al. (2008). I selected factors that the Toma et al. did not use and examined different factors that were assumed to have an impact on deception in online dating. By using existing data but changing the combination of factors and their potential interactions, this study fulfilled the needs of many studies by reexamining the same data with different statistical strategy and focus.

Theoretical Framework

The transformation of social desirability between online environments and the real world has been a topic of research for quite some time. Studies showed similarities between behaviors in online environments and the real world and the same similarities were present for social desirability and acceptable standards (Yee & Bailenson, 2007;

Yee et al., 2007). People in online environments engage with each other in a computer-mediated context where information and behavior are exchanged via text, images, and voice chat. Reeves and Nass (1996) social response theory indicated that the transmission of social cues in this computer-mediated space indeed brought forth socially desirable responses and encouraged behaviors that were typically expressed in face-to-face settings. Given that most computer-mediated interactions take place through text exchanges, the inherent temporal delay provides users more leverage to manage and hone their responses that would achieve a socially desirable goal (Massara, Ancarani, Costabile, & Ricotta, 2012). This type of social desirability bias is further amplified in social network and online dating environments since participants' true name and identity are revealed at first glance.

Using Paulhus' (1984) social desirability model, I found that impression management, the desire to enhance an individual's physical attribute to appear desirable based on social standards, is the key factor that influences people's inaccurate depiction of themselves in self-reports. In particular, people's tendency to impress others increased greatly from anonymous to public conditions. Three different studies were conducted in Paulhus' model of social desirability research. The first study used factor analysis to examine factors typically loaded in desirability scales and found that impression management and self-deception were the two highest loaded factors. The second study used confirmatory factor analysis to compare the interaction between two sets of factors that could have a great impact on socially desirable responding (i.e., self-deception and impression management and attribution and denial model) and found that the attribution

and denial model did not fit the social desirability model. The third and last study simply compared the scores between self-deception and impression management from anonymous to public conditions to determine which factor has a greater impact on socially desirable responding. Paulhus found that impression management had the greatest impact on socially desirable responding when compared to all other factors commonly found on desirability scales. I chose Paulhus' social desirability model as the theoretical framework because online dating environments rely on an individual's ability to generate and project amicable and likeable self-presentation in order to attract potential mates. In an environment where self-presentation can be skewed to achieve the socially desirable response, Paulhus' social desirability model is the most suitable and applicable theory for this study.

Intentional deception and misrepresentation of an individual's attributes in online environments are the two most debated topics related to deception in digital environments. Some research indicated that situational arousal combined with social desirability goals were ammunition to induce biased scanning, a process where people were prompted to describe good qualities of themselves (DeAndrea, Tong, Liang, Levin, & Walther, 2012). This type of biased scanning is generally considered non-threatening, not a strategic misrepresentation of oneself, and therefore not deceptive in nature. DeAndrea et al.'s (2012) study examined variant levels of biased scanning between the sexes and found that females were more likely to alter their physical description to achieve a more socially desired image than males. Future research was called to

investigate factors that would contribute to men's tendency to express high levels of biased scanning that is not related to their physical attribute.

Literature Review of Research Variables

Research questions in this study examined how gender and a person's tendency to modify self-traits when communicating online impacted perceived anonymity, social desirability, and self-monitoring behavior in online dating environments. This section analyzed literature that focused on the following research variables that have an impact on deception in online dating: gender, modified self-traits, perceived anonymity, social desirability, and self-monitoring.

Gender and Deception in Online Dating

Evolutionary psychology suggested that males and females used different tactics to enhance their reproductive viability in online dating environments (Evans & Brase, 2007; Lance, 1998; Schmitt, 2005). Due to biological differences and gender-specific social construction, females were more likely to augment their physical attributes such as weight, height, and self-description of attractiveness than males, and males were more likely to enhance their financial stability, physical strength, and social status than females (Hall, Park, Song, & Cody, 2010). Mating preferences did not differ between the real world and online dating, and research showed that due to the combined anonymous and temporal delay aspects of online environments, online daters were equipped to manipulate their existing attributes to appear more favorable to the opposite sex (Lucid, 2009; Walther, 2007).

Evolutionary theories suggested the importance of physical attractiveness in the realm of procreation and passing on the genes (Buss & Schmitt, 1993; Lynn & Bolig, 1985). While physical attractiveness has been empirically supported to be an important element of online dating, there is a gender disparity between how it is perceived and evaluated. Hitsch, Hortacsu, and Ariely (2010) suggested that in general, both sexes preferred a highly educated partner and often prefer a partner of the same ethnic background. Females preferred males with higher income, higher education level, and taller height compared to themselves and males chose females with higher education level, blonde, and long straight hair. The type of occupation and income were less important than education and physical appearance; however, females taller than 5'8" were often considered less attractive (Hitsch et al., 2010).

To examine the role of natural selection in evolution and mate selection throughout the lifespan of *Homo sapiens*, Alterovitz and Mendelsohn (2011) found that most predictions of evolutionary theories held true where males sought physical attractiveness and youth from their mates and expressed social status more often than any other trait, whereas females mostly sought after social status from their mates when they were younger but desired younger males as they reached older stages of their lives. This study showed that male's continued desire for physical attractiveness and youth in their mates did not taper off as they reached later stages of life, which reinforced evolutionary theories of procreation and passing on of genes. Furthermore, this study's finding showed that evolutionary predictions of natural selection were a better fit across males' lifespan than females'; this indicated that females were more cognizant of their

demographic and situational realities (Alterovitz & Mendelsohn, 2011). Therefore, an indirect inference can be drawn so that males were likely to augment, or deceive, their height and social status as they reflect power, and females were likely to adjust their age and weight as they reflected fertility, youth, and beauty (Toma et al., 2008).

Hall, Park, Song, and Cody (2010) studied the effects of gender, self-monitoring, and personality traits on misrepresentation in online dating and found that males were more likely to misrepresent dating values such as personal interests and age than females, and females were more likely to misrepresent their weight than males. Hall et al. also found that both sexes, between ages 20 and 40, were likely to misrepresent their age to match their mate's preferred age, but participants ages 50 and above were less likely to do so. Results from Toma, Hancock, and Ellison's (2008) study supported this evolutionary claim that females were likely to augment their physical attributes and males were likely to enhance their social status and physical strength. Toma et al. also found that age, the third variable analyzed, turned out to be a stable factor that was not altered to appear more attractive to the opposite sex.

Modified Self-Traits and Deception in Online Dating

Environments of computer-mediated communication (CMC) are different from face-to-face communication. CMC forums include, but are not limited to, e-mail systems, social network websites, virtual worlds, instance message platforms, and online dating websites (Hancock & Dunham, 2001; Lea & Spears, 1992; Walter, 2007). While CMC forums can increase business, academic, and other professional productivity, the technical nature of CMC specific to online dating allows people to present the best

possible version of themselves (Walther, 2007). The ability to create and edit an individual's online dating profile freely and adjust aspects of a profile that received negative feedback are ways that online daters modify their self-traits to appear more attractive and likable (Lucid, 2009).

Based on Walther's (1996) hyperpersonal model, Internet users took advantage of the asynchronous nature of CMC and weighed the potential consequences on face-to-face encounters when the online presentation was different from the truth. Bargh, McKenna, and Fitzsimons (2002) posited two aspects of the self that people generally express in online dating, the "actual self" and the "true self." The "actual self" included characteristics that individual expresses on a daily basis while the "true self" included traits that an individual possesses but is unable to express as easily in daily activities (McKenna, Green, & Gleason, 2002). The modification of self-traits between the realms of actual and true selves could be seen as misrepresentation; however, understanding the role and impact of CMC may offer an explanation to this phenomenon.

Having an intermediary platform such as a computer or a smart phone when communicating with other people sometimes provide a sense of safety and anonymity compared to face-to-face communication. The typical socially constructed etiquette and mannerism that the society expects people to possess in the real world can hinder some people from expressing themselves or vocalizing their true feelings. McKenna, Green, & Gleason (2002) found that people who conveyed their "true selves" online often developed stronger relationships and transitioned them to the real world because people were able to express themselves truly without inhibition. Conversely, other studies found

that most online daters preferred profiles that depicted an individual's "actual self" so that they would not become disappointed when the online relationship transitioned to the real world (Lucid, 2009; Whitty, 2008).

Anonymity and Deception in Online Dating

Internet-induced anonymity is a key influence on the difference between the real world and online environment behaviors. Suler (2004) asserted that Internet-induced anonymity was one of the main factors that caused the online disinhibition effect. The disassociation between online and offline selves and behavior was the byproduct of online disinhibition effect. In essence, people were prone to disclose more about themselves and act in different manners when they have the opportunity to separate their online behavior from their identity in the real world. One can assume that anonymity in online environments allows individuals to symbolically interact with other people and objects differently compared to similar interactions in the real world. When people project an online identity that is different from their true identity, their behavior can inevitably change. This difference in behavior and anonymity are key enablers for individuals to either deceive or exploit others. Deception is made possible and easy to carry out because it is difficult, if not impossible, to link people's online identity to their real identity without obtaining proper identification (Chiluwa, 2009).

Social interactions developed on the Internet are in many ways similar to behaviors expressed in the real world. The addition of electronic devices (e.g., computers, smart phones) that act as communication intermediaries afford users the ability to delay information sent and received (Marx, 2004). This temporary delay of

information transfer is the main difference between social interactions in the real world and online environments. Face-to-face interactions often include nonverbal cues such as body language, facial expressions, and verbal communication (Brew & Kottler, 2008). When the act of sending and receiving these cues are delayed, the gap allows senders additional time to analyze and evaluate the message received, and decide the most advantageous or desirable way to respond.

The delay that communication intermediaries provide not only impact how Internet users interact with each other, but they also influence how online identities are generated, and how self-presentations are exhibited. Internet-induced anonymity permits its users to interact with each other without having to disclose a lot of personally identifiable information such as true name, age, gender, and ethnic background (Blommaert, 2005; Chiluwa, 2009; Marx, 2004). Given that online environments generally do not have mechanisms to immediately triage or authenticate its users, this relaxed atmosphere can significantly affect people's identity construction (Jung, 2010). Furthermore, Zhao, Grasmuch, and Martin (2008) argued that people commonly express freedom while exploring online environments because they could truly be themselves due to anonymity. This perceived freedom minimizes some of the social etiquette that is present in face-to-face interactions and offers a calming and comforting effect to many (Zhao et al., 2008). In this instance, Internet-induced anonymity seems to liberate some users where their true selves are revealed without prejudice and judgment.

Anonymity that offers freedom to some also offers room for deception to others. The construction of an individual's online identity is frequently motivated by the user's

end goal. When an individual's objective to create an online identity is to keep in touch with friends and family members, it is fair to assume that the profile attributes are as close to the truth as possible since the individual's affiliates act as an authentication mechanism (Zhao, 2005). On the other hand, if an individual generates an online identity for dating purposes, some aspects of the self may be accurately portrayed; however, Internet-induced anonymity offers an opportunity to augment or modify certain features with hopes that the individual will be perceived in a more favorable light (Toma et al., 2008). Hence, online identity construction is invariably affected by the motivation and goal of the user, and similarly, the anticipation of having an individual's online identity cross-referenced against a real world identity is a key factor that impacts the way people present themselves in online environments (Zhao, 2005).

Werhane et al. (2011) provided rationale for people's blind obedience to authority and offered strategies to interrupt the mental models by pairing externally induced moral awareness with decision making. In the online environment, especially when interaction is temporarily limited to the confines between the user and the digital forum (i.e., an individual creating an online dating profile on an online dating website), the presence of perceived anonymity combined with the lack of accountability and attachment to the real world allows the user to become his or her own authoritative figure, in which conformity and obedience to the digital social norm is absolutely dependent on the user's situational environment and existing opportunities. When an individual is unaware that the authoritative figure is none other than his or her own subconscious, actions and behaviors that can lead to beneficial outcomes will ultimately supersede potential consequences

(e.g., exhibit more socially acceptable behavior that otherwise would not be present, modifying self-traits in online dating profiles to appear more attractive). Without binding real world accountability to an individual's action in the online environment, blind obedience to an environment that can provide a favorable outcome can also indirectly inflict harm to others (i.e., projecting an image in online dating profile that is very different from an individual's image in the real world).

Social distance theory suggested that lies typically make people uncomfortable; however, the frequency and depth of lies increased when there was a greater social distance between the individual and the person intended to deceive (Lucid, 2009). The lack of nonverbal cues and temporal delay was the rationale that supported the increasing comfort of lying in social distance theory (Massara et al., 2012; Walther, 1996; Whitty & Joinson, 2009). Not having to control an individual's body language when lying and the opportunity to carefully craft ideal responses to textual exchanges are critical components that make lying easy and feasible in online environments (Lucid, 2009). Therefore, social distance theory supported the existence of perceived anonymity that afforded people the opportunity to either portray themselves as someone else, or to slightly modify their self-traits, in order to express an ideal self to achieve a predetermined goal.

Online dating has become a phenomenon that facilitates the need for instant gratification in the era of digital romance. Online dating services allow users to create a profile, or a webpage within the dating service website, that provides information about users in terms of demographics, socioeconomic status, and physical characteristics that other members of the same dating website can access (Hitsch, Hortacsu, & Ariely, 2010).

While online dating websites can help break down geographic barriers that often limit an individual's ability to meet people, studies on online dating revealed that users tended to limit their search for potential romantic mates who resided in close proximity (Yung, 2010). Because online dating websites encourage users to post photos and declare their motivation for using the dating service, Hitsch et al. found a strong positive correlation between the amount of personal information disclosed (e.g., photos, hobbies, demographics), and the frequency of contact by others. However, it is very easy to modify descriptions of self-presentation in the online dating arena. How an individual perceives himself affects how he wants to be perceived by a potential mate. Innocent augmentations of online dating profiles may be perceived as dishonesty and deception by others. On the other hand, the expectation to meet other daters eventually in real life seems to have a deterring effect on potential deceptive changes to an individual's online dating profile (Toma et al., 2008).

While online dating has evolved and has become a growing industry that facilitates romance in the digital age, anecdotal accounts and news reports have revealed its vulnerability to deception. Recent surveys indicated that more than 80% of online daters felt people misrepresent their physical appearances in their online dating profiles (Ellison et al., 2006; Toma et al., 2008). Areas of misrepresentation included photos, age, weight, height, and other physique categories. In addition to physical misrepresentation, the desire to augment an individual's self-presentation is likely to be correlated to the anonymous nature of the Internet, constraints of computer-mediated

communication (Walther, 1996), impression management (Goffman, 1959), and social desirability (Paulhus, 2002).

The study of Internet-based human behavior borrows the construct of symbolic interactionism, where the immersion in the lives and activities of the participants is an important and fundamental element to understand the construct of online environments, people's decision-making process, meaning of their actions, and relationship dynamics (McClelland, 2000). Behaviors observed on the Internet were also considered a form of social interaction. Social interaction is a fluid process that every action is dependent on the individual's perception of the environment; therefore, symbolic interactionism can explain how perceived anonymity in virtual environments fosters and motivates individuals to exploit others (McClelland, 2000).

Individuals in online environments subjectively interpret their actions toward another person or an object and the responses they receive. Accumulated interactions can shape an individual's behavior and these behaviors are the building blocks of an individual's online identity. With anonymity as an enabler that diminishes accountability, individuals who intend to deceive can do so by constructing an online identity to be different from a real world identity. Therefore, the combined anonymity and lack of accountability appear as opportunities for individuals who have no intention to deceive but find the opportunity alluring for personal gain.

Social Desirability and Deception in Online Dating

Identify formation is an evolving repository that builds based on learning, exposure, and experience. Because identity can be parsed into categories such as gender,

culture, social, and profession, social identify is more flexible than others when discussing the ability to modify aspects of an individual's identity. Hence, social identity is a melting pot of an individual's social environment that includes beliefs, norms, values, and biases (O'Fallon & Butterfield, 2011). As social identity is an extension of an individual's identity in social environments, social desirability is an extension of an individual's desires as a social being in which the goal is to present himself in a positive light (DeAndrea et al., 2012).

O'Fallon and Butterfield (2011) examined social desirability and ethical behavior and found that an individual's high or low level of need for association has a direct impact on behavior in social settings. People who have a high level of need for association tend to conform to accepted social standards compared to those who have a low level of need for association. However, it was inconclusive whether people with a high need for association were more likely to engage in online dating than people who have a low need for association. Ultimately, social desirability plays an important role when determining an individual's likelihood to behave within the bounds of acceptability or augment an individual's self in a fashion that is more socially desirable (DeAndrea et al., 2012).

Paulhus (1984) suggested that social desirable responses have two distinctive factors (i.e., egoistic and moralistic bias) and two distinguishing aspects to each (i.e., conscious management of self-deception and unconscious enhancement of impression management). Egoistical response correlated to an individual's exaggeration for social status, power: this type of response inherently distorted an individual's self-perception.

Moralistic bias response, on the other hand, correlated to an individual's need for interpersonal relationships, approval: this type of response inherently conformed to socially acceptable behavior (Paulhus, 2002). The distinction between these two factors paralleled the typical gender divide in evolutionary psychology wherein males are more likely to augment their social prowess than females and females have a higher tendency to appear cooperative and avoid excessive socially undesirable impulses than males (Dodaj, 2012; Hitsch et al., 2010; Kenrick et al., 1993).

Dodaj (2012) examined the response distortion in pre-employment personality assessments of job applicants using the Comprehensive Inventory of Desirable Responding (CIDR). In an attempt to assess the applicability of CIDR, Dodaj applied the instrument to job applicants. Dodaj's results supported Paulhus' (1984, 2002) dichotomous model of socially desirable response (egoistic and moralistic distortion); however, it failed to support the model from the conscious and unconscious level (i.e., management of self-deception and enhancement of impression management). According to Dodaj, the reason that the instrument failed to support the model from the conscious and unconscious level was because the scales of social desirability measured some personality traits as well as conscious dissimulation, which were factors that ultimately impacted the results.

DeAndrea et al. (2012) used the impression management model to conduct three experiments to assess people's self-presentation of weight and height. Social desirability was one of the factors examined. Research with reference to deceptive communication showed that lies were told every day in face-to-face settings to enhance social desirable

perceptions (Barak, 2008; Harrington, 2009). The degree of deceptive communication varied in face-to-face environments and the typical checks and balances mechanism used to detect deception was through observable nonverbal cues, linguistics analysis, accountability, and validation ranged from friends and family to patterns of behavior (Hancock, 2008). Moreover, Leary (1995) believed that people have the tendency to achieve socially desirable goals when the outcome temporarily outweighed the perceived consequences. However, when accountability from the cost of social embarrassment from ground truth was present, people were likely to monitor their behavior more frequently and portray themselves more accurately (DeAndrea et al., 2012).

Self-Monitoring and Deception in Online Dating

Self-monitoring is a specific conscious behavior that people used to manage their physical appearance, behavior, and public persona (Hall et al., 2010). The distinction between high and low self-monitors is that high self-monitors' behavior and appearance changed from one situation to the next, to obtain the best possible outcome in a given environment. This type of pursuant behavior revealed the individual's need to appear in a positive light, in social settings, and also his/her desire to manage others' perceptions. In contrast, low self-monitors' behavior and appearance remained consistent across platforms, which reflected a sense of realism and accuracy of the individual's values and beliefs that were not easily swayed or changed (Barbuto & Moss, 2006; Rowatt, Cunningham, & Duren, 1998). Hall et al. examined the effects of gender, self-monitoring, and personality traits on misrepresentation in online dating and supported

existing literature that high self-monitors were more malleable when developing and editing their online dating profiles.

Leone and Hawkins (2006) studied the concept of the self, cognitive, and behavioral differences between high and low self-monitors in close relationships. Similar to scholars that examined the basic distinction between high and low self-monitors, high self-monitors were chameleons in the sense that their construction of the self and identity were byproducts of their social interactions. The way they perceived interpersonal relationships was similar to the constant fluctuation of social settings. As a result, any form of inflexibility created internal turmoil (Gaines et al., 2000). Conversely, low self-monitors' construction of the self was built on their personal dispositions such as beliefs, values. Low self-monitors' orientation to the social world was based on a sense of commitment and the desire for closeness (Gaines et al.; Leone & Hawkins, 2006).

The way high and low self-monitors see themselves and their social worlds applied to how they perceive and interpret dating and intimate relationships. High self-monitors preferred malleable methods to approach their sexual and love interests. Similar to how their social identities were formed (by different expectations from social interactions), they perceived dating as a social game in which multiple players were involved, and the transition from one player to the next was seamless and accepted (Leone & Hawkins, 2006). High self-monitors' focus on desired external attributes (e.g., physical attractiveness, financial resources) of their potential mates outweigh the need for personal compatibility because the mate was often seen as an attribute to enhance the high self-monitor's social image. On the other hand, low self-monitors focus more on

developing an intimate relationship with their potential mates in order to satisfy the need for personal compatibility and mutual trust. With the understanding of distinctive features between the high and low self-monitors, it was evident that high self-monitors tailored their online dating profiles to create an impression that they were compatible with multiple potential mates and at the same time believe that minor deception was acceptable in order to achieve their goal (Leone & Hawkins; Rowatt et al., 1998).

Literature Review of Archival Data

Toma et al. (2008) examined characteristics of self-presentation (i.e., height, weight, age) from online dating profiles that could predict deception in online dating. Toma et al. examined existing literature that focused on the movement of romantic encounters from the real world to online environments. Like any and all romantic strategies conducted in the real world, the same strategies were carefully crafted in online dating environments, and the presentation of the self to a potential mate was often skewed and augmented. Toma et al. reviewed a combination of theories ranged from evolutionary psychology, online identity construction, computer-mediated communication, to deception, and analyzed online daters' likelihood to deceive. Toma et al. assessed their data by using self-report questionnaires and cross validation methods between measured and projected physical attributes. Toma et al. used regression analysis, independent t-tests, and found that females lied more about their weight than males, males lied more about their height than females, and the level of deception used by the participants was carefully balanced between opportunities offered in online

environments and realistic expectations to meet their potential mate in face-to-face settings.

Toma et al. (2008) focused on three aspects of self-presentation and deception in online dating: accuracy; social acceptability of deception; and the warranting effect. For accuracy, Toma et al. (2008) hypothesized that online daters would engage in some level of deception, but the magnitude would be minor due to their expectation of meeting their potential mate sometime in the future. For social acceptability of deception, Toma et al. focused on gender-based lies and hypothesized that males would lie more about their social status and height than females and females would lie more about their age and weight than males. As for the warranting effect, Toma et al. hypothesized that profiles with a greater amount of self-identifying information that connected to the real world (e.g., photographs, social, education, professional affiliations) were more accurate than those that had lesser amount of self-identifying information. Lastly, Toma et al. assessed if the existence of deception were due to intentional skewing of profile information or if the participants were unaware of their own inaccuracies.

Data Analysis

Toma et al. (2008) collected a list of 15 profile items that were common across the four online dating websites. These items were organized into five categories: physical appearance (e.g., height, hair color, body type); social status (e.g., occupation, income, education level); relationship status (i.e., children); habits and interests (e.g., smoking, hobbies, drinking); and beliefs (e.g., religion, politics). Participants were asked to rate the accuracy on each of the 15 items compared to themselves at the time of the

interview, this rating was later labeled as self-reported accuracy. Each item was given a score that ranged from 1 to 5, score of 1 indicated completely inaccurate and score of 5 indicated completely accurate. Toma et al. used a 5 (category) x 2 (gender) mixed linear model where category was the repeated measure and gender was the between subject factor to examine whether self-reported accuracy varied between males and females. Post hoc pairwise comparisons were also used to show the category that the participants lied about the least. Furthermore, a univariate comparison was applied to demonstrate whether males and females lie differently across the five categories.

For observed accuracy, only the following factors were included due to Toma et al.'s (2008) accessibility to participants' personal information: height; weight; and age. Toma et al. defined discrepancies greater than .5 inches in height as deception, discrepancies greater than 5 pounds in weight as deception, and any deviation from the actual age as deception. Toma et al. used regression analysis to measure the amount of deception that occurred for height, weight, and age.

Data analysis for social acceptability of deception was conducted with a Likert scale that ranged from 1 to 5 for the 15 profile items. Participants were instructed to score each of the 15 profile items based on the social acceptability to lie about them. Toma et al. (2008) used the same 5x2 mixed linear model with category as the repeated measure and gender as the between subject factor, and post hoc pairwise comparisons were applied on the category factor. Toma et al. applied t-tests to measure the warranting effect for self-reported accuracy on posted photographs and the number of people in the participants' social circle who were aware of the participants' online dating profile.

Results

Toma et al. (2008) examined three factors of the participants' online dating profile: accuracy; social acceptability to deception; and the warranting effect. The assessment of accuracy was divided into two categories: self-reported accuracy; and observed accuracy. Self-reported accuracy was examined by comparing the self-reported 15 profile items (organized into five categories: physical appearance, social status, relationship status, habits and interests, and beliefs) and gender. Toma et al. employed a 5 (category) x 2 (gender) mixed general linear model where the category was the repeated measure and gender was the between subject factor. Toma et al. examined if there were significant differences in self-reported accuracy scores between males and females and found no significant difference, $F(1, 75) < 1$. Observed accuracy was examined by comparing three specific profile items (i.e., height, weight, and age) and gender. Remember that Toma et al. measured the participants' weight and height using a measuring tape and standard scale and age was recorded by looking at the participants' driver's licenses. In general, approximately 80% of the information the participants provided deviated from Toma et al.'s acceptable parameter, and this was interpreted as that the participants lied at least on one or more of their observed characteristics. Toma et al. also found that males lied more about their height than females, females lied more about their weight than males, and while older participants lied more frequently about their age than younger participants, the difference was insignificant.

Recall also Toma et al. (2008) asked each participant to rate the social acceptability to lie about the 15 profile items, where a score of 1 indicated deception was

completely unacceptable and a score of 5 indicated deception was completely acceptable. Toma et al. found that the participants deemed any deception across the 15 profile items as unacceptable. In addition to the participants' general belief on lying in online dating profiles, the results showed that participants believed lying about relationship status was less acceptable than the other four categories, and males considered it more acceptable to lie about social status and occupation than females.

For the warranting effect, Toma et al. (2008) explained that people may be more truthful in their online dating profiles if there were connections between participants' real self and the online self-presentation. Examples of these connections included photographs, friends who were aware of the participant's online dating profile, and existence of friends who were also members of the same online dating website. It is important to note that not all participants included a photograph in their online dating profile and it was assumed that those without photographs lied more in their online self-presentation than those who did present photographs in their online dating profile. Toma et al. found that participants who included photographs in their online dating profiles were more truthful in their self-reported accuracy and observed accuracy. Moreover, the warranting effect on the number of friends and family members who were aware of participants' online dating profile was less significant as a deterring factor of deception in online dating profiles.

Summary

In summary, online deception is prevalent due to the lack of nonverbal cues and asynchronous nature of the Internet. There exists an exceptional amount of literature on

the effects of Internet on online dating and the majority of these studies focused on the level of effect that self-presentation and personality traits have on people's likelihood to deceive. Literature on computer-mediated communication, evolutionary psychology, and online identity construction were reviewed to lend support to the current study that focused on the effects that gender and self-traits have on anonymity, social desirability, and self-monitoring on deception in online dating. What is currently known in the discipline related to the topic of deception in online dating provided a wealth of information for researchers to build upon; however, what is currently unknown is what specific circumstances, or combination of factors (environmental, social, or situational), would lead individuals to deceive in online environments. I delineated a combination of factors that could shed light to the rationale of deception in online dating and examined variables of gender, modified self-traits, anonymity, social desirability, and self-monitoring.

I used Paulhus' (1984) social desirability model to examine people's tendency to modify or change their behavior in order to appear more likable and favorable in social settings. Using Paulhus' social desirability model as the theoretical framework, I drew the correlation between the effects of physical proximity to people's willingness to inflict intentional or unintentional harm to others by the desire to appear likeable in social settings. Using archival data to analyze the research questions and hypotheses posed in this study was challenging due to the framework that came with the archival data (e.g., limited sample size, and depth and type of data collected). Nevertheless, there was sufficient data to extract and analyze for the purpose of this study. The archival data

were discussed in detail, as they relate to recruitment, data collection, data analysis, and results. Moving forward, Chapter 3 discusses the sample pool, research method, which includes the design of the study, criteria for data collection, and methodology and statistical analysis used for data analysis.

Chapter 3: Research Methodology

Introduction

The purpose of this quantitative study was to investigate the relationship between gender, modified self-traits in online dating profiles, and personality characteristics that led to online deception. Examples of the relationship between gender, modified self-traits, and personality characteristics included the assumption that males were less likely to engage in acts of self-monitor in online dating environments, females were more likely to engage in behaviors that make them appear more socially desirable, and people who scored high in modified self-traits also scored high in perceived anonymity. I provided foundational data for future longitudinal studies to focus on trend and pattern analysis of behavior in online environments. The findings provided additional understanding of how factors related to anonymity, social desirability, and self-monitoring contribute to deception in online dating. I investigated whether people's tendency to modify self-traits in online dating profiles played a role in deception in online dating compared to gender. To conclude, the objectives of this study were

1. To determine the relationship between gender and the three personality characteristics: perceived anonymity, social desirability, and self-monitoring.
2. To determine the relationship between the tendency to modify self-traits in online dating profiles and the three personality characteristics: perceived anonymity, social desirability, and self-monitoring.

This chapter provides an overview of the research design and approach (research design setting and participants, population, reasons to use the selected population, and selection criteria), instruments used in this study, data collection and analysis, and measures taken to protect participant rights. I used archival data obtained and permitted by Toma et al. (2008) via e-mail correspondence. Toma et al. developed their own instruments to assess variables such as modified self-traits, perceived anonymity, social desirability, and self-monitoring. Descriptions of these instruments are discussed in this chapter. Data analysis includes a discussion of inferential statistics of multivariate analysis of variance (MANOVA). This chapter ends by including measures used to protect participant rights and a summary of the chapter.

Research Design and Approach

Quantitative research design and methodologies are used when researchers intend to analyze the relationship, correlation, predictability, and/or significant changes between two or more variables (Creswell, 2009). Quantitative research design is different from qualitative research design because researchers are expected to remain neutral and inferential statistics are used as part of the analysis process (Creswell, 2007). In this quantitative study, I used archival data permitted by Toma et al. (2008) to measured deception in online dating. Toma et al. focused on the relationship between deception and physical attributes listed in online dating profiles (i.e., age, weight, and height) that were either augmented or modified among a group of 80 participants. I received approval from Walden University's Institutional Review Board committee (#07-29-13-0140203).

Due to the factors that contribute to deception in online dating, I determined that Toma et al.'s (2008) dataset was pertinent because it contained variables valuable to this current study. I focused on variables such as modified self-traits, perceived anonymity, social desirability, and self-monitoring because they were considered motivating factors that contributed to deception in online dating. I focused on the effects of gender and modified self-traits in relation to perceived anonymity, social desirability, and self-monitoring.

The statistical analysis of factorial MANOVA was chosen for this quantitative study, and it was used to examine deception for online dating purposes. Factorial MANOVA was used to compare the independent variables of gender (two levels) and modified self-traits of online dating profiles (two levels) to the dependent variables of perceived anonymity, total scores of social desirability, and total scores of self-monitoring. In order to determine the level of impact that gender and modified self-traits have on online deception for dating purposes, the use of quantitative research methodology was appropriate and supported the goal of this study. Factorial MANOVA is used in research scenarios that have two or more categorical independent variables that are (i.e., male versus female for gender and high and low level of modified self-traits), and when there are multiple quantitative dependent variables (i.e., perceived degree of anonymity, total scores of social desirability, and total scores of self-monitoring behavior).

The first research question inquired the following: Is there a significant difference in perceived anonymity, total scores of social desirability, and total scores of self-

monitoring between males and females in online dating profiles? The second research question inquired the following: Is there a significant difference in perceived anonymity, total scores of social desirability, and total scores of self-monitoring between high and low level of modified self-traits in online dating profiles? Due to the number of IVs used, different combinations of DVs were created for each main effect of, and interaction between, the IVs (Mertler & Vannatta, 2010).

The use of archival data has its benefits and constraints. Benefits in using archival data include cost effectiveness and time reduction for the researcher. However, constraints to use such data include the inability to broaden the scope of research questions, control over sample size, and the type/depth of data collected. Nevertheless, the ability to use existing data to investigate research questions related to deception in online dating is valuable, and archival data can minimize the time and resources required of the researcher.

Participants and Sample Size

Participant information for this study was obtained from Toma et al. (2008) who examined the elements of age, weight, and height as they relate to deceptive self-presentation in online dating profiles. The same set of data were later used by Toma and Hancock (2010) to examine physical attractiveness as it impacted people's self-presentation in physique categories such as age, weight, and height. Toma et al. did not analyze the research questions I examined, which was the impact of perceived anonymity, social desirability, and self-monitoring on deceptive online dating profiles.

Using Toma et al.'s data to examine research questions this study analyzed could reveal other factors that would contribute to deception in online dating.

Using a commercially available software program, GPower 3.1, the ideal sample size necessary to satisfy the minimally required power analysis for the current study was 72. Three necessary factors (i.e., alpha level, amount of power, and effect size) were examined, and the following values were set: alpha = .05, power = .95, and effect size = .25 (Creswell, 2009). The alpha level represents the probability that the test will lead to a Type I error, when a researcher rejects a null hypothesis that is actually true, and it is used to determine the likelihood that the sample data will fall within the critical range even when the null hypothesis is true (Mertler & Vannatta, 2010). Gravetter and Wallnau (2004) conveyed that the power of a test could correctly reject a false hypothesis; in other words, power of a test could identify the existence of treatment effect. George and Mallery (2009) explained that the power of a test and its effect size is positively correlated. As the effect size increases, the probability of rejecting the hypothesis increases, and so does the strength and magnitude of the test. With a sample size of 80 participants, power of the sample size is slightly higher than .95 and the alpha level remains at .05. This power analysis can validate the effect on the outcome, and that the outcome is attributed to the experimental manipulation of this study.

Recruitment

Toma et al. (2008) recruited participants from New York City through online and print advertisements on Craigslist.org, a widely accepted and popular online classified website, and the *Village Voice*, a prominent local newspaper. Content of the

advertisement asked online daters to join a study that focused on self-presentation in online dating. In an effort to deter the likelihood of self-selection bias, Toma et al. did not discuss deception in their advertisement or throughout the entire study with their participants. The advertisement also included a list of recruitment criteria for interested candidates: be an active member in one of the four online dating websites in the United States (e.g., Match.com, Yahoo! Personals, Webdate, American Singles), be ages 18 and over, be a resident of NYC, be heterosexual, and provide basic online dating profile information (e.g., online dating website, profile username, e-mail address).

During the recruitment process, Toma et al. (2008) obtained a total of 479 interested candidates who signed up through the study's website. Toma et al. filtered this population by using the candidates' username to validate the following: the candidate is an actual and active member of the said online dating website, age, and sexual orientation. This filtering process narrowed down the original pool from 479 candidates to 251 and invitations were sent to these 251 candidates. Only 84 participants responded to the invitation and scheduled an appointment with Toma et al.. Four participants were further excluded from the final sample pool because two of them indicated that they were of homosexual orientation, and the other two were of bisexual orientation even though their online dating profiles indicated they were heterosexual.

After all the application filtering processes were complete, Toma et al.'s (2008) final sample pool consisted of 80 participants of the following characteristics: 40 males and 40 females, 45 users belonged to Match.com, 29 users belonged to Yahoo! Personals, four users belonged to Webdate, and two users belonged to American Singles; seven

users were between the ages of 18-20, 43 users were between the ages of 21-30, 20 users were between the ages of 31-40, nine users were between the ages of 41-50, and one user was between the ages of 51-65. Gender divide of the participants was even; however, younger males and females within the ages of 21 and 30 were overrepresented whereas older males and females, ages 51 and above were underrepresented (Toma et al., 2008). An overview of this sample indicated that the majority of the participants were between the ages of 20 and 30, and over half of the participants were members of Match.com. Upon completion of this study, participants were debriefed and $30 was given as compensation for their participation.

Data Collection

Toma et al. (2008) collected data from four online dating websites and gathered 15 of the commonly presented profile items for assessment. The procedure Toma et al. used included individual interviews and three assessment phases: accuracy of online dating profiles, social acceptability of lying on online dating profiles, and the warranting effect. Because Toma et al. had access to data listed on the participants' online dating profile prior to participants' arrival to the study site (using information collected during the recruitment phase), Toma et al. printed a copy of the participants' profile and asked them to rate the accuracy of their own 15 profile items. Accuracy, as defined by Toma et al., was the degree that the profile item reflected the truth about the participant during the time of the interview. With this definition, participants were given a Likert scale ranged from 1 to 5 to measure the accuracy of their profile. A score of 1 indicated *least accurate* and a score of 5 indicated *most accurate*. Once participants finished assessing the

accuracy of items listed on their profile, they were then asked to rate the social acceptability to lie about these profile items. Toma et al. defined social acceptability as the participants' understanding of how acceptable deception is when lying about a particular profile item. With this explanation, a Likert scale ranged from 1 to 5 was again given to the participants, and a score of 1 indicated *completely unacceptable* and a score of 5 indicated *completely acceptable*.

The warranting effect defined the connection between an individual's real self and any given self-presentation that may be different (Toma et al., 2008). An example of how the warranting effect affected the presentation of online dating profile would be an online dater's hesitation to present himself as a 6'2" body builder if he were truly a 5'8" couch potato, because several of his friends are also members of the same online dating website. The anticipation or fear of getting caught and becoming a social embarrassment is a deterrent to deception in online dating. Hence, after completing the accuracy and social acceptability of deception assessments, participants were asked to answer questionnaires that assessed warranting effect of their online dating profile. A sample warranting effect question asked how many people were aware of the participant's online dating website. The last phase of the data collection circled back to the first segment when Toma et al. (2008) printed a copy of the participants' online dating profile and asked them to assess the accuracy of the profile items. Toma et al. measured each participant's actual weight and height by using a measuring tape and weight scale, and they recorded the participant's age by examining their driver's licenses. Data from the

printed profile were compared with the measured physical attributes to assess the level of discrepancies in participants' online dating profiles.

Instrumentation and Materials

In addition to the profile information collected, Toma et al. (2008) obtained more than 50 sets of self-reported data for their repository. In this study, I used the data collected from four instruments that Toma et al. developed to measure modified self-traits, perceived anonymity, social desirability, and self-monitoring. Because Toma et al. developed questions for their instruments and did not use any commercially available or validated material to assess the variables they measured, no formal names were given to these instruments. When an instruments is developed without undergoing repeated testing to ensure the accuracy of their intended measure, the instrument's validity and reliability are often called into question (Creswell, 2009). Toma et al. did not provide any published reliability and validity values relevant to their use of the instruments. Furthermore, the same data and instruments obtained and developed from the 2008 study was repeatedly used in their subsequent publications (Toma & Hancock, 2010; Toma & Hancock & 2012). The following subsections elaborate on the instruments developed by Toma et al. in order to measure variables of modified self-traits, perceived anonymity, social desirability, and self-monitoring.

Measurement for Modified Self-Traits

Self-trait was described as personal characteristics or attributes that an individual believed to be building blocks of whom he/she is. These traits are driven by an individual's insight of the self and sometimes these traits are validated externally, as well.

For example, self-traits that people would put on their online dating profiles may include descriptors such as outgoing, humorous, dedicated, shy, or opinionated. Toma et al. (2008) modified self-traits instrument and measured the participants' modification of five self-traits they put on their online dating profiles. These self-traits were one word adjectives that the participants used to describe themselves. For each trait described, they were asked to compare their descriptors to a 5-point Likert scale that measured first, the level of change from their real life, and second, the level of change from their online dating profile. A score of 1 indicated *no modification*, 2 indicated *a little modification*, 3 indicated *some modification*, 4 indicated *quite a bit of modification*, and 5 indicated *a lot of modification* (Toma et al., 2008). Total scores for real life and online profile traits could individually range from 1-5. At the completion of these two ratings, the difference was taken to demonstrate the disparity between an individual's perception of real life traits and traits projected in online dating profiles. Lastly, a mean rating was calculated for each participant's modified self-trait in real life, online dating profile, and the difference between the two. For each trait that the participant rated for his/her real life and online dating profile, the maximum number of points obtainable was five, and the minimum number of points obtainable was one. Because the modified self-trait was a two-category IV, the mean score of each participant's modified self-trait for profile was used. Individuals whose mean score falls below 3.0 were categorized as low, and those whose mean score falls above 3.1 were categorized as high.

Measurement for Anonymity

In order to measure perceived anonymity, Toma et al. (2008) encouraged the participants to self-report the perceived level of anonymity of their online dating profile. This measurement required participants to rate their perceived anonymity of the characteristics of their online dating profile on a 5-point Likert scale: 1 indicated *not at all anonymous*, 2 indicated *a little anonymity*, 3 indicated *somewhat anonymous*, 4 indicated *quite anonymous*, and 5 *indicated very anonymous*. The measurement of anonymity is an important aspect for the current study. While Toma et al. used the measurement of perceived anonymity to assess the participants' awareness and experience in online dating, I examined its impact on deceptive behaviors in online dating

Measurement for Social Desirability

Toma et al. (2008) developed a self-report questionnaire to measure social desirability. This instrument consisted of 33 true or false questions. True answers produced a score of zero and false answers produced a score of one. Hence, each participant could accumulate a total social desirability score that ranged from 0-33 (Toma et al., 2008). The nature of these questions was divided into three themes: participants' perception of their social behavior, participants' opinion on how his/her action can potentially impact others socially, and participants' awareness of self-presentation in public. These questions were developed to assess the participants' desire to be viewed positively in social settings, particularly in online dating environments (Toma et al.). People's aspiration to be likeable and to gain popularity is a potential contributor that could skew self-presentation in online dating profiles (Badhwar, 2009).

Measurement for Self-Monitoring

For the measurement of self-monitoring, Toma et al. (2008) constructed a set of 25 true or false questions. Similar to the measurement of social desirability, true answers produced a score of zero and false answers produced a score of one. Hence, each participant could obtain a total self-monitoring score that ranged between 0-25 (Toma et al., 2008). Three themes were extracted from these questions: expressing behavior that is only true to the self, demonstrating behavior that conforms to social standards, and projecting deceitful behaviors to achieve an individual's personal goal. These questions evaluated the participants' insight and sensitivity to how their self-description and behavior are presented to others online, and their willingness to modify their behavior in order to achieve a predetermined goal (Toma et al., 2008). Sample questions to assess the participant's self-monitoring behavior were: "in different situations and with different people, I often act like very different persons"; "I may deceive people by being friendly when I really dislike them"; "I would not change my opinions (of the way I do things) in order to please someone or win their favor" (Toma et al., 2008).

Research Questions and Hypotheses

Research questions for this study were structured to examine the significant difference between gender, modified self-traits, and their impact on perceived anonymity, social desirability, and self-monitoring. The IVs were categorical (i.e., gender and modified self-traits), and the DVs were quantitative (i.e., perceived anonymity, social desirability, and self-monitoring). The first research question asked: Is there a significant difference in perceived anonymity, total scores of social desirability, and total scores of

self-monitoring between males and females in online dating profiles? The following hypotheses were investigated:

$H_1$1: Women would score significantly lower in perceived degree of anonymity than men.

$H_0$1: Women would not score significantly lower in perceived degree of anonymity than men.

$H_1$2: Women would score significantly higher in the total social desirability score than men.

$H_0$2: Women would not score significantly higher in the total social desirability score than men.

$H_1$3: Women would score significantly higher in the total self-monitoring score than men.

$H_0$3: Women would not score significantly higher in the total self- monitoring score than men.

The second research question asked: Is there a significant difference in perceived anonymity, total scores of social desirability, and total scores of self-monitoring between high and low level of modified self-traits in online dating profiles? The following hypotheses were investigated:

$H_1$4: Individuals who are high in modified self-traits would score significantly higher in perceived degree of anonymity than those who do not.

$H_0$4: Individuals who are high in modified self-traits would not score significantly higher in perceived degree of anonymity than those who do not.

$H_1$5: Individuals who are high in modified self-traits would score significantly higher in the total social desirability score than those who do not.

$H_0$5: Individuals who are high in modified self-traits would not score significantly higher in the total social desirability score than those who do not.

$H_1$6: Individuals who are high in modified self-traits would score significantly higher in total self-monitoring score than those who do not.

$H_0$6: Individuals who are high in modified self-traits would not score significantly higher in total self-monitoring score than those who do not.

Data Analysis

The goal of inferential statistics is to draw inferences about the general population based on the information found in the sample data. Moreover, standard error indicates that the likelihood of developing a strong inference is dependent on the ability to minimize the standard deviation of the sample means (Mertler & Vannatta, 2010). Therefore, a small standard error often projects a higher confidence, whereas a large standard error often projects a lower confidence in making inferences about the general population (George & Mallery, 2011). I employed factorial MANOVA in this study. Mertler and Vannatta (2010) explained that a factorial MANOVA is used when a researcher intends to examine the relationship between two IVs that are categorical and two or more quantitative DVs. The type of categorical or quantitative variables used in a study determines the statistical test to employ (Metler & Vannatta, 2010). Categorical variables consist of separate and distinctive categories. These variables are often used to classify or organize subjects such as gender, high and low level, and they are also

referred to as nominal, discrete, or qualitative variables (Gravetter & Wallnau, 2004). Furthermore, quantitative variables can be measured on a continuous scale and examples could be age, income, and temperature. These variables are often referred to as continuous or interval variables (Gravetter & Wallnau, 2004).

While multiple ANOVAs can be used to obtain conceptual clarity when examining the changes as a result of different treatments, disadvantage in doing so is the increased chance of committing Type I errors (George & Mallery, 2011). A Type I error is defined as the occurrence of a researcher erroneously rejecting a null hypothesis that is actually true (Gravetter & Wallnau, 2004). For example, if ANOVA was used to examine the three dependent variables in this study, which meant group differences for each of the DVs would be tested (at alpha = .05 level of significance, assuming 95% chance of no Type I error), the overall process would require three univariate tests. With this calculation, the Type I error would be .86 (.95x.95x.95) and the probability of at least one false rejection would be .14 (Mertler & Vannatta, 2010). Therefore, using ANOVA for this study was not a viable option since it would result in a much higher overall error rate, and the use of MANOVA would maintain the overall error rate at .05 level.

Advantages in using MANOVA include the ability to discover actual changes as a result of different treatments (understanding what measures of deception in online dating are affected by gender and modified self-traits, chances of uncovering these effects are improved by including anonymity, social desirability, and self-monitoring), and the ability to maintain the overall error rate at the .05 level (Mertler & Vannatta, 2010). Furthermore, the method to counteract the potential of having an inflated error rate due to

using multiple ANOVAs is to apply the Bonferroni-type adjustment. The Boneferronie-type adjustment provides a limit to the alpha level for the test of each dependent variable, by dividing the number of dependent variables by the oval alpha level of the analysis (e.g., alpha = .05) (Mertler & Vannatta, 2010).

Furthermore, the use of MANOVA can reveal differences not apparent in separate ANOVA procedures, and display intercorrelations among DVs in the analysis (Metler & Vannatta, 2010). In this study, I chose factorial MANOVA as the statistical analysis, and I used it to analyze the relationship between two categorical IVs (i.e., gender and modified self-traits), and three quantitative DVs (i.e., perceived anonymity, social desirability, and self-monitoring). Results from the factorial MANOVA analysis would indicate if significant differences existed between gender and the three DVs, if significant differences existed between modified self-traits and the three DVs, and the interaction between gender and modified self-traits, and the three DVs. Therefore, steps to run a successful MANOVA include the Box's M Test, Wilks' Lambda, univariate ANOVAs, and univariate post hoc tests, if the ANOVA results were significant. Each step is dependent on the significance found in the previous step. For example, if the sample violated the Box's M Test then the Pillar's Trace would be employed. Furthermore, I would only examine the post hoc tests for dependent variables if the univariate test results were significant (Mertler & Vannatta, 2010).

I employed MANOVA to examine the variables in this study. I first evaluated the Box's M Test since homogeneity of variance-covariance is a test assumption for MANOVA (Mertler & Vannatta, 2010). If homogeneity of variance-covariance is

assumed, the Wilks' Lambda statistic would be applied when interpreting the multivariate tests. However, if the assumption of equal variances is violated, I would apply the Pilai's Trace. The second step would involve the examination of the significance of factor interaction (*F* ratios and *p* values) for each factor's main effect. This step was taken because there were two IVs in this study. As a result, if multivariate significance is found, I would evaluate the univariate ANOVA results to determine the significant group differences for each DV. If such significance is found, I would analyze the post hoc results to identify which groups are significantly different for each dependent variable (Mertler & Vannatta, 2010).

Lastly, I chose the Statistical Package for the Social Sciences (SPSS) as the descriptive analytic tool to employ the inferential statistical analysis of factorial MANOVA. SPSS version 21 is an IBM product available for home and educational use. It is a 12-month, single-user, licensed product; it uses advanced analytic algorithms and various regression techniques to afford users the ability to analyze statistical data of varying degree and size (IBM, n.d.). This software has the ability to perform analyses ranging from pre-analysis data screening, factorial analysis of variance, multivariate analysis of variance and covariance, to multiple regression, path analysis, and discriminant analysis (Metler & Vannatta, 2010).

Measures Used to Protect Participants' Rights

The use of archival data often lessened a researcher's responsibility to directly employ measures to protect participants' rights. According to Toma et al. (2008), the sample size of 80 participants was reduced from the initial 479 online daters who

responded to the original recruitment advertisement. Toma et al. did not provide measures used to protect participants' rights. This information would typically include informed consent, secure data collection, analysis, and storage, and debrief (APA, 2002). Toma et al. indicated that the term deception was not disclosed to any of the potential candidates during recruitment, and the participants were never informed that their online dating profiles would be reviewed by the authors. The justification Toma et al. provided not to include the disclosure of deception was to encourage participation and prevent participant self-selection bias. While an individual could argue that Toma et al. violated the participants' confidentiality by not disclosing their review of the online dating profiles, the need to recruit as many online daters as possible outweighed the need to disclose the element of deception, regardless of their tendency to deceive, in order to counterbalance possible self-selection bias.

The data used in this study was privately held by Toma et al. (2008) and a data use agreement (i.e., e-mail correspondence with the authors) was obtained. The archival data were obtained electronically via e-mail from Toma et al. and the data are stored on my personal laptop (with password protection) with a back up copy on a media disc stored at my home solely for the purpose of this dissertation. Only I have access to the data, and the data would not be disseminated to anyone under any circumstances. The data would be deleted from my personal laptop and the backup media disc would be destroyed six years after the completion of this dissertation. Since the current study used archival data collected and analyzed by Toma et al. for other research questions, I would take additional measures to ensure that participants' confidentiality is not violated by

employing repeated reviews and scrubbing of personal identifying information that could be accidentally left in the dataset.

Summary

In this chapter, I provided an overview of the research methodology. I explained and discussed the chosen quantitative research design and approach, along with archival data profile, sample size, and selection criteria. I also provided detailed information on the type of instruments used and how they related to the current research questions and hypotheses. I revisited the research questions and hypotheses to demonstrate that they are consistent with this study. In the data analysis section, I explained how the research questions and hypotheses would be analyzed using the inferential statistical analysis of factorial MANOVA.

In summary, I used factorial MANOVA to determine if significant differences exist between gender and modified self-traits in relations to perceived anonymity, total scores for social desirability, and total scores for self-monitoring. The archival data used in this study was previously collected from online daters who resided in New York City. The participants were chosen based on their sexual orientation, subscription to one of the four pre-determined online dating services in the United States, and their willingness to provide accurate username and e-mail address (Toma et al., 2008). Results from this study would show additional significance of different variables that have an impact on deception in online dating and these results could further contribute to the research topic examined in this area of study. In Chapter 4, I provided the results of the study, which includes a review of the findings and further exploration of the hypotheses examined.

Chapter 4: Results

Introduction

The purpose of this study was to investigate the relationship between gender, modified self-traits in online dating profiles and personality characteristics, such as perceived anonymity, social desirability, and self-monitoring, that can lead to deception in online dating. A quantitative research design was used in this study. A MANOVA was used to determine if differences between gender and modified self-traits and personality characteristics in online dating environments existed. The results of the MANOVA are described in detail in the following section. This chapter illustrates a review of the purpose of the study, study questions and hypotheses, data collection, analysis, results, and summary of this study's statistical findings.

The study was designed to answer two research questions: Is there a significant difference in perceived anonymity, total scores of social desirability, and total scores of self-monitoring between males and females in online dating profiles? The following hypotheses were investigated:

$H_1$1: Women would score significantly lower in perceived degree of anonymity than men.

$H_0$1: Women would not score significantly lower in perceived degree of anonymity than men.

$H_1$2: Women would score significantly higher in the total social desirability score than men.

$H_0$2: Women would not score significantly higher in the total social desirability score than men.

$H_1$3: Women would score significantly higher in the total self-monitoring score than men.

$H_0$3: Women would not score significantly higher in the total self- monitoring score than men.

The second research question asked: Is there a significant difference in perceived anonymity, total scores of social desirability, and total scores of self-monitoring between high and low level of modified self-traits in online dating profiles? The following hypotheses were investigated:

$H_1$4: Individuals who are high in modified self-traits would score significantly higher in perceived degree of anonymity than those who do not.

$H_0$4: Individuals who are high in modified self-traits would not score significantly higher in perceived degree of anonymity than those who do not.

$H_1$5: Individuals who are high in modified self-traits would score significantly higher in the total social desirability score than those who do not.

$H_0$5: Individuals who are high in modified self-traits would not score significantly higher in the total social desirability score than those who do not.

$H_1$6: Individuals who are high in modified self-traits would score significantly higher in total self-monitoring score than those who do not.

$H_0$6: Individuals who are high in modified self-traits would not score significantly higher in total self-monitoring score than those who do not.

Data Collection and Analysis

In this study, I used data archived and compiled from Toma et al. (2008). The data were collected in 2008 from NYC who participated in one of the four predetermined websites (i.e., Match.com, Yahoo! Personals, Webdate, and American Singles). The original response rate was 479 candidates but after Toma et al. applied additional recruitment filters, the final number of participants was 80. Demographics of the dataset included an equal number of male and female participants; 53% of the participants were between the ages of 21-30, 25% were between the ages of 31-40, 11% were between the ages of 41-50, 8% were between the ages of 18-20, and 3% were between the ages of 51-65. Fifty-six percent of the participants belonged to Match.com, 36% belonged to Yahoo! Personals, 5% belonged to Webdate, and 3% belonged to American Singles. Because I used archival data, there were no discrepancies in data collection from the plan presented in Chapter 3.

The information was collected and assembled in an SPSS data file with data organized in a categorical fashion. I employed a factorial MANOVA to analyze the hypotheses. The categorical IVs had two levels: male versus female, and high- versus low-level of modified self-traits. The quantitative DVs were perceived degree of anonymity, social desirability, and self-monitoring. I would determine if there were a statistically significant difference in perceived degree of anonymity, total scores of social desirability, and total scores of self-monitoring for males and females in online dating profiles, and if there were a statically significant difference in perceived degree of

anonymity, total scores of social desirability, and total scores of self-monitoring in high and low level of modified self-traits in online dating profiles.

Results

The hypotheses were tested using a factorial MANOVA. Demographics of the population are reported (see Tables 1-3). Participant demographics between gender and modified self-traits are as follow: 40 females and 39 males; 39 of them are in the high modified self-traits category and 40 of them are in the low modified self-traits category; there are 19 female and 20 males in the high modified self-traits category; and there are 21 females and 19 males in the low modified self-traits category (see Table 1). Participant demographics between age groups and gender are as follow: five males and two females were ages 18-20, 17 males and 26 females were ages 21-30, 13 males and seven females were ages 31-40, and four males and five females were ages 41-50 (see Table 2). Participant demographics between age groups and modified self-traits were as follow: four high and three low modified self-traits were ages 18-20, 20 high and 23 low modified self-traits were ages 21-30, 11 high and nine low modified self-traits were ages 31-40, four high and five low modified self-traits were ages 41-50 (see Table 3).

Table 1

Demographics of Population between Gender and Modified Self-Traits

Gender	*Participants (n)*	*High Modified Self-Traits*	*Low Modified Self-Traits*
Male	39	20	19
Female	40	19	21
Total	79	39	40

Table 2

Demographics of Population between Age Groups and Gender

	Age Groups	*Participants (n)*	*Male*	*Female*
Age	18-20	7	5	2
	21-30	43	17	26
	31-40	20	13	7
	41-50	9	4	5
Total		79	39	40

Table 3

Demographics of Population between and Age Groups and Modified Self-Traits

	Age Groups	*Participants (n)*	*High Modified Self-Traits*	*Low Modified Self-Traits*
Age	18-20	7	4	3
	21-30	43	20	23
	31-40	20	11	9
	41-50	9	4	5
Total		79	39	40

The test of Box's M allowed me to evaluate the hypothesis that the covariance matrices are equal. According to the Box's M test, I found that equal variances can be assumed, [$F(18, 19589) = .673$, $p = .841$]; therefore, Wilks' Lambda was used as the test statistics. The Wilks' Lambda is a commonly used test statistics for MANOVA. Because it is an inverse criterion and its value range from zero to one, the smaller the value of Wilks' Lambda, the more evidence there is for treatment effects or group differences (Mertler & Vannatta, 2010). In the Wilks' Lambda criteria, I found nonsignificant group differences in gender with respect to anonymity, social desirability, and self-monitoring in deception in online dating, Wilks' $\Lambda = .983$, [$F(3, 73) = .417$, $p = .741$, multivariate $\eta^2 = .017$]. In the Wilks' Lambda criteria, I also found nonsignificant

group differences in modified self-trait with respect to anonymity, social desirability, and self-monitoring in deception in online dating, Wilks' $\Lambda = .949$, [$F(3, 73) = 1.312$, $p = .277$, multivariate $\eta^2 = .051$].

Because the compilation of MANOVA was performed and found nonsignificance in the overall multivariate test, I concluded that all six null hypotheses were retained, and the IVs had no effect on the DVs. In the first research question, I asked is there a significant difference in perceived anonymity, total scores of social desirability, and total scores of self-monitoring between males and females in online dating profiles? In the following research hypotheses, I investigated the relationship between gender in online dating profiles and the three DVs. In Research Hypothesis 1, I suggested that females would score significantly lower in perceived degree of anonymity than males, and this hypothesis was not supported, [$F(1, 75) = .048$, $p = .826$, $\eta^2 = .001$]. In Research Hypothesis 2, I suggested that women would score significantly higher in the total social desirability score than males, and this hypothesis was not supported, [$F(1, 75) = 1.266$, $p = .264$, $\eta^2 = .071$]. In Research Hypothesis 3, I suggested that females would score significantly higher in the total self-monitoring score than males: again, this hypothesis was not supported, [$F(1, 75) = .333$, $p = .565$, $\eta^2 = .004$]. In the second research question, I asked is there a significant difference in perceived anonymity, total scores of social desirability, and total scores of self-monitoring between high and low level of modified self-traits in online dating profiles and the following research hypotheses investigated the relationship between high and low level of modified self-traits in online dating profiles and the three DVs. In Research Hypothesis 4, I suggested that individuals

who are high in modified self-traits would score significantly higher in perceived degree of anonymity than those who are not, and this hypothesis was not supported, [$F(1, 75) = .22$, $p = .64$, $\eta^2 = .003$]. In Research Hypothesis 5, I suggested that individuals who are high in modified self-traits would score significantly higher in the total social desirability score than those who are not, and this hypothesis was not supported, [$F(1, 75) = 3.11$, $p = .082$, $\eta^2 = .04$]. Lastly, in Research Hypothesis 6, I suggested that individuals who are high in modified self-traits would score significantly higher in total self-monitoring score than those who are not, and this hypothesis was not supported, [$F(1, 75) = .741$, $p = .392$, $\eta^2 = .01$]. In the ANOVA results, I found that the tendency to modify an individual's self-traits in an online dating environment had no impact on online daters' sense of anonymity, social desirability, or self-monitoring behaviors. Therefore, all of the research hypotheses and assumptions are proven to be non-significant. Since the Wilks' Lambda evaluation showed that the overall test statistics was nonsignificant, and because I found overall MANOVA nonsignificance in any of the research hypotheses, no post hoc analysis of statistical tests was performed. Additionally, no statistical hypotheses emerged from the analysis of the main hypotheses.

Summary

The objective of this investigation was to determine if there would be an interactive association between anonymity, social desirability, and self-monitoring and gender or modified self-traits in online dating profiles. I employed a factorial MANOVA to investigate the variables. In the result of the Box's M test for equality of variance-covariance, I found that equality of variance was assumed, and I used the Wilks' Lambda

test statistics to examine group differences. The Wilks' Lambda value indicated nonsignificance in group differences in either gender, or modified self-traits with respect to anonymity, social desirability, and self-monitoring in deception in online dating. Furthermore, in the MANOVA statistical analysis, I found an overall nonsignificance in all of the research hypotheses. Specifically, there was no significant difference found between perceived anonymity, total scores of social desirability, and total scores of self-monitoring between males and females in online dating profiles for the first research question, and there was no significant difference found between perceived anonymity, total scores of social desirability, and total scores of self-monitoring between high- and low-level modified self-traits in online dating profiles for the second research question.

An overview of this quantitative study on the relationship between gender, modified self-traits in online dating profiles, and personality characteristics that can lead to online deception is discussed in Chapter 5. An interpretation of the findings and a detailed discussion of limitations of the study can be found in Chapter 5. Furthermore, recommendations for future research on the impact of personality characteristics and deception in online dating, and implications for social change are addressed in Chapter 5.

Chapter 5: Discussion

Introduction

The purpose of this study was to investigate the relationship between gender, modified self-traits in online dating profiles, and personality characteristics (i.e., perceived anonymity, social desirability, and self-monitoring behavior) that could lead to online deception. This study was quantitative in nature because I desired to find a correlation, relationship, and/or impact that gender and high and low level of modified self-traits may have on an individual's tendency to deceive in online dating environments. I used archival data collected by Toma et al. (2008) and analyzed data points that the original authors obtained but did not examine. This study was conducted because there was a gap in the literature on the topic of deception in online dating, especially in an area that personality characteristics played a role. Furthermore, I conducted this study to analyze data points that the original authors did not use and determine if those data points would yield significant findings.

The objective of this study was to investigate whether there would be an interactive association between anonymity, social desirability, and self-monitoring and gender and modified self-traits in online dating profiles. In the main research questions, I sought to determine whether gender and modified self-traits would impact an individual's perceived anonymity, social desirability, and self-monitoring behaviors in online dating environments. I employed MANOVA to examine these variables and found that all hypotheses proposed for the research questions were nonsignificant. The way females and males behave in online dating environments failed to support the assumption about

gender roles, and the way individuals of high and low level modified self-traits behaved in online dating environments failed to support the assumption about the existing disparity between physical descriptions of an individual's identity in real life and the individual's online dating profile.

Interpretation of the Findings

The findings in this study extend existing knowledge in the discipline related to deception in online dating. Personality characteristics analyzed in this study, such as perceived anonymity, social desirability, and self-monitoring behavior were reviewed in depth in Chapter 2, referencing their relationship and correlation with deception in online dating. However, in the statistical analysis conducted in this study, I concluded that neither gender nor modification of self-traits had an impact on people's personality characteristics that was assumed to influence deception in online dating. While the nonsignificant relationship between these personality characteristics with gender and modification of self-traits conflicted with the peer-reviewed literature described in Chapter 2, I believed that the results of this study extend knowledge in the discipline because a different combination of variables were examined using the same archival data collected by Toma et al. (2008).

In Chapter 2, Toma et al.'s (2008) data were examined on three different occasions by applying quantitative and qualitative methodologies, and analyzing different combination of variables. Toma et al. found significance in gender-specific online dating behaviors, but these authors did not compare if one gender would conduct one behave more frequently than the other gender (which is what this current study examined).

Toma et al. (2010) found significance in less attractive individuals' tendency to provide deceptive physical descriptions in their online profiles to others (this is an aspect that I did not examine). The third study, Ellison et al. (2011), used qualitative methodology and found that the tendency to alter an individual's self-presentation in online dating profiles was due to a lack of self-knowledge or insight than intentional deception. Furthermore, Ellison et al. also found that asynchronous environments affected how self-presentations were crafted. This last finding correlates to part of this study's analysis whereas a delayed communication tempo could be viewed as a form of perceived anonymity, and how self-presentation is crafted could be viewed as modification of self-traits. I found no significance between modified self-traits and perceived anonymity but Ellison et al. indicated the opposite. I assumed a possible explanation for this conflicting finding, and that is the use of qualitative versus quantitative methodology. Participants in qualitative studies are given the opportunity to provide explanations in open-ended questions but participants in quantitative studies are not afforded the same opportunity; instead, their responses are coded and stored away for statistical analysis.

I applied Paulhus' (1984) social desirability model as the theoretical framework for this study. This model attributes an individual's desire to appear socially acceptable to the individual's inaccurate depiction of himself or herself in self-reports. Furthermore, Paulhus also claimed that an individual's tendency to impress others increase from anonymous to public conditions. The commonality between an individual's inaccurate depiction of himself in self-reports and the tendency to impress others in public settings by altering his self-presentation can be interpreted as that individual's level of social

desirability and that individual's self-monitoring behaviors in order to appear socially acceptable. Therefore, based on Paulhus' social desirability model, I hypothesized that a significant relationship would exist between modification of self-traits, social desirability, and self-monitoring behavior because online dating takes place in public forums and the desire to achieve acceptability and obtain a romantic mate is high. In the MANOVA analysis conducted in this study, I did not find such significant relationships between modification of self-traits and social desirability, or modification of self-traits and self-monitoring behavior. Perhaps this is due in part to people's awareness and insight of their behavior when developing their online dating profiles, people's level of comfort to disclose the augmentation of their online dating profile when they are aware, or people's desire to appear socially acceptable to the administrators during the original data collection environment.

Limitations of the Study

The main limitation of this study was the use of archival data. In this broad limitation, I addressed five limitations that were applicable to this study. First, using archival data limits the researcher's control to determine the accuracy of data collection and storage, specifically, the type of participants recruited. Toma et al. (2008) used four predetermined online dating websites as a criterion for selection (i.e., Match.com, Yahoo! Personals, Webdate, and American Singles). While Match.com and Yahoo! Personals were considered popular online dating websites, Webdate and American Singles were not. The inclusion of other popular online dating websites such as eHarmony or LavaLife may have broadened the type and range of participants recruited. The second

limitation was the inability to control the overall sample size. Toma et al. had a total number of 80 participants. According to the GPower analysis, a sample size of 72 would be sufficient to satisfy the minimally required power analysis (with alpha = .05, power = .95, and effective size = .25); however, I determined that one of the reasons for the nonsignificant finding for all six hypotheses was due to a lack of data.

The third limitation was the inability to match the type and depth of data collected from the original participants to the current research questions. For example, data on perceived anonymity were buried in the midst of other unrelated survey questions such as the number of online relationships, marriages, and awareness of other online dating sites (Toma et al., 2008). The inability to design additional anonymity related questions to further understand participants' perception of their anonymity in online dating was a hindrance to this study. Examples of additional anonymity questions would include (a) would participants use perceived anonymity to alter their online dating profile, (b) would participants consider their perceived anonymity to be beneficial to achieve their goals, and (c) would participants view their perceived anonymity as a hindrance to their self-presentation. Therefore, if the scope of perceived anonymity were assessed further, it would increase the possibility that anonymity played a substantial role in its relationship to online deception.

The fourth limitation was the type of questionnaires administered. The reliance on self-report questionnaires was a limitation for deception related research. Self-report methods are principally biased because the participants are assumed to have self-awareness and insight in order to obtain unbiased responses (DePaulo et al., 1996). A

proposal for future researchers is to include a mixture of questionnaires that are not solely based on self-report methods (i.e., interactive Q&A sessions) and broaden the scope of investigation by testing variables that the research question intends to address. The fifth limitation was the use of untested instruments. Toma et al. (2008) developed their own instruments to assess the variables discussed in this study (i.e., questionnaires to determine modification of self-traits, perceived anonymity, social desirability, and self-monitoring) and these instruments did not undergo repeated testing to ensure the accuracy of their intended measure. When instruments are not tested properly, their validity and reliability are often called into question. Therefore, another potential explanation for this study's lack of significance could be due to the fact that the instruments failed to measure what the researcher had hoped they would.

Based on the limitations of this study, the results do not have generalizability. Because it was a onetime data collection from NYC residents in 2008 and more popular nation-wide online dating websites were not included in the group of predetermined websites, the findings were analyzed based on older data that may not express the sentiment of online daters to date. Therefore, while using archival data have its benefits (i.e., cost effectiveness and time efficiency), the ability to obtain more relevant, up to date data, and the freedom to craft or select questionnaires that are more applicable to the research questions outweighs the benefits.

Recommendations

The examination of how gender and modification of self-traits can impact personality characteristics and deception in online environments should be of interest to

online daters, mental health professionals, and law enforcement professionals. The findings of this research study can be used to inform individuals who are interested in online dating, mental health professionals who are providing care to victims of deception in online dating, and law enforcement professionals who are pursuing deceptive online daters who committed criminal acts (i.e., child predators) or civil crimes (i.e., financial fraud) against other online daters. Members in these groups play a role in the necessary social change to inform new online daters of the existing landscape, assist other mental health professionals with useful strategies to counsel their clients, and provide law enforcement professionals with typical traits of online daters who are considered child predators and those who commit financial fraud.

This investigation of gender and modification of self-traits did not show statistical significance on its impact on perceived anonymity, social desirability, or self-monitoring behavior; however, it is still important to emphasize that the nonsignificance of this study's findings should not be implied that gender and modification of self-traits has no impact to any personality characteristics and deception in online dating. Future researchers should note and address the limitations demonstrated in this study. This study's findings should not be generalized for future studies, and other combinations of personality characteristics should be examined to assess its relevance and significance to deception in online dating. Moreover, comparing culturally diverse populations from different parts of the world may result in statistically significant findings.

Additionally, future researchers should obtain more data points related to perceived anonymity, aspects of the asynchronous nature of computer-mediated-

communication that may affect self-monitoring behavior, and broaden the diversity of the sample pool. The instruments used in this study were developed by Toma et al. (2008) and Toma et al. did not provide any information related to the instruments' reliability as sound measurements of the constructs within the parameter of this study. Therefore, future studies may benefit from using instruments that have reliable external and internal validity, and those that are designed to measure perceived anonymity, social desirability, and self-monitoring behaviors. While this study's findings did not yield statistically significant results, future researchers should not discard them. Rather, the nonsignificance in all six hypotheses should spark additional investigation to what variables, or combination thereof, of personality characteristics and environmental factors would have a significant impact on deception in online dating.

Implications for Social Change

Deception in online environments has a range of effects on individuals, families, and society. It is crucial for individuals, family members, and society as a whole to understand the dynamics of human interaction in online environments, to know the tolerable and acceptable behaviors in online environments, and to be able to identify suspicious and deceptive behaviors in online environments. The intent of this study was to discover how technology and anonymity impact human behavior in online environments and knowledge obtained in this area was to help psychologists, teachers, parents, and criminal investigators understand the positive and negative influence of technology and anonymity. Understanding which social, environmental, and interactive factors could trigger exploitive and deceptive behaviors would provide insight to all

interested parties so that they can prevent foul-play, protect the young and the innocent, and educate the masses on safety measures.

While I did not yield statistically significant results that are applicable to answer the research questions, the in-depth discussions on social desirability, anonymity, and the dynamic and rituals of online dating environment should be used as foundational knowledge for all members of the society. On the individual level, people who are interested in online dating should understand the landscape of online dating and acceptable online behaviors in order to present themselves and assess others appropriately. On the family level, knowing and acknowledging family members and/or friends who are active on online dating websites can strengthen the connection between online and real world identity (Gibbs et al., 2011; Toma et al., 2008). Furthermore, on the societal level, researchers can provide new findings to clinicians and support strategies to counsel victims of online deception. In turn, commonly shared characteristics of online deceivers identified by researchers and clinicians can be provided to law enforcement professionals and strengthen their methods to pursue online deceivers who caused criminal and civil harm.

Conclusion

The ability to identify deception in online environments is a daunting task for individuals, organizations, and society. This study contributes to the existing literature by pulling together past research on deception in online environments and highlighting theoretical models that provided correlation between personality variables and deception in online dating. While I did not provide additional factors that impacted deception in

online dating, the nonsignificance found between the variables examined in this study should not be viewed as ineffective. Instead, it should promote future researchers to seek ways to broaden the scope of research and eliminate the limitations addressed in this study.

I recommend that individuals, families, and the society take interest and understand the dynamic of online environments. While some basic human behavior and interaction remain consistent between online and the real world, having the ability to identify differences between the two worlds, to recognize anomalies in online environments, and to protect oneself from online predators and financial schemes will prove to be great benefits to all members of the society. Results from this study could be strengthened from future research by adjusting research questions and hypotheses, data collection criteria, implementation of validated instruments, and statistical methodology.

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Allied Beverage Group, LLC
Promotional Specialist

- Managed team of 6 for wine and spirit promotions throughout casinos in New Jersey
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Sept 2002-Dec 2002
Cable News Network LP, Beijing, China
Intern

- Assisted bureau chief in preparation for his live broadcast of the 16th Chinese Party Congress

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