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## (Tele)presence in Mediated Worship: The Influence of Antecedent Traits and the Effect on Memory, Enjoyment and Behavior

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(TELE)PRESENCE IN MEDIATED WORSHIP: THE INFLUENCE OF ANTECEDENT  
TRAITS AND THE EFFECT ON MEMORY, ENJOYMENT AND BEHAVIOR

by

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A thesis submitted in partial fulfillment of the requirements  
for the degree of Master of Arts  
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## ABSTRACT

This study examines the phenomena of (tele)presence in the distinct mediated environment of an online Christian worship service. A quantitative field experiment involving 48 participants who had just viewed a religious Internet broadcast was undertaken. Individual differences in personality and religiosity are examined in tandem with (tele)presence as predictors of a number of outcome variables, including memory, enjoyment of the online worship service and behavioral intention to be more active with the church. The results showed no significant relationship between religiosity and the experience of (tele)presence, but that users who experienced greater (tele)presence enjoyed the service more, had a greater ability to recognize information from the service, and had a greater intention to attend in the future. The implications for online worship services, along with the limitations of this study, are discussed.

## ACKNOWLEDGMENTS

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## LIST OF ABBREVIATIONS

BFI-10 – Big Five Inventory

FtF – Face-to-Face

MFT – Moral Framework Theory

SCSRFQ – Santa Clara Strength of Religious Faith Questionnaire

TPI – Temple Presence Inventory

TRA – Theory of Reasoned Action

VVI – Vividness of Virtual Imagery

## CHAPTER ONE: INTRODUCTION

For millennia, there have been mediators between worshipers and their deity(ies). Priests, clerics, imams, and pastors, etc. facilitated worship in cathedrals, caves, and country vicarages. The rise of teleministries in the 20<sup>th</sup> century introduced a new intermediary: the television screen. In the 21<sup>st</sup> century, Internet access has afforded a considerable number of potential worshipers another avenue still, and a rising number of people now consider the Internet to be their primary source for religious engagement (Jansen, Tapia, & Spink, 2010). Participating in religious services from a remote location adds an interesting additional level of mediation between worshipers and their God(s) – and raises a number of conceptual questions about the “perceptual illusion of non-mediation.” It also begs the practical question, how do worshippers at home experience a “sense of being there” when viewing online worship services?

(Tele)presence is commonly defined as the “perceptual illusion of non-mediation,” (Lombard & Ditton, 1997). It refers to the experience of feeling like one is in the mediated environment, and/or with others in the mediated environment, despite being separated by various screens or devices. The antecedents, implications, and outcomes of the experience of (tele) presence continue to be explored beyond the virtual environments and popular media applications it has typically been associated with. Recent research has explored (tele)presence and cybertherapy (Spagnolli, Bracken, & Orso, 2014); telesurgery (Dolezal, 2009); online classrooms (Wei, Chen, & Kinshuk, 2012); augmented reality games (Klatt et al., 2011); and other blended reality environments (Hoshi, Pesola, Waterworth & Waterworth, 2009).

This field experiment explores several possible influences on (tele)presence and several outcomes that may be mediated by (tele)presence experienced by congregants of a Lutheran church in the United States while viewing an online worship service.

There are two overarching goals of this study. The first is to explore how experiencing varying degrees of (tele)presence during a mediated worship experience is related to a number of outcome variables that demonstrate engagement with the online service. These include enjoyment of the online worship service, memory for content presented during the service, and behavioral intentions to both continue to attend online worship services and further volunteer their time, energy or financial resources to the church. Secondly, this study attempts to understand three antecedent traits that are proposed to lead to greater levels of experienced (tele)presence in the online worship service environment: low extraversion, high openness, and religiosity. To these ends, a field experiment was conducted with *Time of Grace Ministries* via online survey completed immediately after viewing an online worship service. The following literature review briefly discusses online worship services and the growing technological adaptations adopted by religious organizations, followed by a discussion of (tele)presence and the predicted outcome and antecedent variables of experiencing (tele)presence in this unique context.

## CHAPTER TWO: LITERATURE REVIEW

While a great deal has been written on the individual fields of religiosity, mediated presence, and personality, little has been written about the three operating together. However, a number of studies provide the necessary tools and background to conduct research into the influence of antecedent traits on the experience of (tele)presence, and the consequent impact on specific cognitive, emotional and behavioral outcomes.

### Religion and media

Rapid adoption of technology has already stimulated re-imaginings of how institutions conduct business. Traditional brick and mortar stores must maintain an ever greater online presence to compete, and the preference for many users is to have their entire experience take place online (Coyle & Thorson, 2001). The interpersonal aspect, once believed to be a crucial aspect of the sales experience, has all but disappeared from the landscape of online transactions with human interaction only taking place when something is wrong. With so many of the world's institutions online, religious institutions are also questioning whether face-to-face interaction is actually being a fundamental piece of their makeup, or if they are simply behind the times in moving to increased virtual interaction (Campbell, 2006).

Religious organizations have messages that they take pains (and considerable expense) to disseminate (Mittelstaedt, 2002). But although the Internet is one of the most useful tools for

wide-spread message dissemination, and a strong desire on the part of several religious entities to adopt its use (Swanson, 2010), considerable difficulty has been encountered in adapting ancient models and messages to new media (Waters, Friedman, Mills, & Zeng, 2011). Therefore, within religious entities there is a conflict where there is a desire to employ various mass media to assist with message dissemination but simultaneously a hesitancy to adopt these technologies. In fact, an individual's religiosity was a negative predictor of Internet adoption well into this millennium (Armfield & Holbert, 2003), possibly due to moral concerns over the use of the Internet, frequently called "secularization" (Armfield, Dixon, & Dougherty, 2006). The present state of research on the implementation of various forms of mass media by religious organizations focuses on topics such as the impact that a virtual space has on the practice and understanding of religion, how the message changes in the process, and what changes take place when a previously predominately participatory is adapted to be consumed online (Campbell, 2006).

While actual data concerning the number of churches making video reproductions of their services available online is scarce, Pew Research found in 2008 that, although the rate of adoption was slowing, two-thirds of individual congregations made use of an independent website for their church. Additionally, churches with an online presence were generally seeking to expand it to include new forms of media (Pew Research, 2008). These media forms are generally low in interactivity, essentially broadcasts of worship services or other counselling and support media (Hutchings, 2011). Furthermore, these transmissions are generally presented in such a way as to imitate face-to-face interactions (Stewart, 2011).

While these mediated communications may be intended to resemble face-to-face interactions, questions remain as to the degree of success achieved in actually inspiring a sense of (tele)presence in viewers.

## (Tele)presence

The voluntary suspension of the perception of mediation is called (tele)presence, or as Lombard & Ditton (1997) defined it, “The perceptual illusion of non-mediation” (p. 9). Virtual environments resemble, with increasing accuracy, real-world environments. As these environments become more realistic, users have an easier time becoming enmeshed in them and experiencing greater degrees of (tele)presence (Clark, 2007). When a user interacts with a virtual environment that resembles a familiar real world environment, or when a situation occurs online that resembles a situation in the offline world, the feeling of being “present” in a mediated environment is amplified (Bracken & Skalski, 2010).

There is a noted difference in the degree to which individuals experience (tele)presence which can be accounted for by looking at “external” and “internal” variables. (Usoh & Slater, 1995). The majority of research into (tele)presence focuses on factors concerning the quality of the medium, or the external variables, such as virtual reality capabilities and structural features, screen size and realistic presentation of light and visuals (Slater, Khanna, Mortensen & Yu, 2009). Bracken & Skalski (2010) identify a quality of “richness” or “vividness” (p. 118) in a given media environment. These terms largely reflect how closely the sensations of a mediated environment reproduce those of the real-world environment it simulates (Ijsselsteijn, de Ridder, Freeman, & Avons 2000). This extends to all the familiar five senses, not just the visual that is normally associated with mediated interaction, and even extends beyond to other senses, as evidenced by the fact that natural interaction with an environment (for example, a realistic controller) is also a strong contributing factor to its richness (Skalski, Tamborini, Shelton, Buncher, & Lindmark, 2011). In general, it is believed that the richer the media environment is, the greater the sense of (tele)presence it may elicit in individuals (Klein, 2003). For example,

studies have demonstrated correlations between the external variables of medium quality, (tele)presence, and credibility (Nass, Reeves, & Leshner, 1996), as well as the internal variable of the willingness of a user to suspend disbelief (Lombard & Ditton, 1997).

### *Differences between varieties of presence*

Telepresence, social presence, co-presence and transportation are often used interchangeably, even within studies. The differences between the concepts, however, can be quite pronounced, and expected relationships between seemingly inextricably linked ideas can be unexpectedly absent (Bulu, 2012). Because of the variety of meanings researchers have ascribed to presence in its various forms, it is worthwhile to review the terminology and establish precisely what a researcher means by “presence.” It is therefore worthwhile to briefly review some of the terminology often associated with the phenomenon of (tele)presence.

### *Spatial Presence*

From the early days of the Internet and computer mediated environments, it was apparent that virtual space represented a distinct “location” that engaged users could have the sensation of occupying (Heeter, 1992). The phrase “being there” emerged as an important description for the experience of presence in general (Kim & Biocca, 1997), and of spatial presence in particular (Hofer, Wirth, Kuehne, Schramm, & Sacau, 2012). Users were no longer merely present at a physical place, but also had the sensation of being present in a virtual space. When experiencing

the virtual space, users do not perceive the medium (in the case of this particular study, the computer screen) and feel as though they act within that virtual environment rather than acting upon it from somewhere else (Schubert, Friedmann, & Regenbrecht, 2001).

Many of the factors associated with (tele)presence, such as transportation (often used interchangeably with immersion), social presence, and media quality contribute to the sense of “being there,” the hallmark of spatial presence (Wirth et al., 2007; Witmer & Singer, 1998; Glenberg & Kaschak, 2002). Within this environment there are certain limitations to choice, and may be certain expansions to action options available, so “users accept, in a hypothesis-testing process, this spatial situation model as their own egocentric viewpoint” (Schubert, 2009). Given this new set of “rules” to a user’s environment, judgments, decisions, and behaviors are impacted (Schubert, 2009). This experiment is primarily concerned with the experience of spatial presence, the factors leading to it, and some of the potential outcomes.

### *Transportation*

Nell (1988) identified what would come to be the concept of transportation (also sometimes called “narrative transportation”) when he discovered that one of the critical components of reading fiction and narrative non-fiction is, “the experience of being lost in a book, in absorption or entrancement” (p. 8) and further asserted that this experience has an addictive quality to it. Gerrig (1993) illustrated the concept colorfully by pointing to a novel by Paul Theroux (1990) entitled *My Secret History* in which he refers to the experience of becoming involved in the narrative as being “transported.”

Green and Brock (2000) offered a more precise definition when, in developing a 15 point scale to measure the phenomenon, “conceived of transportation as a convergent process, where all mental systems and capacities become focused on events occurring in the narrative” (p. 701). The user of media “loses access to some real-world facts in favor of accepting the narrative world that the author has created” (p. 702). In short, narrative and the consequent involvement of an individual in the story is the crucial aspect of transportation studies. While transportation can be applied to many different forms of narrative media, it is most frequently associated with text-based mediums (Green & Brock, 2000). It has, however, also played a significant role in virtual reality research (Lombard, Ditton & Weinstein, 2009).

### *Social presence*

Social presence can be described simply as an interaction between two participants over a medium (Short, Williams & Christie, 1976). Initially this medium was the telephone, but as the world has become increasingly connected the theory has expanded in scope to cover a variety of communication methods. In more recent times, the concept has grown to also include an individual’s perception of the medium itself and its ability to connect them to others in a meaningful or intimate way (Lombard & Ditton, 1997). Lee (2004) captured the essence of the sensation of social presence well when he wrote, “social presence occurs when technology users successfully simulate other human or nonhuman intelligences” (p. 45).

Another aspect of social presence is co-presence. In fact, the two terms are often used interchangeably (Bracken & Skalski, 2010). There is a slight difference in nuance for many studies, however, with co-presence becoming a combination of (tele)presence and social

presence and representing the feeling of being with others in a space (Biocca, Harms, & Burgoon, 2003). Bulu's (2012) research drew a more distinct line between the two, identifying social presence as having more to do with the quality of the medium to produce interaction, and co-presence with the psychological qualities of the interactions themselves. Under these conceptual definitions, social presence can be said to have more to do with the medium's capacity to facilitate social interaction, co-presence more to do with the quality of those interactions.

### *Effect of (tele)presence on the individual*

The phenomenon of (tele)presence is more than an interesting anomaly of human/machine interfacing, its occurrence can leave users changed. Despite the practical implications of questions concerning user outcomes following (tele)presence, surprisingly little research has been conducted on this question. Recent qualitative studies have been undertaken which form a bridge between the quality of the content and the level of immersion and enjoyment that individuals experience, as Poels, de Kort, & Ijsselstein (2012) found a positive relationship between the two. However, less research has been conducted utilizing quantitative measures. The studies that exist tend to focus on the commonly used dimensions of memory, enjoyment and a variety of consequent behaviors when examining the effects of media use (Schuemie, ven der Straaten, Krijn, & van der Mast, 2001).

## *Enjoyment*

Media enjoyment has received considerable attention in recent years in an attempt to define it more narrowly than merely a vague sense of happiness or pleasure connected to an activity (Tamborini, Bowman, Eden, Grizzard, & Organ, 2010). Enjoyment is a major and distinct aspect of an individual's emotional response to a stimulus, where user needs: cognitive, affective and physiological; are satisfied (Vorderer, Klimmt, & Ritterfold, 2004). Put another way, enjoyment consists of the satisfaction of both hedonic (arousal & affect) and non-hedonic (competence & autonomy) needs (Tamborini, Grizzard, Bowman, Reinecke, Lewis, & Eden, 2011). This represents an expansion upon other models, which would understand enjoyment to be distinct from the non-hedonic type of satisfaction that one may encounter by watching a worship service, sometimes referred to as "appreciation" (Oliver & Bartsch, 2011). The difference between the two is that appreciation is a considered reaction while enjoyment is an intuitive reaction (Tamborini, 2011). In brief, Tamborini et al. (2011) define it thusly: "Enjoyment can be thought of as a positive valuation stemming from unconscious processes in which all intrinsic needs are satisfied (or at least those needs that are dominantly salient) through intuitive response, and there is no unsatisfied need to impede the positively valued experience" (p. 1039).

A number of studies have linked an increased sense of (tele)presence to greater enjoyment. In a study involving video games, a greater sense of presence was positively related to enjoyment (Skalski, Tamborini, Shelton, Buncher, & Lindmark, 2011). Traditionally enjoyment was regarded as the fulfillment of pleasure-seeking, however a model proposed by Tamborini et al. (2011) expanded the scope of understanding enjoyment in media by extending it to non-interactive media and including non-hedonic as well as hedonic needs. A study into moral framework theory (MFT) crosses over with the enjoyment model to show how non-hedonic,

moral needs result in enjoyment when met (Tamborini, 2011). Tamborini's 2011 study outlines a set of dimensions of media content that may very likely be encountered in a traditional worship service: "The five MFT moral modules include: Harm/Care (concerned with the suffering of others and empathy), Fairness (related to reciprocity and justice), Loyalty (dealing with common good and punitiveness toward outsiders), Authority (negotiating dominance hierarchies), and Purity (concerned with sanctity and contamination)" (Tamborini, 2011, p. 40). Consequently, enjoyment can be expected to have a positive association with (tele)presence.

*H1: (Tele)presence will be positively related to enjoyment.*

These results are supported by other research into specific aspects of media enjoyment, hedonic and non-hedonic alike. For example, in the cognitive dimension of enjoyment in the previously mentioned study by Kim & Biocca (1997) it is established that there is a link between consumer confidence and a sense of presence. Probably most significantly, Li, Daugherty, & Biocca (1997) found that the greater the sense of presence, the more a user's feelings would resemble the actual, real-world situation being simulated.

Given that enjoyment may be understood as the satisfaction of non-hedonic as well as hedonic needs, and that the moral modules of MFT are consistent with the content one may encounter in a sermon, the question is prompted as to whether the experience of (tele)presence in mediated worship influences the level of enjoyment a viewer experiences.

## *Memory*

One of the most important objectives in a worship service is to teach and instruct effectively (Balge, 1982). For hundreds of years there has been particular emphasis in Western Christianity on the connection between memory and instruction. For example, when Martin Luther wrote the Small Catechism (1529) he did so with the intention that it be committed to memory, recognizable in many contexts and recalled even from a deathbed (Tappert, 1959). It is of particular interest, therefore, to examine the impact of mediated religious communication on memory.

Researchers have long established a link between presence and cognitive processing. Kim & Biocca (1997), in an examination of the significance of display angle on (tele)presence in general and transportation in particular, found that memory and attitude were positively linked both to a sense of arrival in a virtual environment and to a sense of departure from a participant's physical environment. Keng & Lin (2006) found that, in the field of advertising, a greater sense of presence led to improved recall and recognition. Their experiment further found that even when the medium was low in vividness of virtual imagery (VVI), a strong sense of (tele)presence would still improve recognition (p. 92). Thorough message processing benefits from (tele)presence, with involvement positively correlated to information retention (Skalski & Tamborini, 2007). However, in most studies involving presence and information retention, the idea of "being there" (telepresence) is considerably less examined than the feeling of "being with others" (social presence), as in Gunawardena, Lowe, & Anderson's (1997) study on improving online education and cooperative learning which found a positive relationship between memory and social presence. A meta-analysis of research into online education suggests that those who are educated online or in a "blended" environment (online learning coupled with face-to-face

classroom studies) perform as well or better than their face-to-face counterparts (Means, Toyama, Murphy, & Baki, 2013).

Experiments have also been conducted concerning the experience of (tele)presence and variables which could detract from memory. A Skalski, Tamborini, Glazer, & Smith (2009) experiment broke memory into three specific facets: message hits (the ability to accurately recognize information), typical belief false alarms (interference from outside false beliefs misattributed to the message), and message-relevant false alarms (interference from outside real beliefs misattributed to the message). Skalski et al. (2009) hypothesized that interference from these false-alarm messages would be more pronounced when a user was experiencing greater humor-induced (tele)presence, because the viewer would be likening the virtual experience to actual ones and therefore importing outside information. However, only in the dimension of message-relevant false alarms did their hypothesized negative relationship prove statistically significant. Users had become so present in their environment that they were more likely to rapidly understand the meaning and importance of information, but less likely to appreciate the details, much as the experience of driving a car will feel intuitive but details and particulars of recent signs may escape the driver. Based on the previous research on (tele)presence and memory, we propose,

*H2: Greater levels of reported (tele)presence will result in better memory for content presented in the online worship service.*

### *Behavioral intention*

Identifying the factors that inform behavior is an area of widespread study that encompasses many fields and disciplines. The term itself refers to either an action resulting from a message or the intention to act based on a message. The Theory of Reasoned Action (TRA) identifies intentions as the best means of determining future action (Fishbein & Ajzen, 1975). TRA was established as a theory decades ago, but to this day, behavioral intention remains the best predictor of actual action (Rhodes & Dickau, 2012).

There is precedent for anticipating differences in behavior based on levels of (tele)presence. Cortese and Seo (2012) conducted an experiment in which participants were invited to participate in an opinion discussion forum. The two condition study included a face to face, or FtF, condition), as well as a condition in which participants had real-time interactions with a presentation via a local intranet connection, which constituted the mediated condition. Those in the FtF condition reported the highest levels of Presence, participated more and reported the lowest levels of communication anxiety. Those in the mediated condition who reported a greater sense of presence participated more and experienced less communication anxiety than those who self-reported a lesser sense of presence.

When conducting market research the general tendency is to look for an individual's intention to purchase a product. In a religious environment there may not be a perfect parallel to this. There are occasions of financial transaction but the reasons and causes behind them are not the familiar "money for services" model (De Jonge, 1989). In fact, the act of providing financial support to a religious body can be so highly ritualistic and ceremonial that, for some, replica money is an acceptable norm (Kwon, 2007). For other religious bodies, the contribution of a set percentage or amount of financial resources is non-optional (tithes, sacrifices, audits, door fees,

etc.) to maintain membership in good standing, and therefore not as useful for gauging whether (tele)presence influences a person's intention to give (Galinsky, 2011). In the Roman Catholic, Lutheran, and Evangelical traditions, however, the bringing of an offering is a voluntary response to the delivered message (Senn, 1997). Within the context of these services, then, it is reasonable to examine influences on an individual's intention to donate. While the contribution of money to the program certainly represents a desired behavior, Bracken & Skalski (2009) cited the sacrifice of time as a desirable behavior with which to gauge a change in a user. Because continued attendance would be a desirable behavior for the religious body to achieve, the user's intention to continue attending online or in person in the future is a relevant point of study. Given the aforementioned research,

*H3: Greater levels of reported (tele)presence will result in greater intention to attend another online worship session in the future.*

*RQ1: Will the level of (tele)presence reported influence individuals' (a) intention to volunteer or (b) donate money?*

## Personality Traits

Beyond "states," which are brief, temporary attitudes or feelings that influence an individual in a given setting, "traits" refer to enduring characteristics in individuals that are expressed consistently over time (Augustine & Larsen, 2012). Although they can change over great periods of time, traits form a baseline for understanding an individual's behavioral and emotional predispositions, with personality being the most basic avenue of investigation (Beatty, McCroskey, & Valencic, 2001).

Although a variety of systems exist for evaluating personality, the “Big Five,” is one of the most commonly used taxonomic breakdowns of personality traits (Luo & Dai, 2011). There is significant variance in how the terms are applied, understood and defined, but these central traits of conscientiousness, extraversion (or surgency), agreeableness, neuroticism/emotional stability, and openness to experience (or culture) emerge consistently as the defining characteristics of a human being (John & Naumann, 2010). Repeated tests of Goldberg’s Big Five have shown it to be a highly durable taxonomy (Rushton & Irwing, 2008; John, 1999; Gurven et al., 2012; Specht, Egloff, & Schmukle, 2011). Its ability to serve in a predictive and explanatory capacity is remarkable across various cultures and languages, particularly when one considers the differences in the shades of meaning a word may have even within a given culture, depending on specific location, racial background, etc. (Sharpe, Martin & Roth, 2011).

Allport and Odbert (1936) made significant early contributions to what would ultimately become The Big Five, but it was Tupes & Christal (1961) who found that only five of the overarching personality factors were particularly significant. Goldberg (1990) identifies the five traits that are most secure, no matter how many other personality categories are introduced. The “conscientiousness” measure examines the tendency to act in a disciplined, deliberate manner. “Extraversion” focuses on a person’s motivation to seek interaction with others. “Agreeableness” deals with the nature of those interactions. A person’s internal attitudes and tendency toward particular feelings fall under the heading of “neuroticism/emotional stability”. The fifth, oft debated, factor is “openness to experience”, which takes a variety of forms but generally deals with an individual’s willingness to interact with the world, as well as factors of creativity and rebelliousness.

*(Tele)presence and personality.*

The Big Five have been used to study a variety of traits which would contribute to experiencing (tele)presence, with extraversion and openness receiving the most attention (Lin & Chiang, 2013; Lachlan & Maloney, 2008). A user's personality is an important factor in determining his or her sense of presence in a virtual reality environment (Kober & Neuper, 2013). A study by Alsina-Jurnet and Gutierrez-Maldonado (2010) found that the personality trait of introversion (or low extraversion) was a strong predictor of a sense of (tele)presence. In discussion on that piece, the authors considered the possibility that introversion plays a strong role in the experience because of the positive impact that it potentially has on memory, however this was never tested and has not been demonstrated. Openness to experience has been positively correlated to cognitive flexibility and negatively correlated to inhibition in past studies, and may also contribute to a sense of (tele)presence (Murdock, Oddi, & Bridgett, 2013). There are a great many external variables that contribute to (or detract from) the effectiveness of memory in mediated settings (Liang & Chen, 2012). However, on an individual level several personality variables apply to perceived satisfaction and actual effectiveness (in terms of information retained) in other online learning environments (Bear, 2012).

The existing body of study on how individual differences, or internal variables, between viewers is a factor in determining one's sensation of (tele)presence is small. The bulk of the examination is dedicated to temporary states, such as Witmer & Singer's (1998) questionnaire measuring immersion and involvement, which focuses on temporary states rather than more permanent traits. These states have been found to be significant variables in achieving (tele)presence.

Kober & Neuper (2013) found that personality variables were an important contributing factor to determining a participant's level of presence in a virtual reality environment. Their experiment examined the commonly used Big Five personality traits of agreeableness, conscientiousness, extraversion, neuroticism and openness, as well as a number of infrequently employed dimensions such as absorption (level to which an individual becomes involved or immersed), imagination (specifically how well sensory input is mentally represented and reproduced), immersive tendencies (not dissimilar to transportation), empathy (sensitivity to the experiences of others), impulsive tendencies (tendency to act without thinking) and locus of control ("the extent to which people believe that events are caused either by their own behavior and actions [internal locus of control] or by outside forces, fate, or chance [external locus of control]") (p. 16). The Big Five personality trait of "openness" correlated positively to subjective perceptions of (tele)presence (p. 20). Although the findings were modest, they encouraged others to conduct further research on the topic, particularly since the sample size (N=30) and diversity was limited to female psychology undergraduates at a single university. There is certainly additional work and research potential in this area. However, in keeping with the published literature, this study anticipates that extraversion will be negatively related to (tele)presence and openness will be positively related.

*H4: Low extraversion will be related to greater reported levels of (tele)presence*

*H5: High openness will be related to greater reported levels of (tele)presence.*

Personality is, of course, not the only factor to be considered when examining the role of individual characteristics in the sensation of (tele)presence. It is worth mentioning at this point that the word "Big" in Big Five is not meant to indicate their importance (though important they certainly are) but rather their size. These five characteristics encompass the majority of

adjectives that can be used to describe an individual's behaviors and attitudes (John & Srivastava, 1999). That means that within these categories lie thousands of subcategories, perhaps even competing subcategories, and many more that are unaccounted for at all. One trait that does not neatly fall into the Big Five taxonomy is that of religiosity.

### *Religiosity*

The term "religiosity" can have a wide array of definitions, depending on what one is examining when looking at an individual's religious inclinations (Mahoney, 2010). A meta-analysis of 97 academic articles on the use of the term found that religiosity can be a measure of anything from how committed an individual feels to a particular religious conviction, to the degree of importance religion plays in an individual's decision making process (Mahoney, Pargament, Tarakeshwar, & Swank, 2008). Any of these definitions could be employed meaningfully when looking at how one experiences (tele)presence. For the purposes of examining religiosity as an antecedent trait parallel to personality traits, however, the definition employed will be the one defined by Lewis, Shevlin, McGuckin, and Navrátil (2001), who conceptualized religiosity as, "the strength of religious faith regardless of religious affiliation or denomination" (p. 380).

Several features of church services lend themselves to viewers with high religiosity experiencing (tele)presence, particularly if accompanied by up-to-date technology. Familiarity with an environment contributes to a sense of (tele)presence (Bracken & Skalski, 2010), and higher self-reported levels of religiosity have been shown to correlate positively to feelings of ease and comfort in a church (Petersen & Roy, 1985). Those who report higher levels of

religiosity are more likely to feel familiar with a church environment, and therefore potentially report a greater sense of (tele)presence. Additionally, experiential activities such as listening to a sermon further facilitate user involvement and (tele)presence (Novak, Hoffman, & Duhachek, 2003). Greater involvement also yields higher levels of (tele)presence (Skalski & Tamborini, 2007), and individuals who report high levels of religiosity are more likely to be involved in religious organizations and more likely to attend worship services (Piedmont, Ciarrochi, Dy-Liacco, & Williams, 2009). Taken as a whole, there is substantial reason for expecting a positive association between religiosity and (tele)presence in a worship service alongside the BFI-10 personality variables of low extraversion and high openness.

*H6: High religiosity will be related to greater reported levels of (tele)presence.*

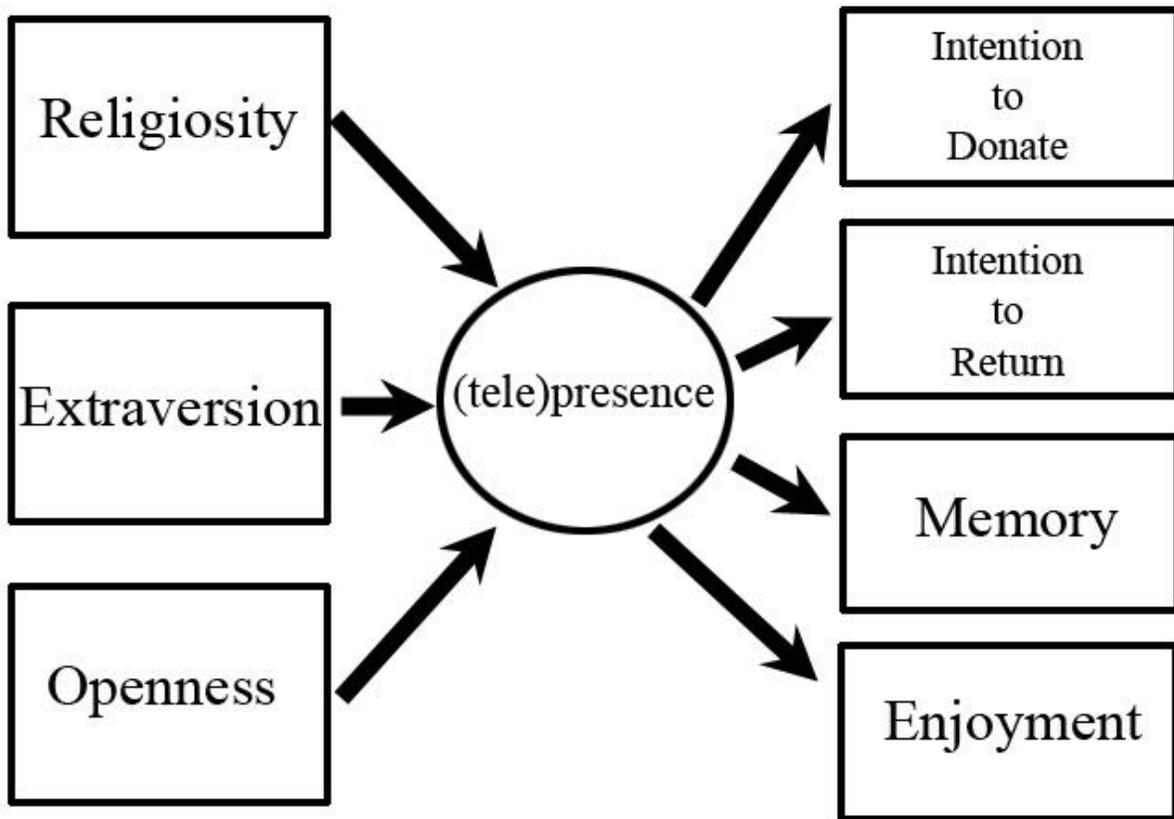


Figure 1: Proposed positive relationships between variables

## CHAPTER THREE: METHOD

An online survey was administered to 80 participants as part of a field experiment conducted in cooperation with Time of Grace Ministries, a Lutheran teleministry with a national audience headquartered in Milwaukee, WI. In order to create the questionnaire's memory test measure, Tim of Grace's Executive Vice President arranged for researchers to have an advance copy of the specific service the participants would view to be available to researchers in order to create the questionnaire's memory test measure.

### Procedure

A convenience sample was taken of home viewers who watched part 7 of "What is in your mouth," an online worship service series on the Time of Grace Internet broadcast. Following the twenty minute online worship service on the Time of Grace website, the viewers were presented with a request to help improve our understanding of online worship by answering a brief survey. A link was provided to the website hosting the online questionnaire. Participants could end their participation at any point by closing their browser window. Upon completion of the questionnaire participants were dismissed with thanks. Results were delivered electronically to researchers for tabulation.

Questionnaires were checked following completion of data gathering. Data cleaning revealed 31 questionnaires in which one or more measures had not been completed, and one with clearly spurious answers. These were removed from the analysis, for a total  $N = 48$ .

## Participants

A volunteer sample of online attendees was recruited from Time of Grace Ministries' online audience. Participation was voluntary and participants were not compensated. All protocols and measures were used with the approval of the Institutional Review Board at the University of Central Florida.

Of the total 48 individuals who completed a questionnaire for the study, 51.3% were male and 48.7% were female. Ages ranged from 21 to 85 and the mean age was 58.86. Respondents were overwhelmingly Caucasian, with one identifying as American Indian and one identifying as other.

## Measures

### *(tele)presence*

The Temple Presence Inventory (TPI) published by Lombard, Ditton & Weinstein (2009) measures (tele)presence. The inventory is an additive scale that contains 35 7-point Likert-type questions (1 = Not at all – 7 = Very much) and 7 semantic differentials with 7 points (Remote – Immediate, Unemotional – Emotional, Unresponsive – Responsive, Dead – Lively, Impersonal – Personal, Insensitive – Sensitive, Unsociable – Sociable). It measures (tele)presence by combining dimensions of spatial presence, social presence, engagement, social richness, social

realism, and perceptual realism. The TPI captures the concept of social and co-presence under the heading of “presence as social richness”, and transportation as “spatial presence” (Lombard, Ditton, & Weinstein, 2009). Though all dimensions were tested separately, the (tele)presence scale is a composite measure. The Cronbach’s Alpha was .954.

The TPI has been developed for measuring presence in popular media environments, a crucial distinction from other measures available which focus on virtual reality environments. Questions include items such as “How often did you have the sensation that people you saw/heard could also see/hear you?” and “To what extent did you feel mentally immersed in the experience?” The measure can be found in Appendix B.

### *Religiosity*

The 10 item Santa Clara Strength of Religious Faith Questionnaire(SCSRFQ) was developed by Plante & Boccaccini in 1997 to provide a brief, reliable, quantitative instrument for assessing religiosity. It employs a 4 point Likert scale (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree) and answers are summed to form a score between 10 and 40. Factor analysis of the scale has shown it to be psychometrically sound and a useful means for measuring the strength of an individual’s religious belief (Lewis, Shevlin, McGuckin, & Navrátil, 2001). SCSRFQ data has been consistent with the findings of larger measures (Plante, Vallaeys, Sherman, & Wallston, 2002). The scale is composed of statements such as “My faith is an important part of who I am as a person.” Cronbach’s Alpha was .959. The measure can be found in Appendix C.

## *Personality*

The Abbreviated Big Five Inventory (BFI-10) is a 10 item, 5-point Likert scale developed by Rammstedt & John (2007). It is the truncated version of the 44-item Big Five Inventory (John, Donahue, & Kentle, 1991) which has been shown to be one of the most reliable methods for defining and quantifying personality traits (McAbee & Oswald, 2013). Adaptations to the original scale (Benet-Martinez & John, 1998; John, Naumann & Soto, 2008) have further improved reliability and generalizability.

The BFI-10 is not favored over the original version of the Big Five Inventory by its creator, John Oliver, who advocates the use of the 44 question version in nearly all circumstances, citing that the entire Inventory takes only about five minutes to complete (Rammstedt & John 2007). In pre-testing, several concerns were raised about the length of the questionnaire, which were eliminated by employing the BFI-10. Additionally, there is some support for the BFI-10 actually being a better measure of personality than the 44 point Big Five Inventory (Rushton & Irwing, 2008). Due to the minor differences between the two and the advantages of a shorter questionnaire the BFI-10 was used for this study.

Response categories for the BFI-10 range from 1 = Disagree strongly to 5 = Agree strongly. Each of the personality traits of the Big Five are addressed with two questions, one positively linked to the trait, the other negatively. Scores for each personality trait are added together for a range of 2 to 10 for each of the five categories, with items 1, 3, 4, 5, and 7 reversed. For the purposes of this study, only openness (identified in the questionnaire as the items “artistic interests” and “active imagination”) and extraversion (measured by items “reserved” and “outgoing/sociable”) were examined. The extraversion scaled reached a

Cronbach's Alpha of .730, indicating acceptable reliability, while the 2-item openness scale attained a Cronbach's Alpha of .465. Because only two questions made up the openness scale there was no room for deletion. Openness has generally been the trait to cause the most problems in the BFI-10 (John & Naumann, 2010), but a reliability this low is an enigma. The instrument is available in Appendix D.

### *Memory*

Arrangements were made in advance with Time of Grace's Executive Vice President for the text of the specific service the participants would view to be available to researchers in order to create the questionnaire's memory test measure. Participants were presented with six multiple choice questions with four options each which tested memory for content presented in the service. The questions were designed to test information the participants would likeliest likely have encountered for the first time in the message, such as the meaning of a particular word in Hebrew (see Appendix E). Six multiple choice questions examined the participants' ability to correctly recognize this information from the available answers (ex: "Thinking of the sermon, which of the following books of the Bible was referenced?"). Two of the questions were dropped due to changes between the written material presented to researchers and the actual broadcast. Scores were recoded into either right or wrong and turned into a proportion, allowing a range between 0% and 100% correct.

### *Enjoyment*

Enjoyment was measured using the media enjoyment scale developed by Nabi, Stitt, Halford & Finnerty (2006). The 4 item, 7 point Likert-type scale asks how entertaining, enjoyable, engaging, and captivating participants felt the mediated experience to be (1 = Strongly Disagree – 7 Strongly Agree). The responses are summed, resulting in a range of 4 to 28. Cronbach's Alpha for this instrument was .954. The instrument is available in Appendix F.

### *Behavioral intentions*

Behavioral Intention was measured with three 7 point Likert scale questions (1 = Very Unlikely – 7 = Very Likely), namely: “How likely are you to attend services online in the future?” “How likely are you to attend services in the future in person?” and “How likely are you to support, either financially or with your time, this ministry?” Each question directly addressed a hypothesis and therefore there was no need to create a composite measure.

## CHAPTER FOUR: RESULTS

H1 predicted that (tele)presence would be a significant predictor of enjoyment. A hierarchical multiple regression analysis was performed with enjoyment as the dependent variable of interest. Because age and gender could potentially be related to enjoyment they were controlled for, and were present as control variables for each of the regressions in the experiment. After entering the control variables into the first block of the multiple regression and (tele)presence in the second, the test found (tele)presence significantly predicted enjoyment  $\beta = .380, p = .013$ , explaining 12% of the variance:  $R^2 = .124, F(3, 43) = 5.452, p = .003$  (see Table 1). Since greater (tele)presence was a predictor of greater enjoyment, H1 was supported.

H2 predicted that greater (tele)presence would be a significant predictor of memory. A regression analysis with age and gender controlled for in the first block and (tele)presence in the second revealed no statistically significant relationship between the variables:  $\beta = -.173, p = .316$  (see Table 1). H2 was therefore not supported.

H3 predicted that (tele)presence would be a significant predictor of intention to attend a future online worship service. A regression was run, controlling for age and gender by entering the variables into the first step of the regression, and (tele)presence in the second block of the regression. (Tele)presence significantly predicted likelihood to attend in the future.  $\beta = .435, p = .003$ . The results explained 16% of the variance:  $R^2 = .162, F(3, 43) = 7.348, p < .001$  (see Table 1). Therefore H3 was supported: those who experienced a greater sense of (tele)presence were more likely to express an intention to attend an online worship service in the future.

RQ1 asked whether (tele)presence would influence an individual's likelihood to contribute time or money to Time of Grace Ministries. A regression was performed, controlling for age and gender in the first block. With (tele)presence in the second block, (tele)presence was

found to be a significant positive predictor of one’s likelihood to contribute time and/or money to the program,  $\beta = .296, p < .035$ . The variance that could be explained by (tele)presence was 7.5%:  $R^2 = .075, F(3, 43) = 8.387, p < .001$  (see Table 1). That is, the level of (tele)presence was positively associated with an individual’s intention to volunteer and /or donate money, in response to RQ1.

Table 1: Regression results for (tele)presence and listed dependent outcome variables

	<i>B</i>	<i>SE B</i>	$\beta$
<b>Enjoyment</b>	.206	.080	.380*
<b>Memory</b>	-.022	.022	-.173
<b>Intention to Attend Again</b>	.102	.033	.435**
<b>Intention to Contribute</b>	.073	.034	.296*

Notes: \* $p < .05$ , \*\* $p < .01$

H4, H5, and H6 were developed to test whether the antecedent variables of low extraversion, high openness, and high religiosity would be positive predictors of (tele)presence experienced across participants.

H4 posited that extraversion would be negatively related to (tele)presence. A regression was performed. Age and gender were entered into the first block for control, extraversion was entered into the second block. The results were not statistically significant ( $\beta = .079, p = .602$ ) and therefore H4 was not supported (see Table 2).

H5 hypothesized that high openness would be positively related to (tele)presence. The Cronbach's Alpha for the measure tested only at .465, well below acceptable levels for a reliable measure, and therefore the H5 was not supported (see Table 2).

H6 predicted that religiosity would be a positive predictor of (tele)presence. A regression was performed with age and gender in the first block and religiosity in the second. Religiosity was not a significant predictor of (tele)presence,  $\beta = -.070$ ,  $p = .635$  (see Table 2). H6 was not supported. A summary of all supported and unsupported hypotheses can be found in Table 3.

The frequency distribution tables for all variables are available in Appendix A.

Table 2: Antecedent variables as predictors of (tele)presence.

	<i>B</i>	<i>SE B</i>	$\beta$
<b>Extraversion</b>	.480	.911	.079
<b>Openness</b>	-	-	-
<b>Religiosity</b>	-.112	.235	-.070

Notes: No statistical significance on any findings in Table 2.

Table 3: Summary of supported and unsupported hypotheses

<b>Hypothesis</b>	<b>Support</b>
H1: (Tele)presence will be positively related to enjoyment.	Supported
H2: Greater levels of reported (tele)presence will result in better memory for content presented in the online worship service.	Not Supported
H3: Greater levels of reported (tele)presence will result in greater intention to attend another online worship session in the future.	Supported
H4: Low extraversion will be related to greater reported levels of (tele)presence	Not Supported
H5: High openness will be related to greater reported levels of (tele)presence.	Not Supported
H6: High religiosity will be related to greater reported levels of (tele)presence.	Not Supported
RQ1: Will the level of (tele)presence reported influence individuals' (a) intention to volunteer or (b) donate money?	Positive relationship

## CHAPTER FIVE: DISCUSSION

This experiment examined (tele)presence in the previously unexplored area of mediated worship services, hypothesizing that the experience of greater (tele)presence would have a positive effect on memory, enjoyment and certain desirable behavioral intentions. It also examined the influence of potentially important antecedent traits such as personality and heretofore unexamined religiosity. The findings provide support for the expectation that greater (tele)presence yields greater enjoyment, extending the concept into this new application, and that greater (tele)presence yields a stronger intention to attend online services in the future and contribute money and time to the host ministry. Support was not found for any of the antecedent traits having an influence on (tele)presence, nor was there support for improved memory resulting from greater (tele)presence.

Hypothesis 1, which predicted that (tele)presence would positively influence enjoyment, was supported. Presence accounted for a moderate amount of the variance in enjoyment, which is in line with previous studies on the subject of (tele)presence and enjoyment that were executed in applications other than a mediated worship service. This finding is noteworthy, since it is a departure from the more familiar forms of online mediated environments (eg. film, video games, etc.) that constitute a kind of enjoyment that could generally be said to be more dependent upon the creation of a fun environment, rather than a contemplative, slow-paced one.

Enjoyment is an evolving concept, and it is possible that improving measures will allow for this effect to be more carefully examined in future studies. Of particular potential in this regard would be studies in which a distinction between “enjoyment” and “appreciation” is suggested, such as in Oliver & Bartsch (2011) and Tamborini (2011). Because a worship service may constitute a form of enjoyment distinct from, for example, movies or video games, pursuing

a measure that can encompass the broader concept of “appreciation” may lead to more significant findings. Although “enjoyment” can often be employed as a synonym for “fun,” this research would suggest the need to further explore notions of enjoyment in terms of “appreciation,” or “fulfillment.” Some of the work done in this area has been to understand why individuals seek out “sad” or “frightening” entertainment (Tamborini, Grizzard, Bowman, Reinecke, Lewis, & Eden, 2011). However, spiritual satisfaction represents a relevant and generally unexplored facet of enjoyment. Gauging the effectiveness of enjoyment measures at determining the level of satisfaction with a worship service would be a worthwhile endeavor for future studies.

Hypothesis 2 predicted a positive relationship between (tele)presence and memory but was not supported. Further future research into the links between (tele)presence and memory is definitely warranted given the disparate results achieved in the past. In hindsight, this result should have been anticipated, since Skalski et al.’s (2009) rejected hypothesis, discussed earlier in the literature review, did not necessarily mean the rejection of the proposed model. The non-significance of Skalski et al.’s (2009) article was nevertheless an important finding, as it at least demonstrated that (tele)presence was not positively impacting memory when it came to particulars. They suggested that when experiencing (tele)presence an individual’s mind is referring to parallel, real-life experiences which enhance the realism of the mediated experience, and also bring in data from those other experiences, interfering with one’s ability to recall what happens in the mediated experience. This is perhaps even more logical when one considers the essence of (tele)presence: interacting with an unreal environment as though it were a real one, even to the point of forgetting that the experience is mediated. In unmediated situations, individuals generally have a good memory for the broad gist of an experience, but a poor

memory for the specifics (Skalski, Tamborini, Glazer, & Smith, 2009). The fact that high (tele)presence mirrors this speaks to the breadth of the phenomenon and should have been anticipated. It certainly warrants future study. Future research should employ a greater number of measures for memory including recognition and cued recall, allowing for a greater diversity of scores and perhaps a more telling result.

Hypothesis 3 predicted that greater (tele)presence would be a predictor of greater intention to attend services online in the future. This suggests several lines of inquiry for future studies, particularly whether the experience of (tele)presence causes an individual's behaviors to more closely mirror the behaviors exhibited in a face-to-face experience of the same kind. For example, a comparison could be made of the frequency of attendance between those who go to a physical church and those who participate in mediated worship. Other behaviors of interest not included in this study might include intention to seek out additional information on concepts presented in the service or intention to participate in affiliated groups (Bible studies, service groups, etc.).

Hypothesis 4, which was the first of the hypotheses to deal with antecedent traits as potential variables in the experience of (tele)presence, predicted that a negative relationship would exist between extraversion and (tele)presence, namely the lower the score on the extraversion scale, the greater the experience of (tele)presence. As noted in the literature review, previous research into personality traits as relevant variables in determining (tele)presence has yielded mixed results. It is possible that the relatively low N resulted in a model with insufficient statistical power to reveal these relationships.

Hypothesis 5 also dealt with an antecedent trait. It predicted that high openness would be a predictor of the experience of (tele)presence, however it was not supported. Of all the traits in

the Big 5, openness has consistently been the weakest not just in mediated presence research, but altogether, and is considered to be the least universal of the traits (Calabrese, Rudick, Simms, & Clark, 2012). As noted in the literature review, previous research involving personality traits and (tele)presence has yielded mixed results, with the effect sizes for openness being particularly small. Given the results of hypothesis 4, the conclusion of no significance to hypothesis 5 is not surprising.

The small *N* caused problems when using the BFI-10, which reduces the personality variables to only two questions. Rather than administer the entire Inventory, future studies should focus on the variables of interest and employ the more thorough Big Five Inventory. It is possible that in this study using the more traditional Big Five Inventory could have resulted in significant results, or potentially a more acceptable reliability coefficient for Openness.

The last of the antecedent variables was dealt with in hypothesis 6, which predicted that religiosity would be related to greater levels of (tele)presence. The most notable limitation was the unusually high scores on the SCSRFQ, with the median score being a 39 out of a possible 40. Given the limited variability in the measure for this study a rejection of the hypothesis was very likely. It is likely that the weakness here was in participant selection. Because the sample was a volunteer sample of those who not only watched the worship service but also took the time to take a survey concerning the program, it could be presumed that the participants represented the most religiously dedicated of the program's viewers. In a controlled, random selection experiment the SCSRFQ would likely have functioned well, but if this experiment were redone with the expectation that the participants would be of an unusually high religiosity, a questionnaire concerning their level of dedication to the specific ministry being viewed may

prove more appropriate. All adjusted  $R^2$  values for variables in relation to (tele)presence are pictured on Figure 2.

Because of the limited variability, several questions concerning the role of religiosity on (tele)presence remain. Earlier it was noted that, in the past, high religiosity has been a negative predictor of media use, but in more recent years that effect appeared to be diminishing. No conclusions as to whether this trend towards greater media use will continue can be drawn from the data in this research. A study with more variability in the religiosity measure may achieve significant results in this category, and future experiments should certainly take this into consideration.

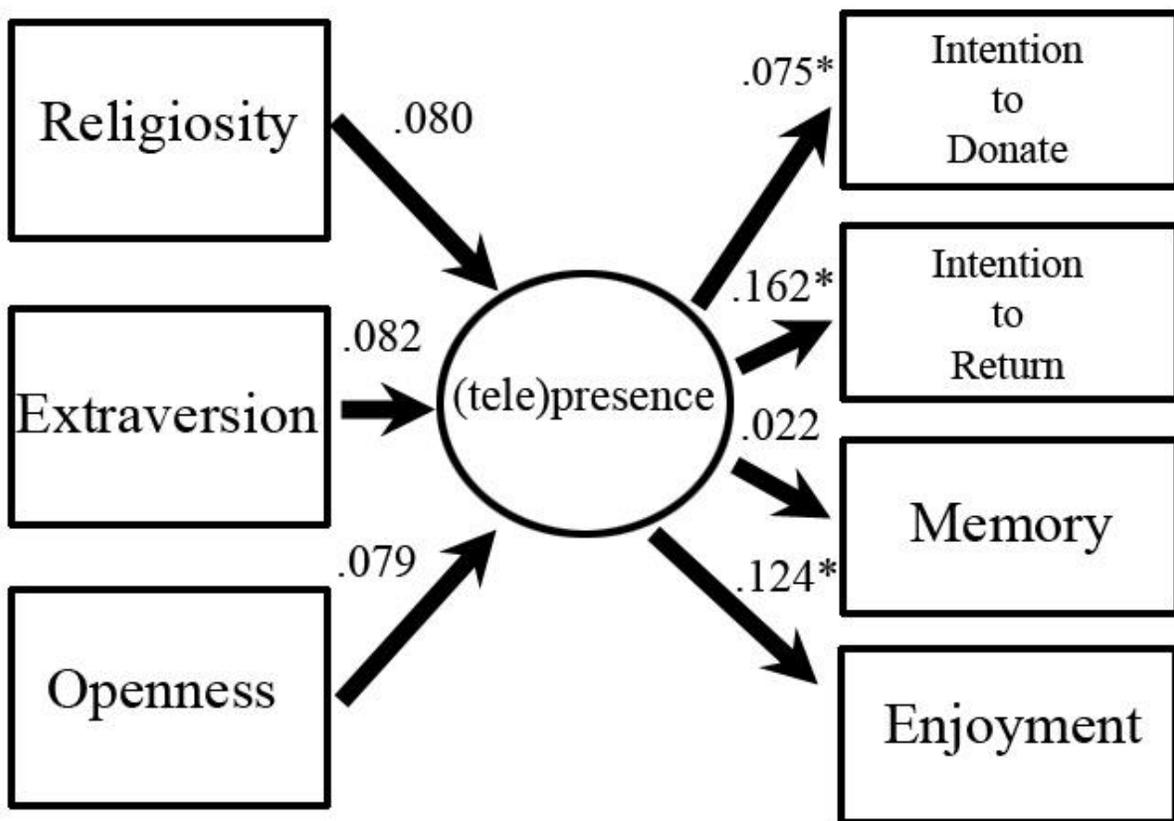


Figure 2: Adjusted  $R^2$  values between variables.

The research question addressed the participants' behavioral intentions more directly, going beyond their intention to attend again in the future and moving to their intention to actually contribute. Very little research has been conducted in the past concerning what motivates donation in a church service, or whether it can be presumed that face-to-face worship is the optimal forum for soliciting donations. As a result, a research question was posed instead of a hypothesis. This study found that (tele)presence positively influenced a participant's intention to contribute materially. This may mean that in-person attendance at a worship service constitutes the ideal scenario for prompting contributions, and therefore greater (tele)presence would result in a greater intention to contribute due to its proximity to the non-mediated conduct of a service. However, this finding may speak to a persuasive value in (tele)presence. Research by Green & Brock (2000) found transportation to be an important factor in persuasion, and this could potentially apply to (tele)presence as well.

This study qualifies as preliminary research partially due to the low number of participants and large number of questionnaires excluded from the final analysis, which was certainly a limitation. Future studies into (tele)presence in mediated worship may find some of the effect sizes to be larger than encountered here.

The move of many services provided by churches to an online environment further begs questions concerning how well mediated worship mirrors face-to-face worship. Now that there is a basis for expecting a positive relationship between (tele)presence and enjoyment and behavior, it would be interesting and useful to determine how great the difference is between virtual attendance and face-to-face attendance. To this end there are many avenues to be pursued. Topics of interest could include all the variables of this research in a comparison between mediated and non-mediated worship services. The general view of (tele)presence is that the

greater the experience, the closer the simulated experience is to the actual reality, however this may or may not be a desirable end for either religious institutions or other organizations. Suler (1999) found that disinhibited behavior online manifested in two ways: benign and toxic disinhibition. With respect to benign disinhibition, the mere act of engaging in mediated communication prompted individuals to be more trusting, more likely to self-disclose, and more open to new ideas. A potential avenue of interest for future research could therefore be the ways in which mediated worship prompts desirable effects (such as the aforementioned openness to new ideas) in participants better than face-to-face worship (and vice versa) and what effect (tele)presence has on these variables. This research would have implications, not only for the priorities of mediated worship for religious institutions, but the conduct of business and advertising for other organizations as well.

Simply knowing that the medium in the case of religious worship is not neutral may lead to re-assessments on the part of public ministers concerning what it is they are attempting to achieve with their messages. The failure of (tele)presence to produce any improvement to memory is a striking feature for those who have to deliver messages. If the objective of a worship service is to educate, it would seem from this data that no benefit is incurred from greater (tele)presence. Skalski et al.'s (2009) research, which hypothesized that the experience of (tele)presence rests on parallel, non-mediated prior experiences, that individuals participating online will be harkening to past experiences where they attended worship face-to-face. On the other hand, greater enjoyment was achieved as a result of greater (tele)presence, and therefore if the desired reaction is to feel pleasure in connection with the worship service, then greater (tele)presence will contribute to that.

Unfortunately, little progress has been made on antecedent variables which may precede the experience of (tele)presence in mediated worship settings. As noted earlier, religiosity should remain a variable of interest in future studies due to the unusually high scores on the SCSRFQ in this particular research. A more diverse sample may produce a significant effect. The failure of extraversion and openness to account for significant variance may actually speak to the strength of (tele)presence, as it indicates the experience is equally likely to occur across the spectrum of those variables. For distributors of religious media, this may be taken as encouraging: no particular personality set will be left out *a priori*, the message will be heard and experienced via (tele)presence in a similar manner by all.

## APPENDIX A: DESCRIPTIVE STATISTICS TABLES

Gender

	<b>Frequency</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
<b>Male</b>	24	51.1	51.1
<b>Female</b>	23	48.9	100.0

Ethnicity

	<b>Frequency</b>
<b>White</b>	45
<b>American Indian</b>	1
<b>Other</b>	1

Age

<b>Range</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>SD</b>
64	21	85	58.9	18.1

Variables of Interest

	<b>Range</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>SD</b>	<b>Alpha</b>
<b>(tele)presence</b>	40	9	49	23.1	8.9	.954
<b>Religiosity</b>	30	10	40	36.2	6.2	.959
<b>Extraversion</b>	8	2	10	6.1	1.9	.730
<b>Openness</b>	7	3	10	6.8	1.8	.465
<b>Memory</b>	100	0	100	68.75	26.5	-
<b>Enjoyment</b>	22	6	28	22.6	5.7	.945
<b>Intent to Donate</b>	4	1	5	2.7	1.6	-
<b>Intent to Attend</b>	4	1	5	3.3	1.6	-

## APPENDIX B: TEMPLE PRESENCE INVENTORY

How much did it seem as if the objects and people you saw/heard had come to the place you were?

Not at all    1    2    3    4    5    6    7    Very Much

How much did it seem as if you could reach out and touch the objects or people you saw/heard?

Not at all    1    2    3    4    5    6    7    Very Much

How often when an object seemed to be headed toward you did you want to move to get out of its way?

Not at all    1    2    3    4    5    6    7    Very Much

To what extent did you experience a sense of being there inside the environment you saw/heard? (Not at all - Very much [7 points])

Not at all    1    2    3    4    5    6    7    Very Much

To what extent did it seem that sounds came from specific different locations?

Not at all    1    2    3    4    5    6    7    Very Much

How often did you want to or try to touch something you saw/heard?

Not at all    1    2    3    4    5    6    7    Very Much

Did the experience seem more like looking at the events/people on a movie screen or more like looking at the events/people through a window?

Not at all    1    2    3    4    5    6    7    Very Much

How often did you have the sensation that people you saw/heard could also see/hear you?

Not at all    1    2    3    4    5    6    7    Very Much

To what extent did you feel you could interact with the person or people you saw/heard?

Not at all    1    2    3    4    5    6    7    Very Much

How much did it seem as if you and the people you saw/heard both left the places where you were and went to a new place?

Not at all    1    2    3    4    5    6    7    Very Much

How much did it seem as if you and the people you saw/heard were together in the same place?

Not at all    1    2    3    4    5    6    7    Very Much

How often did it feel as if someone you saw/heard in the environment was talking directly to you?

Not at all    1    2    3    4    5    6    7    Very Much

How often did you want to or did you make eye-contact with someone you saw/heard?

Not at all    1    2    3    4    5    6    7    Very Much

Seeing and hearing a person through a medium constitutes an interaction with him or her. How much control over the interaction with the person or people you saw/heard did you feel you had?

Not at all    1    2    3    4    5    6    7    Very Much

During the media experience how well were you able to observe the facial expressions of the people you saw/heard?

Not at all    1    2    3    4    5    6    7    Very Much

During the media experience how well were you able to observe the changes in tone of voice of the people you saw/heard?

Not at all    1    2    3    4    5    6    7    Very Much

During the media experience how well were you able to observe the style of dress of the people you saw/heard?

Not at all    1    2    3    4    5    6    7    Very Much

During the media experience how well were you able to observe the body language of the people you saw/heard?

Not at all    1    2    3    4    5    6    7    Very Much

How often did you make a sound out loud (e.g. laugh or speak) in response to someone you saw/heard in the media environment?

Not at all    1    2    3    4    5    6    7    Very Much

How often did you smile in response to someone you saw/heard in the media environment?

Not at all    1    2    3    4    5    6    7    Very Much

How often did you want to or did you speak to a person you saw/heard in the media environment?

Not at all    1    2    3    4    5    6    7    Very Much

To what extent did you feel mentally immersed in the experience?

Not at all    1    2    3    4    5    6    7    Very Much

How involving was the experience?

Not at all    1    2    3    4    5    6    7    Very Much

How completely were your senses engaged?

Not at all    1    2    3    4    5    6    7    Very Much

To what extent did you experience a sensation of reality?

Not at all    1    2    3    4    5    6    7    Very Much

How relaxing or exciting was the experience?

Not at all    1    2    3    4    5    6    7    Very Much

How engaging was the story?

Not at all    1    2    3    4    5    6    7    Very Much

Please circle the number that best describes your evaluation of the media experience:

Remote    1    2    3    4    5    6    7    Immediate

Unemotional    1    2    3    4    5    6    7    Emotional

Unresponsive    1    2    3    4    5    6    7    Responsive

Dead    1    2    3    4    5    6    7    Lively

Impersonal    1    2    3    4    5    6    7    Personal

Insensitive    1    2    3    4    5    6    7    Sensitive

Unsociable    1    2    3    4    5    6    7    Sociable

The events I saw/heard would occur in the real world

Strongly disagree    1    2    3    4    5    6    7    Strongly agree

The events I saw/heard could occur in the real world

Strongly disagree    1    2    3    4    5    6    7    Strongly agree

The way in which the events I saw/heard occurred is a lot like the way they occur in the real world

Strongly disagree    1    2    3    4    5    6    7    Strongly agree

Overall how much did touching the things and people in the environment you saw/heard feel like it would if you had experienced them directly?

Not at all    1    2    3    4    5    6    7    Very Much

How much did the heat or coolness (temperature) of the environment you saw/heard feel like it would if you had experienced it directly?

Not at all    1    2    3    4    5    6    7    Very Much

Overall, how much did the things and people in the environment you saw/heard smell like they would had you experienced them directly?

Not at all    1    2    3    4    5    6    7    Very Much

Overall, how much did the things and people in the environment you saw/heard look they would if you had experience them directly

Not at all    1    2    3    4    5    6    7    Very Much

Overall, how much did the things and people in the environment you saw/heard sound like they would if you had experienced them directly?

Not at all    1    2    3    4    5    6    7    Very Much

APPENDIX C: SANTA CLARA STRENGTH OF RELIGIOUS FAITH QUESTIONNAIRE

Please answer the following questions about religious faith using the scale below.

Indicate the level of agreement (or disagreement) for each statement.

1 = strongly disagree 2 = disagree 3 = agree 4 = strongly agree

\_\_\_\_\_ 1. My religious faith is extremely important to me.

\_\_\_\_\_ 2. I pray daily.

\_\_\_\_\_ 3. I look to my faith as a source of inspiration.

\_\_\_\_\_ 4. I look to my faith as providing meaning and purpose in my life.

\_\_\_\_\_ 5. I consider myself active in my faith or church.

\_\_\_\_\_ 6. My faith is an important part of who I am as a person.

\_\_\_\_\_ 7. My relationship with God is extremely important to me.

\_\_\_\_\_ 8. I enjoy being around others who share my faith.

\_\_\_\_\_ 9. I look to my faith as a source of comfort.

\_\_\_\_\_ 10. My faith impacts many of my decisions.

## APPENDIX D: ABBREVIATED BIG FIVE INVENTORY

How well do the following statements describe your personality?

I see myself as someone who...

	Disagree Strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree strongly
... is reserved	1	2	3	4	5
... is generally trusting	1	2	3	4	5
... tends to be lazy	1	2	3	4	5
... is relaxed handles stress well	1	2	3	4	5
... has few artistic interests	1	2	3	4	5
... is outgoing, sociable	1	2	3	4	5
... tends to find fault with others	1	2	3	4	5
... does a thorough job	1	2	3	4	5
... gets nervous easily	1	2	3	4	5
... has an active imagination	1	2	3	4	5

## APPENDIX E: MEMORY TEST QUESTIONS

Thinking of the sermon, do you remember what body part was injured that time would not heal?

\_\_\_\_\_ Foot

\_\_\_\_\_ Hand

\_\_\_\_\_ Shoulder

\_\_\_\_\_ Head

Thinking of the sermon, where might one see a sea of red ink?

\_\_\_\_\_ A badly done essay

\_\_\_\_\_ A church newsletter

\_\_\_\_\_ A red letter edition Bible

\_\_\_\_\_ The dead sea scrolls

Thinking of the sermon, which of the following books of the Bible was referenced?

\_\_\_\_\_ Matthew

\_\_\_\_\_ Mark

\_\_\_\_\_ Luke

\_\_\_\_\_ John

Thinking of the sermon, what can be especially hurtful, even though we're often told it's not?

\_\_\_\_\_ Sin

\_\_\_\_\_ Words

\_\_\_\_\_ Shots

\_\_\_\_\_ Sports

## APPENDIX F: ENJOYMENT MEASURE

I found the program entertaining

Not at all    1    2    3    4    5    6    7    Very Much

I found the program enjoyable

Not at all    1    2    3    4    5    6    7    Very Much

I found the program pleasurable

Not at all    1    2    3    4    5    6    7    Very Much

I found the program captivating

Not at all    1    2    3    4    5    6    7    Very Much

APPENDIX G: IRB APPROVAL LETTER



University of Central Florida Institutional Review Board  
Office of Research & Commercialization  
12201 Research Parkway, Suite 501  
Orlando, Florida 32826-3246  
Telephone: 407-823-2901 or 407-882-2276  
[www.research.ucf.edu/compliance/irb.html](http://www.research.ucf.edu/compliance/irb.html)

### Approval of Exempt Human Research

From: **UCF Institutional Review Board #1  
FWA00000351, IRB00001138**

To: **Brian J. Klebig**

Date: **November 04, 2013**

Dear Researcher:

On 11/4/2013, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review: Exempt Determination  
Project Title: (Tele)Presence in Mediated Worship: The Influence of Antecedent Traits and the Effect on Memory, Enjoyment, and Behavior.  
Investigator: Brian J. Klebig  
IRB Number: SBE-13-09684  
Funding Agency:  
Grant Title:  
Research ID: N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Patria Davis on 11/04/2013 02:16:08 PM EST

IRB Coordinator

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