

THE INVESTIGATION OF HELPING BEHAVIOR IN THE VIRTUAL WORLD

Debaki Chakrabarti

Submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy
under the Executive Committee of
The Graduate School of Arts and Sciences
Columbia University

2013

© 2013

Debaki Chakrabarti

All rights reserved

ABSTRACT

The Investigation of Helping Behavior in the Virtual World

Debaki Chakrabarti

In the recent wake of media reports of peer victimization and its deleterious effects, this study sought to create a personality profile of the individual who is able to resist social, personal and group pressures in order to help a victim of bullying behavior. This research is based on findings from a study by Dr. Elizabeth Midlarsky on rescuers and bystanders during the Holocaust (Midlarsky, Fagin-Jones & Nemeroff, 2006). The present study examined the differences in personality variables of individuals who were either rescuers or bystanders in a peer bullying situation that occurred in the virtual medium of Second Life. Additionally, due to the novel nature of this experimental medium, this study also examined the utility of Second Life as a mechanism for creating realistic psychological experiences. Independent variables included the following personality variables: locus of control, social responsibility, altruism, morality, autonomy, tolerance, risk taking, and empathy, and the participant's experience in the virtual medium was assessed by: realism of the scenario, realism of the world and immersion. The dependent variable was whether or not the participant intervened in the animated scenario by helping the victim.

This study featured a unique experimental design that utilized a virtual experimental space to examine a psychological question. After completing pre-test measures of personality factors, participants were given a cover story that asked them to explore a virtual university campus. Immediately following the participant's response, post-test questions assessed knowledge of the bystander effect, peer victimization experiences, and the experience

of the participant in the virtual world. Debriefing sessions also ascertained personal reactions of each participant.

Findings indicated that people reporting more immersion in the Second Life scenarios were more likely to intervene on behalf of the bullied person. In accordance with Midlarsky, Fagin-Jones & Nemeroff (2006), the rescuers in this study exhibited higher levels of empathy when compared to bystanders. However, no significant differences were found for other personality correlates of altruism. Instead, relationships were found among participants who intervened in the animated scenario and those who reported finding the virtual scenario a realistic representation of a peer victimization incident.

Several important differences between the Midlarsky, Fagin-Jones & Nemeroff (2006) studies and this study account for the differential results. Most notable is that this study, the one-time reaction to an event in a virtual world presented only a possible emotional risk to the rescuers and victims. On the other hand, Holocaust rescuers typically risked their lives continually, over an extended time period. While the personality profiles of the bystanders and rescuers in a realistic, traumatizing incident was not ascertained, the significant effect of empathy accords with the existing body of altruism research. Additionally, people who viewed the Second World scenario to be most realistic were more likely to help

TABLE OF CONTENTS

TABLE OF CONTENTS.....	i
LIST OF TABLES.....	iv
ACKNOWLEDGEMENTS.....	v
CHAPTER 1: INTRODUCTION.....	1
CHAPTER II: LITERATURE REVIEW.....	4
Defining the Bystander/Rescuer.....	4
Personality Variables of the Bystander/Rescuer.....	5
Locus of Control.....	5
Risk Taking.....	5
Social Responsibility.....	6
Empathy.....	6
Peer Victimization History.....	7
Greater Empathy for Bullying Victim.....	7
Retention of Victim Status.....	8
Bystander Influences.....	8
Importance of Social Group Size on Individual Action.....	8
Importance of Issue and Membership Affiliation.....	9
Importance of Perception of the Scenario as an Emergency.....	10
Experience in the Virtual World.....	11
Similar/Dissimilar Behavior in Virtual and Naturalistic Environments.....	11
Hypotheses.....	18
CHAPTER III: METHOD.....	20

Participants.....	20
Procedures.....	20
Measures.....	22
International Personality Item Pool: Locus of Control.....	22
International Personality Item Pool: Autonomy.....	22
International Personality Item Pool: Risk Taking.....	22
International Personality Item Pool: Social Responsibility.....	22
International Personality Item Pool: Tolerance.....	23
International Personality Item Pool: Altruism.....	23
International Personality Item Pool: Morality.....	23
International Personality Item Pool: Empathy.....	23
Interpersonal Reactivity Index (IRI).....	24
Subjective Happiness Scale (SHS).....	24
Self-Esteem Scale (SES).....	25
Satisfaction With Life Scale (SWLS).....	25
Helping Attitudes.....	25
Peer Victimization History.....	26
Bystander Influences.....	26
Experience in and of the Virtual World.....	27
CHAPTER 1V: RESULTS.....	29
Preliminary Analysis.....	29
Bivariate Analysis.....	35
Multivariate Analysis.....	43

Additional Analysis.....	53
CHAPTER V: DISCUSSION.....	57
REFERENCES.....	62
APPENDICES.....	76
A. Study Constructs and Corresponding Scales.....	76
B. International Personality Item Pool	77
C. Interpersonal Reactivity Index.....	80
D. Subjective Happiness Scale.....	82
E. Rosenberg Self-Esteem Scale.....	83
F. Satisfaction with Life Scale.....	84
G. Helping Scale.....	85
H. Peer Victimization History.....	87
I. Bystander Variables.....	88
J. Virtual Medium Variables.....	89
K. Simulator Sickness Questionnaire.....	90
L. Informed Consent.....	91
M. Participants' Rights.....	92
N. Procedure.....	93

LIST OF TABLES

TABLE 1	Demographic Variables.....	30
TABLE 2	Demographic Variables by Condition.....	32
TABLE 3	Demographic Variables by Intervention/Non-Intervention.....	33
TABLE 4	Group Differences Among Participants (T-tests).....	36
TABLE 4a	Gender Differences Among Participants (T-tests).....	37
TABLE 5	Analysis of Variance (ANOVA).....	38
TABLE 6	Chi-Square Analysis of Bystander, Peer Victimization, and Avatar Variables.....	40
TABLE 7	Pearson Product Correlation Coefficients.....	42
TABLE 8	Discriminant Functional Analysis (Structure Matrix) of 8 Personality and Virtual Medium Variables.....	45
TABLE 9	Discriminant Functional Analysis (Centroid) of 8 Personality and Virtual Medium Variables.....	46
TABLE 10	Discriminant Functional Analysis (Classification Table) of 8 Personality and Virtual Medium Variables.....	47
TABLE 11	Discriminant Functional Analysis (Structure Matrix) of 5 Personality and Virtual Medium Variables.....	50
TABLE 12	Discriminant Functional Analysis (Centroid) of 5 Personality and Virtual Medium Variables.....	51
TABLE 13	Discriminant Functional Analysis (Classification Table) of 5 Personality and Virtual Medium Variables.....	52
TABLE 14	Principal Component Analysis of Personality and Virtual Medium Variables.....	54
TABLE 15	ANOVA of Top 30% of Participants Who Found the Scenario Realistic.....	56

ACKNOWLEDGEMENTS

The completion of this dissertation would not have been possible without the support and encouragement of many individuals. I would like to first acknowledge my mentor, Dr. Elizabeth Midlarsky. Professor Midlarsky encouraged me to pursue this research topic and provided me with the opportunity and resources to design my own experiment, implement the experiment, and thoughtfully analyze the results. I feel very fortunate to have had the chance to engage in every phase of this research project. This has been a very enriching experience and I am very appreciative of Professor Midlarsky's wisdom, kindness, and help throughout the entire process.

I am very grateful for the support of my dissertation committee for their insightful ideas and thoughtful comments. Professor Lisa Miller, who served as my second reader, provided an immense amount of support, optimism, and inspiration for future work. Professor Charles Kinzer, who was part of my initial proposal committee, raised important questions which helped to enhance the research design, and helped me to clarify various points in the final draft. Professor Lena Verdeli, the chair of my committee, and Professor Anne Conway, both made astute points which helped to enhance the quality and depth of this project.

I would also like to thank my research team for their many hours of dedication. This project would not have been possible without their commitment, time and care.

And finally, I would also like to thank my parents, Asok and Karabi Chakrabarti, my sister, Ketaki, and my husband, Jason Wang for all of their love, support and patience. Their encouragement has helped me persevere through all the challenges of embarking on such a project and has motivated me to keep pursuing this goal. They have also provided me with the much needed balance that has kept me grounded throughout this entire process.

Thank you with love and gratitude to my family, dear friends, colleagues, and peers.

Chapter I

INTRODUCTION

The Investigation of Helping Behavior in the Virtual World

The primary aims of this study were to: 1) discover whether the relationship between personality variables identified in Holocaust-era rescuers would be similar to those found in modern day young adults who intervene in peer bullying behavior, and 2) to ascertain the ecological validity and plausibility of the Second Life virtual world as a platform for psychological research. This experimental study sought to identify the personalities of individuals who responded altruistically in a virtual environment and to examine whether or not this virtual environment was a viable parallel to naturalistic environments. Respondents in this study participated in a Second Life scenario which elicited either an active intervening or passive, non-participatory bystander response. The scenarios depicted a peer victimization scenario during which an aggressor engaged in either a verbal or physical assault of another individual. Prior to engaging in this scenario, personality variables were measured with self-report psychological questionnaires, and after engagement in this scenario, the immersion with scenarios of each participant was established. Motivation for engaging in or opting out of altruistic behavior was also ascertained by responses during a debriefing session.

While the studies conducted by Darley and Latane (1968) suggested that helping behavior in social situations is less influenced by personality variables (acceptance of social responsibility, authoritarianism, and alienation) and is more prompted by situational variables such as the number of bystanders present (i.e. “diffusion of responsibility”), studies in altruism suggest that prosocial behavior may be rooted in personality. Krebs’ 1970 review of the literature on altruism noted that rating scale and paper-and-pencil self-report measures have

typically found relationships between personality traits and altruism but studies of correlations between personality and behavioral measures have not. However, most of the studies that investigated correlations of personality variables and helping traits were conducted in laboratory settings. Despite these constraints, several studies (Allen & Ferrand, 1999; Midlarsky & Midlarsky, 1973) found personality correlates of altruism and helping (e.g. internal locus of control) among college age students.

Studies conducted by Oliner & Oliner (1988) and by Midlarsky and her colleagues (Midlarsky, Fagin-Jones & Corley, 2005; Midlarsky, Fagin-Jones & Nemeroff, 2006, Fagin-Jones & Midlarsky, 2007) focused on the behavior of Holocaust-era rescuers who met criteria for altruism. Rescued survivors described the in-vivo behaviors of rescuers who risked their lives without expectation of gain. Five decades after World War II, rescuers and bystanders who had moved to the Western hemisphere, were interviewed with an instrument that included measures of personality variables. The interview format was based on an interviewing style that has been demonstrated to be the most effective method for obtaining data from older individuals (Kane & Kane, 2000). Fagin-Jones & Midlarsky (2007) found that situational variables (e.g. residing in rural versus urban settings, distance from neighbors) did not discriminate rescuers from bystanders. Significant discriminant variables were altruistic orientation, moral reasoning, risk-taking, locus of control, autonomy, social responsibility, and empathic concern.

This study sought to apply Midlarsky's research on predictors of courageous rescue to present day intervention in a bullying situation. It employed a virtual peer victimization scenario in order to ascertain whether personality correlates of altruism are generalizable across time (i.e. WWII vs. the present), and degree of valence and risk (i.e. risk of death during genocide vs. risk of pain and ostracism.) The importance of examining bystander/intervention behavior is best

described by the The Anti-Defamation League and the Shoah Visual History Foundation (2003) which noted that the escalation of dehumanizing behavior typically begins with the lack of intervention of bystanders when exposed to prejudiced attitudes and acts of prejudice. Current studies that have investigated bullying and forms of peer victimization have primarily focused on the behavior and personality attributes of the bully or victim. This research sought to expand that literature by identifying bystander attributes that may be developed and promoted in future intervention studies.

Furthermore, in addition to the goal of expanding the altruism research, this study aimed to determine whether virtual technology can be employed as a viable means of examining personality attributes, social psychology concepts, and human behavior. The existing research has identified behaviors that are both similar and dissimilar in virtual and natural environments. For example, differential gender eye gaze, distance between genders when interacting, differences in force applied to inanimate and animate objects, personality traits, and environmental cues have parallel research in both natural and virtual environments. However, other aspects of the individual, such as confidence levels and the impact of self-representations, differ between virtual and natural environments. This study hopes to expand the research that supports virtual mediums for psychological research and examine which virtual factors may parallel naturalistic environments.

The main goals of this study were partially achieved. While the personality profiles of the bystander and rescuer were not significantly determined, the importance of empathy and arousal levels impacting intervention behavior are in accord with the existing body of altruism research employing other research methods.

Chapter II

LITERATURE REVIEW

Rescuer and bystander behavior have been examined in various domains of inquiry (i.e. altruism and helping behavior, research on the bystander effect, and the study of the bully, victim, and bystander in the peer victimization literature). While this research has predominantly investigated the nature of the rescuer and bystander using experimental scenarios, or live observation in an educational setting for children, few studies have studied the personality variables and observed the behavior of the adult bystander and rescuer. This study sought to create a personality profile of both the individual who chooses to intervene in a peer victimization scenario and the individual who does not. While this study is similar to existing research that investigates the bystander/rescuer role in a single act of helping, the distinguishing factor here is the use of the virtual world of Second Life.

Defining and Understanding the Bystander

This study expands the existing bystander research on *why* and *when* an individual chooses to act, and seeks to investigate *who* the adult bystander is in a live, realistic virtual reality scenario. The bystander has traditionally been defined within the context of the bystander effect, a construct that was initially coined to explain the avoidance of providing help or seeking help for a vulnerable or victimized individual (Darley & Latane, 1968). The vast body of research has examined *why* and *when* an individual chooses to take the risk to intervene, specifically within the context of groups. The bystander effect has been found to be related to group size, and the characteristics of the group (i.e. expectations, response, affiliation, membership). The impact of group size defines the central tenet of the bystander effect (i.e. a reduced tendency to intervene in an emergency situation in the presence of a group as opposed to

when the individual is alone). Research subsequent to the studies by Darley & Latane sought to explain the dynamics behind *why* (mediators) and *when* (moderators) the individual chooses to intervene or not to intervene. In his reflections on the psychological lessons that emerged from the Holocaust, Suedfeld (2000) observed that the “diffusion of responsibility” construct, notions of personal responsibility, and perceptions of similarity between an individual and the person seeking help (Batson, 1991 in Suedfeld, 2000) were especially salient in explaining the behavior of Holocaust bystanders.

Personality Variables of the Bystander and Rescuer

Locus of control.

Locus of control, the belief that life events are controlled either by one’s internal attributes, or by external factors such as luck, fate, or chance, has been associated with increased helping behavior in diverse settings (Allen & Ferrand, 1999; Bierhoff et al., 1991; Guagnano, 1995; Midlarsky & Kahana, 1994; Oliner & Oliner, 1988 in Midlarsky, Fagin-Jones & Carley, 2005) and specifically, an internal locus of control has been associated with higher rates of altruism (Allen & Ferrand, 1999; Midlarsky, 1968; Midlarsky & Midlarsky 1973). Individuals who believe that that they have a greater sense of control over their choices and behaviors exhibit a greater tendency to act.

Risk taking.

Risk taking has proved to be an important variable in helping behavior when helping is associated with danger (Huston & Korte, 1976; Wilson & Petruska, 1984, Midlarsky, Fagin-Jones & Corley, 2005).

Social responsibility.

Social responsibility, the prescription that one should help dependent others (Berkowitz, 1968) has also been identified as an important attribute of helping behavior (Midlarsky & Kahana, 1994; Oliner & Oliner, 1988). People higher in social responsibility are more likely to help those who are dependent on them (Bar-Tal, Raviv, & Leiser, 1980; Eisenberg, 1982; Midlarsky, Kahana, Corley, Nemeroff, & Schonbar, 1999 in Midlarsky, Fagin-Jones & Corley, 2005).

Empathy.

Empathy has several components and has been defined in multiple ways throughout the literature. Hakansson (2003) summarized and contrasted the theories of four major researchers in the general empathy/altruism literature. He noted that Martin Hoffman's work discussed empathy as the interaction between affective and cognitive processes, whereas Nancy Eisenberg defined empathy in more emotion-based terms and as a stimulus for helping behavior when one is not overwhelmed by the other individual's emotional experience. Hakansson noted that similar to Hoffman and Eisenberg, C. Daniel Batson also examined the empathy/altruism connection and described empathy as a possible motivational source for helping. Mark H. Davis (1983) proposed a multidimensional model which breaks down the concept of empathy in relational terms and as a reaction to others (i.e. fantasy, perspective taking, personal distress, and empathic concern). In fantasy empathy, people empathize with those in films or books. In perspective-taking, people can put themselves "in the shoes" of the other. In personal distress, people can feel the other's distress. Empathetic concern, which is the form of empathy found most likely to correlate with helping, refers to a genuine concern or sympathy with the other. In research on altruistic behavior during the Holocaust, Midlarsky, Fagin-Jones & Corley (2005)

and Oliner & Oliner (1988) found that empathic concern was an important correlate of helping behavior.

In the peer victimization research, Salmivalli (1999, 1996) noted that the individuals who surround the bully and their victim, hold such roles as “assistants”, “reinforcers”, “outsiders”, and “defenders.” In the International Bystander Study (2005), defenders of victims of bullying behavior noted that they actively intervened for moral reasons, empathy toward the victim, support for another member of their group, and loyalty toward friends. Characteristics of the defenders in this study included a “fellow feeling” toward peers who were victimized. This fellow feeling may be elicited by strong feelings of empathy towards another individual (McLaughlin, Arnold & Boyd, 2005). Fagin-Jones and Midlarsky (2005) noted that “fantasy empathy” or “the quality of being engrossed in the lives of imaginary or fictitious characters and experiencing their emotions” is a salient construct that has been found to augment helping behavior (Stotland, Mathews, Sherman, Hanson & Richards, 1978; Romer, Gruder & Lizzardo, 1986 in Fagin-Jones, 2005). Virtual media may constitute an innovative method of eliciting helping behavior among those with higher levels of “fantasy empathy.”

Peer Victimization History

Personal Peer Victimization Experiences.

The group dynamics research suggests that identification with historical roles may impact future roles and behavior. Salmivalli (1999) has noted that factors influencing the presence of bullying situations include expectations related to social roles (i.e. leader, follower, bully, victim) and the emergent self-concepts that prove difficult to alter due to punishing and rewarding behaviors promoted by the group. Furthermore, fearful and insecure expectancies of the victim tended to be communicated to other group members and continue the perpetuation of their role,

even into adulthood. O'Moore, Seigne, McGuire & Smith (1998) found that over half of those who experienced work place bullying also experienced bullying in childhood (i.e. retention of victim status). However, despite research indicating the stability of the victim role (Schäfer, Korn, Broadback, Wolke & Schultz, 2005), experiences of peer victimization also suggest a possible change in that role resulting from a greater empathy, which leads to a willingness to intervene (Nordgren, Banas & MacDonald, 2011). The breadth of the peer victimization research, the consistency of roles, and the importance of group identification, are important factors that were incorporated into this research study. Thus, the individual's historical roles and whether he or she continues to identify with their historical roles were hypothesized to be factors promoting intervening/helping behavior.

Bystander Influences

Impact of Social Group Size on Individual Action.

The landmark study conducted by Darley & Latane (1968) examined the responses of 59 male and female New York University introductory psychology students to a member of their "discussion group" who had an epileptic seizure. The dependent variable was the speed with which the emergency was reported to the examiner and the independent variable was the number of people that the participant believed was in the discussion group. Results of this study suggested that rather than personality characteristics or socio-economic factors such as urbanization, the number of bystanders present influenced helping behavior. That is, higher rates of helping occurred in 2-person groups than in larger (e.g. 3-person or 6-person groups.) Neither gender nor individual differences in personality were significant. According to Darley & Latane (1968), their results were influenced by three constructs: the "diffusion of responsibility" phenomenon (i.e. the tendency to divide the personal responsibility to help by the number of

individuals present), evaluation apprehension (i.e. individuals' fears that their reactions will be judged), and pluralistic ignorance (i.e. the tendency to rely on the cues of others present to inform whether the situation is actually an emergency) (Latane & Nida, 1981). In the present study, participants who chose not to become involved reported that they assumed that a virtual security guard would intervene and 'take care' of the situation.

Importance of Issue at Hand & Membership Affiliation

Darley, Teger & Lewis (1973) noted that the nuances of a group's dynamics and interactions also affect the helping behavior of bystanders. Ross (1971) and Ross & Braband (1973) found that in the presence of certain characteristics (i.e. presence of children or of a disabled (blind) individual), the participant is as likely to help as if he or she were alone. However, the larger the group, the more likely the bystander effect. Garcia, Weaver, Moskowitz & Darley (2002) noted that imagining oneself to be in a group resulted in priming effects for bystander apathy. Using social processing theory (atmosphere of condoning or condemning certain behaviors), Ferguson & Barry (2011) found that higher levels of group cohesion predicted that not only did individuals fail to intervene, but that they also later participated in adverse behaviors (verbal abuse, sharing of inappropriate jokes, ethnic or racial slurs) in the work environment.

In peer victimization situations, group dynamics are replicated and individuals typically intervene only when the perceived cost of intervention is low and when the issue is personally important (Frings, Abrams, Randsley de Moura, Georgina & Marques, 2010). Furthermore, social categorization and a shared group membership status also impacts the responsiveness of the bystander (Levine & Crowther, 2008). For example, in a research lab, undergraduate research assistants are more likely to intervene on behalf of other undergraduate research assistants rather

than graduate students. In the peer victimization research, Haynie, Nansel, Eitel, Crump, Saylor, Yu, K., & Simons-Morton, (2001) suggested that the predictors of engaging in bullying behavior include gender (boys more likely than girls) and poorer psychosocial functioning (i.e. higher rates of problem behaviors, depressive symptoms, lower self-control, lower social competence, and poorer school functioning). These factors were combined with a strong association to the individual's group membership (i.e. social group) were related to whether or not the individual emerged as a bully or defender.

Perception of Scenario as an Unambiguous Emergency & Cost of Intervening.

The results of Darley & Latane's study were supported by subsequent studies using varied conditions (e.g. smoke filling room, Darley & Latane, 1968), but the impact of the bystander effect is significantly related to factors including the size of a group, whether or not the situation is perceived as a high or a low in danger, and whether or not it is clear that the incident in the scenario is an emergency. For example, an individual is more likely to intervene if he or she perceives himself or herself as the only competent individual present (Schwartz, Shalom & Clausen, 1970) and if the cost of intervening does not constitute a significant physical threat (Piliavin & Piliavin, 1972). The number of others present and their similarity are critical in influencing whether or not an individual intervenes. In regard to task-related competence, if there is a medical emergency signaled by bleeding, and a doctor is present, the person is less likely to intervene. Pluralistic ignorance (or the tendency to follow the cues of surrounding individuals) is applicable to scenarios where there is ambiguity about whether an incident is perceived as an emergency or non-emergency (Levy, Lundgren, Ansel, Fell, Fink & McGrath, 1972).

The above experiments help to define the group context of individual interventions. In smaller group sizes (1-2 person groups), individuals had a greater tendency to help when an emergency situation was not ambiguous (Clark and Word, 1974). The influence of the ambiguity of a situation and thus, potential and perceived threat combined with evaluation apprehension factors, was supported by Schwartz & Gottlieb (1980), who found that greater ambiguity about whether or not a situation is an emergency led to a lower probability of helping behavior. Shotland & Heinhold (1985) also noted that questions regarding the nature of the emergency and questions ascertaining the victim's need for help affected the bystander. Gaertner & Dovidio's (1977) research postulated that perceived emergencies led to higher arousal levels, which in turn led to increased helping behaviors, whereas non-emergencies or ambiguous emergencies did not increase arousal. In a meta-analysis of bystander research, Fischer et al. (2011) verified the arousal hypothesis and concluded that dangerous emergencies reduced the bystander effect. Highly arousing incidents tended to increase arousal and thus, the helping response due to an expectation that other bystanders will be source of support and that pooling the resources of multiple individuals can collectively improve the effectiveness of the intent to help. In the present study, participants who spontaneously 'spoke' to the virtual avatars reported experiencing high levels of activation and feeling when witnessing the scenario.

Experience in the Virtual World

Use of Virtual Environments to Understand Human Behavior.

In the experimental research, there are three types of presentation that can be used to explore behavior: naturalistic or "real" environments, virtual reality where one may become immersed in the content of a computer game, and paper and pencil measures. The first two methods capture behavior as it occurs in the moment. This study was designed to employ

scenarios that investigated the utility of virtual reality in understanding human behavior and personality. The literature on behavior in virtual environments suggests that behavior is both similar and dissimilar in naturalistic and virtual environments.

Behavior Parallel in Naturalistic and Virtual Environments: Personal Distance, Gender Differences in Eye Gaze, Force.

While the body of research in this area has been primarily concentrated on the impact of video games on negative, aggressive or delinquent behavior, Yee (2006) noted that the use of Massively Multi-User Online Role-Playing Games (MMORPGs) have provided a unique platform for many individuals to acquire positive relationships and emotional experiences that are akin to real world experiences. Miller (2007) echoed this sentiment and cited the application of virtual worlds in paralleling personal distance, touch, and social behavior. For example, Yee, Bailenson, Urbanek, Chang, & Merget (2007) found that among avatars (or digital representations of the individual) eye contact decreases when the distance between two individuals decreases (paralleling research conducted by Argyle & Dean, 1965), and that female gender pairs tend to stand closer together and have more eye contact than male gender pairs (paralleling research conducted by Adler & Iverson, 1974). Similarly, Yee and Bailenson (2007) also replicated touch and force potencies in that individuals used more force when wiping dirt off objects versus touching the face or torso of another individual; and noted gender differences in the amount of force in the angle, speed and acceleration of handshakes (Yee & Bailenson, 2007). While these findings may appear subtle, they represent the nuances of human behavior that are present both in real-world and virtual environments.

Behavior Parallel in Naturalistic and Virtual Environments – Impact of Situational Cues and Identification with the Avatar.

Miller (2007) also noted psychological constructs that have paralleled real-life experiments including the Milgram experiments in virtual environment (Slater, 2006; Cheetham, Pedroni, Antley, Slater & Jenke, 2009), and the experiments investigating the strength of priming effects. Hancock, Pena & Merola (2006) applied the research of Adams & Osgood (1973), Meier, Robinson & Clore (2004), and Johnson & Downing (1979) and demonstrated that situational cues (such as the colors black or white, or costumes or uniforms) elicit cues toward death and evil (color black), goodness and helpfulness (color white), and aggression (black uniforms or KKK costumes). Using avatars modeled after a video game titled, “Jedi Knight II: Jedi Outcast”, Hancock, Pena & Merola (2006), conducted two experiments illustrating the impact of virtual cues. In the first experiment, the participants were first primed using clothing color or style, next their virtual conversation analyzed, and finally, they were given attitude and group cohesion measures. In the second experiment, themes were extracted from two stories based on the Thematic Apperception Test (TAT). Hancock, Pena & Merola (2006) found that individuals wearing black cloaks tended to display more aggressive behaviors and intentions, and reported lower group cohesion than players wearing white cloaks. Similarly, in their second experiment, individuals with avatars wearing KKK uniforms had significantly more TAT themes linked to aggression than individuals exposed to avatars wearing doctor uniforms.

Translation of Personality Characteristics.

Thus, while psychological constructs have similar manifestations in both virtual and real world scenarios, personality characteristics also have been demonstrated to straddle both environments. In a 2011 study conducted by Yee, Harris, Jabon and Bailenson, personality

factors of Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Openness to Experience were associated with behavioral and linguistic variables employed in Second Life. For example, linguistic factors associated with conscientiousness were achievement oriented words, while behaviors included movement, such as distance walked and the number of unique zones visited. However, the study was limited by several factors as it did not exactly replicate studies using methodologies other than Second Life that connected personality with non-verbal and verbal cues (Funder & Sneed, 1993; Gosling et al. 2002 in Yee et al. 2011).

Impact of Avatar's Appearance on Confidence Level.

Research by Hancock, Pena & Merola's (2006) and Yee & Bailenson (2007) demonstrated that increased self-confidence, attractiveness and height are characteristics that are related to one another and that can be observed in both real and virtual worlds. Because the manipulation of appearances or self-representations is an important feature of online environments (Turkle, 1995 in Yee & Bailenson, 2007), the ability to choose an avatar or be assigned an avatar that is taller and/or more attractive may lead to changes in behavior that are not generalizable to a real world setting. Similarly, while the Hancock, Pena & Merola's (2006) piece concluded that priming effects are parallel in both virtual and real environments, it is possible that if an individual's avatar wears a certain color (i.e. black or white), this may affect his or her behavior.

Impact of Avatar's Similar and Dissimilar Characteristics on Behavior.

Implications for this research include alterations in avatar behavior based on the appearance of the avatar. Therefore, a notable limitation of these studies (and the experimental study of this researcher) is the influence of the avatar's appearance relative to the participant on the participant's reaction. Furthermore, other characteristics such as the avatar's age and level of

physical fitness also affect the individuals' self-representations in the virtual world (Blascovich & Bailenson, 2011). To address these issues in the present study, the impact of the avatar's characteristics were ascertained by post-experimental questions that specifically asked the participant whether or not they perceived their avatar as being more attractive or physically fit (see Appendix B).

Bystander Experiments in Virtual Environments – Impact of Group Size.

The emergence of virtual reality technology has created a new medium in which to conduct psychology experiments. As noted in the previous section, several studies have been conducted using a wide variety of virtual reality platforms. The exploration of bystander behavior has also been conducted in Yahoo!Groups (Voelpel, Eckhoff & Forster, 2008), using virtual reality in general (Slater, 2009), and Second Life, in particular (Bignell, 2010). Voelpel, Eckhoff & Forster (2008) noted that online group size reflected helping behavior and response rates (i.e. Hudson & Bruckman, 2004a; Yechiam & Barron, 2003). Specifically, the larger the group (250 individuals), the greater the response rates to questions posted in an online forum (i.e. knowledge sharing), and the smaller the group (less than 250 individuals), the stronger the bystander effect. Voelpel, Eckhoff & Forster (2008) noted that social inhibition or perceived social risk (i.e. embarrassment about making mistakes) was a strong factor.

While the bystander effect's presence in the online world is related to group size, behavior in smaller groups parallels existing experiments conducted in non-virtual or real-world environments. Rovira, Swapp, Spanlang & Slater (2009) report that immersive virtual worlds represent valid representations of behavior in the real world. In their study using immersive technology, Rovira, Swapp, Spanlang & Slater (2009) examined bystander verbal and physical intervention based on in/out group affiliation in a sports scenario at a virtual bar. The purpose of

this study was to investigate the realism of this virtual environment, to delineate whether or not the bystander response would match his or her behavior in real life scenarios (self-reported), and to provide a template for designing such an experiment. The scenario was controlled by a member of the research team who sat outside of the experimental room and would choose from a series of pre-recorded phrases that would guide the interaction. Intervention attempts (i.e. touching characters involved in the virtual altercation, positioning the body to stop the altercation) were measured and the credibility of the scenario was also evaluated. Participants reported that realism of the scenario was adversely affected by the dialogue between avatars (i.e. stilted) and body movements (i.e. lack of eye blinking, rudimentary hand gestures). Realism of body movements and facial expressions strongly affects the credibility of the experimental scenario and thus, represent a general technological limitation to using virtual reality platforms. However, despite these barriers, individuals not only became realistically engaged in the scenario but they also demonstrated direct intervention attempts.

The studies cited above examine the bystander effect as it manifests in virtual environments. Using the Second Life platform, Simon Bignell at the University of Derby, has conducted a series of experiments on various topics and has outlined a guide to using virtual worlds in psychology and education experiments (<http://previewpsych.org/BPD2.0.pdf>). Researchers at Bournemouth University-UK and The University College of London are currently investigating the bystander phenomenon but have not yet produced any publishable results (<http://nccastaff.bournemouth.ac.uk/jzhang/projects.htm>; <http://www.miltonbroome.com/2010/08/second-life-as-science-studying.html>).

Ethical and Physical Repercussions of Experiments in the Virtual World.

Due to the relative novelty of the virtual domain, little research has been conducted on the ethical implications of using this medium for psychology experiments. Kerbs (2005) outlined the potential general violation of ethics in virtual environments (i.e. cyber stalking, stealing of proprietary materials, confidentiality, exploitation), and Botterbusch & Talab (2009) applied these probable violations to the Second Life environment (i.e. participant engagement in illegal behavior due to a detachment from the fear of consequences). Rizzo, Schultheis & Rothbaum (2003) discussed the ethical and physical repercussions of using virtual environments specifically in psychological experiments and noted the possible aftereffects (i.e. cybersickness related to motion sensitivities and eye strain), an altered sense of reality due to limited self-awareness and cognitive impairments, and unintended and unanticipated risks (i.e. sensitization to violence or disturbing scenarios). While this specific experiment involved a one-time exposure to a bystander/intervention scenario for a limited duration (10-15 minute maximum in the virtual environment), because it was possible for participants to respond to the virtual environment as though it was real (Slater, Lotto, Arnold & Sanchez-Vives, 2009), aftereffects (i.e. simulator sickness, psychological vulnerability of participants) were assessed during the debriefing session to maintain the ethical integrity of this research study.

Hypotheses

The study sought to expand and add to the existing body of research on bystander behavior by investigating it in a virtual world. Prior research indicates the importance of understanding the role of bystanders in stressful and traumatic situations. While many predictors of the contrast between bystanders and rescuers have been studied (personality, motivation) and in different contexts (peer victimization in schools, work environment), few have been conducted using immersive or virtual technology. Virtual technologies have been identified as comprising an ecologically valid space for psychology studies, Second Life creates a unique opportunity to investigate the bystander phenomenon in an environment that poses little threat to the participants of an experiment. On the basis of prior research, the following three hypotheses emerge.

Hypothesis 1: Individuals who intervene will exhibit personality correlates similar to those reported by the rescuers in prior research (Midlarsky, Fagin-Jones & Nemeroff, 2006). For example, in the groups studied here, I expected to observe higher levels of locus of control, autonomy, risk taking, social responsibility, empathetic concern and altruistic moral reasoning in those who intervene when compared to the bystanders who do not intervene.

Hypothesis 2: Individuals who behave as bystanders during the experimental scenarios will exhibit personality correlates similar to the bystanders in prior research (Midlarsky, Fagin-Jones & Nemeroff, 2006). For example, I hypothesized that bystanders and helpers in the context of Second Life are discriminated in risk taking, social responsibility, empathic concern, and altruistic moral reasoning.

Hypothesis 3: Individuals who intervene will likely have personal experience of peer victimization and thus, a direct understanding of the social pain felt by others who have been victimized (of Nordgren, Loran F.; Banas, Kasia; MacDonald & Geoff, 2011).

Chapter III

METHOD

Participants

100 participants were recruited from a listing on Craigslist, the Teachers College website, and/or to fliers posted throughout the Teachers College and Columbia University campuses. The only exclusion criteria were that the age of the participants be 18+. The majority of this sample identified as Caucasian (38%) and East Asian (24%), Christian (33%), female (74%), heterosexual (88%), between the ages of 23 and 29 (52%), and were in graduate school (71%). Please refer to Table 1 for a more specific breakdown sample.

Procedure

After each participant made contact with the principal investigator, a 60 minute appointment was scheduled at Teachers College. When the participant arrived, he/she was given an informed consent form with a cover story (“the purpose of experiment is to tour Teachers College in Second Life to examine the viability of virtual mediums in psychological experiments”) and asked to sign an acknowledgement of participants’ rights. The participant next completed a series of pre-test measures that examined various personality attributes from the International Personality Item Pool (IPIP), as well as measures of empathy, subjective happiness, self-esteem, and satisfaction with life.

In the next phase of the experiment, participants were introduced to the Second Life medium and given instructions on how to choose an avatar and customize that avatar if they wished. Each participant was given approximately ten minutes to complete this task. The participant then entered the virtual world and was instructed to explore the world. The participant was notified that he/she might be asked to “sign in” at the main security desk because

he/she was new to the world. At this point, participants entered the world, were approached by a security officer and asked to sign into (virtual) Teachers College. They were led to the security desk (if asked by the participant), observed a scenario unfold in the main security area, and had the responses recorded (both manually and by the computer recoding software, Camtasia). After the participant was given 2-3 minutes to respond, the Second Life portion of this study concluded and the participant was asked to complete post-experimental measures that inquired about their experience in the world (i.e. manipulation check that inquired about the level realism and immersion experienced by participant), impact of possible bystander effects (i.e. perception of the scenario as an emergency, if the participant believed there was a social cost to intervening), knowledge of the bystander effect, history of peer victimization experiences, and relationship to their avatar (i.e. fit, attractiveness). Each participant was debriefed at the conclusion of the experiment. Please see Appendix E for more details about the procedures.

All participants were randomized (using randomizer.org) into one of seven conditions: control, derogatory verbal response to the victim, physical reactive response to the victim, reactive verbal and physical response to the victim, reactive verbal and physical response to a victim wearing South Asian identified clothing, reactive verbal and physical response to the victim wearing Jewish identified clothing, and reactive verbal and physical response to the victim wearing clothing that suggests support to GLBT causes. Both the aggressor and victim in conditions 2, 3, and 4 were Caucasian men, and all avatars were male (to limit the number of possible conditions). To account for race and gender of the avatars affecting responses, our security guard was available outside of the TC building (to give an opportunity for a secondary response if the felt uncomfortable and/or threatened). This limitation was also specifically discussed during the debriefing session.

Measures

Personality Variables.

Locus of control. Locus of control was measured using the 20-item subscale of the International Personality Item Pool (The Total Locus of Control Subscale) (Goldberg, 1999). Positive keyed items include: “feel comfortable with myself,” “believe that my success depends on ability rather than luck,” and “like to take responsibility for making decisions.” Negative keyed items include: “believe that unfortunate events occur because of bad luck,” “believe that the world is controlled by a few powerful people,” and “feel that my life lacks direction.” The Cronbach Alpha for this scale was .86 in this study.

Autonomy. Autonomy was measured using the 10-item subscale of the IPIP (The Low Self-Efficacy Subscale). Positive keyed items include: “become overwhelmed by events,” “feel that I'm unable to deal with things,” and “need reassurance.” Negative keyed items include: “readily overcome setbacks,” “can manage many things at the same time,” and “can tackle anything.” The Cronbach Alpha for this scale was .45 in this study, and thus, due to low internal consistency, it was removed from most of the analyses.

Risk taking. Risk taking was measured using the 10-item subscale of the IPIP (The Risk Taking Subscale). Positive keyed items include: “enjoy being reckless,” “take risks,” and “seek danger.” Negative keyed items include: “would never go hang-gliding or bungee-jumping,” “would never make a high risk investment,” and “stick to the rules.” The Cronbach Alpha for this scale was .65 in this study.

Social responsibility. Social responsibility was measured using the 10-item subscale of the IPIP (The Responsibility Subscale). Positive keyed items include: “would never cheat on my taxes,” “return extra change when a cashier makes a mistake,” and “would never take things that

aren't mine.” Negative keyed items include: “cheat to get ahead,” “don't think laws apply to me,” and “believe that I am better than others.” The Cronbach Alpha for this scale was .79 in this study.

Tolerance/Authoritarianism. Authoritarianism was measured using the 10-item subscale of the IPIP (The Traditionalism Subscale). Positive keyed items include: “believe in one true religion,” “guide my life using religious scriptures,” and “believe in sexual modesty.” Negative keyed items include: “tend to vote for liberal political candidates,” “don't consider myself religious,” and “doubt the value of religion.” The Cronbach Alpha for this scale was .83 in this study.

Altruistic moral reasoning. Altruistic moral reasoning was measured by two 10-item subscales of the IPIP (The Morality Subscale and The Altruism Subscale). Positive keyed items for the Morality Subscale include: “would never cheat on my taxes” and “stick to the rules”, and negative keyed items include: “use flattery to get ahead,” “use others for my own ends,” and “know how to get around the rules.” In this study, Cronbach Alpha for the Morality scale was .76. Positive keyed items for The Altruism Subscale include: “anticipate the needs of others” and “love to help others”, and negative keyed items include: “look down on others,” and “take no time for others.” In this study, Cronbach Alpha for the Altruism scale was .84.

Empathy. Empathy was measured using the 9-item subscale of the IPIP (The Empathy Subscale). Positive keyed items include: “anticipate the needs of others,” “love to reflect on things,” and “work on improving myself.” Negative keyed items include: “pretend to be concerned for others,” “don't have a soft side,” and “treat people as inferiors.” This measure of empathy reflects the definition of empathy as a single construct that represents the notion of

identifying with/sharing with the experience of another individual (Hakansson, 2005). The Cronbach Alpha for this scale was .74 in this study.

The multidimensional empathy construct as examined in the Midarsky et al. studies (Midlarsky, Fagin-Jones, Nemeroff, 2006) was measured using the Interpersonal Reactivity Index (IRI) (Davis, 1980). This 28-item self-report measure has four subscales: Perspective Taking (PT), Empathetic Concern (EC), Fantasy Identification (FS), and Personal Distress (PD). Each of these subscales consists of seven questions. For the PT scale, a positively keyed item includes: "I try to look at everybody's side of a disagreement before I make a decision" while a negatively keyed item is: "I sometimes find it difficult to see things from the "other guy's" point of view" (alpha = .80). For the EC scale, a positively keyed item includes: "I often have tender, concerned feelings for people less fortunate than me" while a negatively keyed item is: "Sometimes I don't feel very sorry for other people when they are having problems" (alpha = .76). For the FS scale, a positively keyed item includes: "I daydream and fantasize, with some regularity, about things that might happen to me" while a negatively keyed item is: "I am usually objective when I watch a movie or play, and I don't often get completely caught up in it" (alpha = .79). For the PD scale, a positively keyed item includes: "In emergency situations, I feel apprehensive and ill-at-ease" while a negatively keyed item is: "When I see someone get hurt, I tend to remain calm" (alpha = .74). The Davis IRI also has a demonstrated test-rest reliability (ranging from .61 to .79 for males and .62 to .81 for females) (Davis, 1980) as well as adequate convergent and discriminant validity for each of the subscales (Davis, 1980, 1983).

Subjective Happiness. Subjective happiness was measured using the Subjective Happiness Scale (SHS) (Lyubomirsky & Lepper, 1999). This 4-item scale uses a seven-point response format that ranges from "not a very happy person" to "a very happy person." Items

include: “In general, I consider myself...,” and “Compared to most of my peers, I consider myself...” This measure has been conducted with various groups and numerous studies have demonstrated good psychometric properties. The Cronbach Alpha for this scale was .70 in this study.

Self Esteem. Self-esteem was measured using the Self Esteem Scale (SES) (Rosenberg, 1965). This 10-item scale uses a four-point response format that ranges from “strongly agree” to “strongly disagree.” Items include: “I feel like I have a number of good qualities,” “I take a positive attitude toward life;” and “On the whole, I am satisfied with myself.” Additionally, this measure has adequate test-retest reliability (Fleming and Courtney, 1984) and good convergent and discriminant validity (Savin-Williams & Jaquish, 1982; Demo, 1985; Lorr & Wunderlich, 1986). Cronbach’s alpha for this scale was .80 in this study.

Satisfaction with Life Scale. Satisfaction with life and global cognitive judgment was measured using the Satisfaction with Life Scale (SWLS) (Pavot & Diener, 1993). This 5-item scale uses a seven-point response format that ranges from “strongly agree” to “strongly disagree.” Items include: “In most ways, life is close to my ideal,” and “I am satisfied with my life.” Additionally, this measure also has demonstrated good reliability and validity (Diener, Emmons, Larsen & Griffin, 1985; Pavot, Diener, Colvin & Sandvik, 1991; Pavot & Diener, 1993; Pavot & Diener, 2008). Cronbach’s Alpha for this scale was .84 in this study.

Helping Attitudes. Helping attitudes (beliefs, feelings and behaviors) was measured using the Helping Attitudes Scale (HAS) (Nickell, 1998). This 20-item scale uses a five-point response format that ranges from “strongly agree” to “strongly disagree.” Items include: “It feels wonderful to assist others in need,” and “Giving aid to the poor is the right thing to do.” Additionally, this measure has test-retest reliability and good convergent validity properties

(Nickell, 1998). Also used will be the Altruism Orientation Scale (AOS) (Midlarsky & Kahana, 1994). This eight item scale uses a five-point response format that ranges from “agree very much” to “disagree very much.” The Cronbach Alpha typically range from .83 to .90. In this study, the Cronbach’s Alpha was .69.

Peer Victimization Variables

Peer Victimization History - Personal Peer Victimization Experiences. The participant’s peer victimization experiences was obtained with a 10-item questionnaire that included both multiple choice and open ended questions. Items included: “Have you ever *witnessed* bullying behavior?” and “What did the bullying behavior entail?” with a choice of seven responses (N/A, acts of Prejudice, name calling, social avoidance, social exclusion, cyber bullying, and physical violence.)

Bystander Variables

Bystander Influences - Importance of the Issue. The impact of the importance of an issue on bystander behavior and specifically, whether or not the content of the verbal assault affects intervention, was ascertained with the following questions: “How important to you is speaking up against discrimination based on race?,” “How important to you is speaking up against discrimination based on gender?,” “How important to you is speaking up against discrimination based on sexual orientation?,” and “How important to you is speaking up against discrimination based on disability?” with a choice of five responses (very important, important, neutral, somewhat important, and not at all important.)

Bystander Influences - Importance of Membership Affiliation. The importance of membership affiliation on bystander behavior and specifically, whether or not membership

affiliation with the victim or bully impacts intervention, was measured with the yes/no question, “Do you identify with any minority statuses?”

Bystander Influences - Perception of Scenario as an Unambiguous Emergency & Cost of Intervening. The importance of whether or not the participant perceived the scenario as an emergency and that the intervention will exact some type of social, emotional or physical cost was measured with two questions: “How would you describe the scenario in the experiment (emergency or non-emergency threat to the victim)?,” and “Did you perceive any physical or social cost to intervening?”

Bystander Influences - Intervention Response. The participant’s intervention or lack of an intervention response was measured using a binary code (yes/no) based on observation of the experimental scenario and verified by a recording of the experimental section.

Experience in the Virtual World - Impact of the Avatar. While participants were given the opportunity to design their own avatars, questions were asked to ascertain whether or not the participant’s avatar was a “true” representation of the self. Items assessed differences in perceptions of attractiveness, clothing style, age, and physical fitness. For example, the participant was asked to choose if they perceived their selected avatar as “more”, “less” or “equally” attractive; if they wore “darker” or “lighter” clothing in comparison to their avatar; if their age was “older”, “younger” or the same as their avatar; and if they felt that their avatar was “more”, “less” or “equally” physically fit. These questions were scaled so that a perception of one’s avatar as “more” attractive, “younger”, or “more” physically fit was coded as “1” and experiences of being “equal” or “less” was coded as a “0”.

Experience in the Virtual World - Simulator Sickness Questionnaire.

Possible adverse effects of engaging in a virtual world was determined using the Simulator Sickness Questionnaire. On scale of 0 to 3 (0 = none, 1 = slight, 2 = moderate, 3 = severe), the participant were asked to rate their experience of such symptoms as general discomfort, fatigue, headache, eyestrain, difficulty focusing, increased salivation, sweating, nausea, difficulty concentrating, fullness of head, blurred vision, dizzy (eyes open), dizzy (eyes closed), vertigo, stomach awareness, and burping.

Chapter IV

RESULTS

Preliminary Analysis

This purpose of this study was to determine whether personality variables related to the participant's experience of the virtual world correctly predict membership into either the intervention or non-intervention groups. Because the control condition does not meet the latter criteria, the data from these participants were removed from the analysis. Of the 100 participants included in the bivariate and multivariate analyses (those who intervened and those who did not), the majority of this sample identified as Caucasian (38%) and East Asian (24%), Christian (33%), female (74%), heterosexual (88%), between the ages of 23 and 29 (52%), and were in graduate school (71%). Table 1 presents the demographic profiles of the total sample in the analyses (N = 100). Table 2 presents the percentage of the total sample represented by each condition. Table 3 presents the demographic breakdown of the total sample by group: 1) participants who intervened, and 2) participants who did not intervene.

The internal consistency of each of the scales and subscales was assessed and have been reported in the above measures section. In this study, Cronbach's Alphas ranged from .69 (altruistic orientation) to .86 (locus of control) with the exceptions of autonomy (.45) and risk taking (.65). Furthermore, checks for normality, violation of the homogeneity of variances and multicollinearity assumptions, and presence of outliers was tested. No serious departures were found.

Table 1

Demographic Variables (Intervene = Yes/No only)

	Total Sample (N = 100)	
	N	%
Race		
African American	7	7.0%
Caucasian	38	38.0%
East Asian	24	24.0%
Hispanic/Latino	10	10.0%
Native American	0	0.0%
South Asian	13	13.0%
Other	6	6.0%
Biracial/Multiracial	2	2.0%
Religion		
Christianity	33	33.0%
Judaism	8	8.0%
Hinduism	5	5.0%
Sikh	1	1.0%
Islam	4	4.0%
Buddhism	4	4.0%
Agnostic	11	11.0%
Atheist	9	9.0%
Other	5	5.0%
None	8	8.0%
N/A	12	12.0%
Gender		
Female	74	74.0%
Male	25	25.0%
Other	1	1.0%
Sexual Attraction		
Heterosexual	88	88.0%
Homosexual/Bisexual	12	12.0%
Age		
18-22	16	16.0%
23-29	52	52.0%
30+	32	32.0%

Table 1 (cont.)

Demographic Variables (Intervene = Yes/No only)

	Total Sample (N = 100)	
	N	%
<hr/>		
Living status		
live alone	32	32.0%
live with roommate	46	46.0%
live with my partner	15	15.0%
live with my partner and children	7	7.0%
live with my children only	0	0.0%
Marital Status		
single	84	84.0%
married	11	11.0%
domestic partnership	2	2.0%
divorced	3	3.0%
separated	0	0.0%
Education		
grade school	3	3.0%
high school	2	2.0%
undergraduate	45	45.0%
graduate	50	50.0%
In school		
no	24	24.0%
yes, undergrad	5	5.0%
yes, graduate student	71	71.0%

Note: One participant (#527) had missing demographics.

Table 2

Demographic Variables by Condition

	Total Sample (N = 100)	
	N	%
<hr/>		
Condition		
1 = Control	15	12.9%
2 = Verbal only	17	14.7%
3 = Physical only	17	14.7%
4 = Verbal + Physical	19	16.4%
5 = South Asian Victim	16	13.8%
6 = Jewish Victim	15	12.9%
7 = GLBT Victim	17	14.7%

Table 3

Demographics of Intervening and Non-Intervening Groups

	Intervene (N = 52)		Intervene (N = 48)	
	N	%	N	%
Race				
African American	4	7.7%	3	6.3%
Caucasian	17	32.7%	21	43.8%
East Asian	13	25.0%	11	22.9%
Hispanic/Latino	7	13.5%	3	6.3%
Native American	0	0.0%	0	0.0%
South Asian	7	13.5%	6	12.5%
Other	4	7.7%	2	4.2%
Biracial/Multiracial	0	0.0%	2	4.2%
Religion				
Christianity	18	34.6%	15	31.3%
Judaism	4	7.7%	4	8.3%
Hinduism	2	3.8%	3	6.3%
Sikh	0	0.0%	1	2.1%
Islam	0	0.0%	4	8.3%
Buddhism	1	1.9%	3	6.3%
Agnostic	6	11.5%	5	10.4%
Atheist	7	13.5%	2	4.2%
Other	3	5.8%	2	4.2%
None	4	7.7%	4	8.3%
N/A	7	13.5%	5	10.4%
Gender				
Female	40	76.9%	34	70.8%
Male	12	23.1%	13	27.1%
Other	0	0.0%	1	2.1%
Sexual Attraction				
Heterosexual	43	82.7%	46	95.8%
Homosexual/Bisexual	9	17.3%	2	4.2%
Age				
18-22	10	19.2%	7	14.6%
23-29	29	55.8%	22	45.8%
30+	13	25.0%	19	39.6%

Table 3 (cont.)

Demographics of Intervening and Non-Intervening Groups

	Intervene (N = 52)		Intervene (N = 48)	
Living status				
live alone	14	26.9%	18	37.5%
live with roommate	25	48.1%	21	43.8%
live with my partner	8	15.4%	7	14.6%
live with my partner and children	5	9.6%	2	4.2%
live with my children only	0	0.0%	0	0.0%
Marital Status				
single	41	78.8%	43	89.6%
married	7	13.5%	4	8.3%
domestic partnership	2	3.8%	0	0.0%
divorced	2	3.8%	1	2.1%
separated	0	0.0%	0	0.0%
Education				
grade school	1	1.9%	2	4.2%
high school	1	1.9%	1	2.1%
undergraduate	24	46.2%	21	43.8%
graduate	26	50.0%	24	50.0%
In school				
no	8	15.4%	16	33.3%
yes, undergrad	3	5.8%	2	4.2%
yes, graduate student	41	78.8%	30	62.5%

Note: One participant (#527) had missing demographics.

Bivariate Analysis - Group Differences

Preliminary group differences were tested for all scales (or subscales) using independent samples *t*-tests to determine primary differences between the means of the two groups and one-way analyses of variance (ANOVAs) were conducted to control for Type I errors (failure to reject a false null hypothesis). Among the personality variables, a significant main effect was found for empathy, $F(1, 98) = 4.52, p < .05$. Participants who intervened scored significantly higher for empathy ($M = 39.96, SD = 3.99$) than individuals who did not intervene in the scenarios ($M = 38.10, SD = 4.74$). This difference represents a small to medium effect size ($d = .42$). Additionally, main effects were found for realism of the scenario, $F(1, 99) = 6.46, p < .05$, and immersion in the virtual world, $F(1, 99) = 6.12, p < .05$. Participants who intervened reported experiencing significantly more realism ($M = 3.85, SD = 1.78$) than individuals who did not intervene in the scenarios ($M = 3.04, SD = 1.37$). This difference represents a medium effect size ($d = .51$). Additionally, participants who intervened reported experiencing significantly more immersion ($M = 4.40, SD = 1.84$) than individuals who did not intervene ($M = 3.49, SD = 1.87$). This difference represents a medium effect size ($d = .49$).

Additionally, significant gender differences were found among several personality variables: risk taking, social responsibility, morality, empathy, empathic concern (EC), fantasy (FS) scale, and personal distress (PD).

Please refer to Table 4 (independent samples *t*-tests for group differences), Table 4a (independent samples *t*-tests for gender differences), and Table 5 (ANOVA) for a more detailed description of the analyses.

Table 4

Group Differences Among Participants who Intervened and Participants who did NOT Intervene

	Intervene (N = 51/52)		Intervene (N = 48/49)		t	p*
	M	SD	M	SD		
IPIP: Locus of Control	79.04	10.01	77.27	9.64	-0.90	0.37
IPIP: Autonomy	14.75	2.70	14.98	3.84	0.35	0.73
IPIP: Risk-Taking	30.59	5.48	31.10	5.54	0.47	0.64
IPIP: Social Responsibility	41.10	5.86	39.55	6.38	-1.26	0.21
IPIP: Tolerance	25.45	7.29	27.33	8.69	1.17	0.24
IPIP: Morality	40.80	5.05	39.22	6.04	-1.42	0.16
IPIP: Altruism	42.71	4.87	41.65	5.21	-1.04	0.30
IPIP: Empathy	39.96	3.99	38.10	4.74	-2.13	0.04*
Total IRI	62.29	13.18	60.75	11.55	-0.62	0.54
IRI_EC	21.62	3.58	20.63	3.39	-1.42	0.16
IRI_FS	19.12	5.81	18.63	4.89	-0.45	0.65
IRI_PT	20.62	4.78	19.38	4.04	-1.40	0.17
IRI_PD	10.71	5.01	10.79	4.16	0.09	0.93
RealismScenario	3.85	1.78	3.04	1.37	-2.56	0.01*
Immersion	4.40	1.84	3.49	1.87	-2.47	0.02*
RealismWorld	4.23	1.81	3.59	1.72	-1.82	0.07

Note: Excludes #588 from IPIP scales and #529 from IRI.

Table 4a

Gender Differences Among Participants who Intervened and Participants who did NOT Intervene

	Intervene (N = 51/52)		Intervene (N = 48/49)		t	p*
	M	SD	M	SD		
IPIP: Locus of Control	78.22	9.24	78.72	10.31	-0.23	0.82
IPIP: Autonomy	14.89	3.20	14.48	3.20	0.55	0.58
IPIP: Risk-Taking	29.85	5.40	33.36	4.67	-2.90	0.00*
IPIP: Social Responsibility	41.29	5.65	38.24	6.83	2.21	0.03*
IPIP: Tolerance	26.67	7.78	25.20	8.16	0.81	0.42
IPIP: Morality	41.14	5.15	37.36	5.46	3.12	0.00*
IPIP: Altruism	42.67	5.12	40.80	4.73	1.61	0.11
IPIP: Empathy	39.67	3.88	37.36	5.62	2.28	0.03*
Total IRI	64.24	11.22	52.88	12.21	4.22	0.00*
IRI_EC	21.65	3.39	19.83	3.61	2.24	0.03*
IRI_FS	19.49	5.07	16.63	5.79	2.32	0.02*
IRI_PT	19.99	4.57	20.08	3.96	-0.09	0.93
IRI_PD	11.54	4.39	8.17	4.42	3.27	0.00*
RealismScenario	3.39	1.63	3.68	1.70	-0.76	0.45
Immersion	3.93	1.83	4.04	2.13	-0.24	0.81
RealismWorld	3.97	1.77	3.76	1.92	0.51	0.61

Note: Excludes #588 from IPIP scales and #529 from IRI.

Table 5

Group Differences Among Participants who Intervened and Participants who did NOT Intervene

	Intervene (N = 51/52)		Intervene (N = 48/49)		T	p*	Cohen's D
	M	SD	M	SD			
IPIP: Locus of Control	79.04	10.01	77.27	9.64	0.81	0.37	0.18
IPIP: Autonomy	14.75	2.70	14.98	3.84	0.13	0.72	-0.07
IPIP: Risk-Taking	30.59	5.48	31.10	5.54	0.22	0.64	-0.09
IPIP: Social Responsibility	41.10	5.86	39.55	6.38	1.60	0.21	0.25
IPIP: Tolerance	25.45	7.29	27.33	8.69	1.37	0.24	-0.23
IPIP: Morality	40.80	5.05	39.22	6.04	2.02	0.16	0.28
IPIP: Altruism	42.71	4.87	41.65	5.21	1.09	0.30	0.21
IPIP: Empathy	39.96	3.99	38.10	4.74	4.52	0.04	0.42
Total IRI	62.29	13.18	60.75	11.55	0.38	0.54	0.12
IRI_EC	21.62	3.58	20.63	3.39	2.01	0.16	0.28
IRI_FS	19.12	5.81	18.63	4.89	0.21	0.65	0.09
IRI_PT	20.62	4.78	19.38	4.04	1.95	0.17	0.28
IRI_PD	10.71	5.01	10.79	4.16	0.01	0.93	-0.02
RealismScenario	3.85	1.78	3.04	1.37	6.46	0.01	0.51
Immersion	4.40	1.84	3.49	1.87	6.12	0.02	0.49
RealismWorld	4.23	1.81	3.59	1.72	3.30	0.07	0.36

Note: Excludes #588 from IPIP scales and #529 from IRI.

Additionally, chi-square analyses were conducted to determine whether differences were present between those who intervened and those who did not for various bystander effect related, peer victimization, and virtual medium related categorical variables. The percentage of participants who intervened in the scenario and those who did not intervene did *not* differ in gender, sexuality, whether or not they perceived their avatar as more attractive, whether or not they perceived their avatar as more fit, whether or not they played video games, the personal importance of speaking up against racial discrimination, the personal importance of speaking up against sexuality discrimination, knowledge of the bystander effect, and whether or not they made eye contact with the victim. Please refer to Table 6 for details of this analysis. Fischer's Exact Test results were reported for variables in which the sample size per cell was less than 5.

Table 6

Crosstabulations of Intervention Behavior and Categorical Variables

		Intervene		χ^2	Φ	p*
		No	Yes			
Gender	Female	34	40	1.37	0.12	0.50
	Male	13	12			
Sexuality	Homosexual/Bisexual	3	9	(Fisher's Exact Test)		0.13
	Heterosexual	45	43			
AvatarAttractive	No	39	35	1.94	0.14	0.16
	Yes	10	17			
AvatarFit	No	20	24	0.29	-0.05	0.59
	Yes	29	28			
IssueRace	No	9	3	(Fisher's Exact Test)		0.07
	Yes	40	49			
MinorityStatus	No	19	16	0.71	0.08	0.40
	Yes	30	36			
Emergency	No	43	41	1.43	0.12	0.23
	Yes	6	11			
SocialCost	No	33	32	0.37	0.06	0.54
	Yes	16	20			
PeerWitness	No	5	9	1.07	-0.10	0.30
	Yes	44	43			
PeerVictim	No	16	19	0.17	-0.04	0.68
	Yes	33	33			
Bystander Effect Knowledge	No	25	25	0.09	0.03	0.77
	Yes	24	27			
Video Gaming Immersion	No	34	35	0.96	0.10	0.62
	Yes	15	16			

Note: Excludes #588 from IPIP scales and #529 from IRI.

Bivariate Analyses - Intercorrelations

Pearsons r were calculated to determine whether a statistically significant relationship was present between personality and virtual medium variables. Notable significant associations were found among intervention behavior and empathy ($r = 0.210, p \leq .05$), intervention and realism of the scenario ($r = 0.248, p \leq .05$), and intervention and immersion in the world ($r = 0.241, p \leq .05$). Using Cohen's values, these r values are reflective of a small to medium relationship. Squaring these r values indicated that intervention overlapped with empathy 4.41%, with realism of the scenario 6.15%, and with immersion in the world 5.8%. Table 7 presents the correlation matrix.

Table 7

Intercorrelations Personaliy and Virtual-Reality Related Variables

	1.	2.	3.	4.	5.	6.	7.	8.
1. Intervene	–							
2. Risk	-.047	–						
3. SocialRes	.127	.276**	–					
4. Tolerance	-.118	.104	.160	–				
5. Morality	.142	-.378**	.772**	.080	–			
6. Altruism	.105	-.097	.652**	.093	.596**	–		
7. Empathy	.210*	.042	.480**	-.012	.547**	.667**	–	
8. RealScen	.248*	.062	.021	.031	.015	-.040	-.020	–
9. Immersion	.241*	.093	-.150	.020	-.044	-.056	-.035	.289**

Note: *p < .05; **p < 0.01

Primary Multivariate Analyses

Hypothesis 1. Hypothesis 1 suggested that a personality profile associated with Holocaust rescuer characteristics would predict intervention behavior. This hypothesis was not confirmed.

Hypothesis 2. Hypothesis 2 suggested that a personality profile associated with Holocaust bystanders characteristics would predict intervention behavior. This hypothesis was not confirmed.

To address Hypothesis 1 and Hypothesis 2, a multivariate analysis was performed to determine to what extent intervention by participants is associated with personality variables and variables related to the viability of the virtual medium. Because the objective was to determine whether the personality and virtual medium variables correctly discriminate group membership, only the intervention groups (yes/no) were used in this analysis. Personality variables consisted of locus of control, autonomy, risk taking, social responsibility, tolerance, morality, altruism, and empathy from the International Personality Item Pool (IPIP). These personality variables plus age and gender were chosen to replicate constructs in the Midlarsky et al studies. Virtual medium-related variables included perceived realism of the scenario, realism of the virtual world, and immersion in the virtual world. In the one case where there was an entire section of missing data (due to technological difficulties), the participant's data was excluded. The resulting sample sizes consisted of 51 individuals who intervened, and 49 who did not intervene.

One significant discriminant function was identified. The structure matrix of this function is presented in Table 8. The variables within the table are ordered according to the strength of their contributions to the overall classification. According to Stevens (1996), these correlations are used for interpreting the function. This function had an eigenvalue of .211 that

accounted for 100.0% of the discriminant function variance, and had a canonical correlation of .32, Wilks's $\Lambda = .88$, $\chi^2(2, N = 101) = 10.343$, $p < .05$. This function is best described by perceived realism of the scenario (.74) and empathy (.62), followed by altruism (.42). The group centroid, or mean of the discriminant function, appears in Table 9. The classification table shown in Table 10 indicates that these two functions correctly classified 65.0% of the group members, including 62.7% of those who intervened and 67.3% of those who did not.

Additionally, because the initial stepwise discriminant function analysis identified empathy and realism of the scenario as discriminant functions, an interaction analysis was also conducted between empathy and realism of the scenario. The interaction variable (empathy x realism) was not found to be significant.

Table 8

Structure Matrix for Discriminant Functions

Variable	Function 1
RealismScenario	0.74
Empathy	0.62
Altruism	0.40
Morality	0.36
Social Responsibility	0.31
Locus of Control	0.31
RealismWorld	0.22
Autonomy	-0.21
Empathy*Realism	0.15
Immersion	0.13
Risk Taking	0.10
Gender	-0.08
Age	-0.06
Tolerance	0.06

Table 9

Centroids

Group	Function 1
No	-0.35
Yes	0.32

Table 10

Classification Table

Actual Group	N	Predicted "No"	Predicted "Yes"
No	49	33 67.3%	16 32.7%
Yes	51	19 62.7%	32 62.7%

Another discriminant function analysis was performed removing autonomy and risk taking due to lower than usual internal consistencies (Cronbach's $\alpha = .45$ and $.65$). Locus of control was also removed due to its conceptual similarity to social responsibility. This analysis included five personality variables and two variables related to experience in the virtual world. In this analysis, the personality variables included autonomy, risk taking, social responsibility, tolerance, morality, altruism, and empathy. Virtual medium-related variables included realism of the scenario and immersion in the world. Because a stepwise discriminant functional analysis was conducted, as theoretically expected, the results were identical to the previously noted analysis. The structure matrix, group centroids, and group classification tables are exactly the same as the first discriminant function analysis described on page 40.

Additionally, a third discriminant function analysis was performed with the empathy subscales from the Interpersonal Reactivity Index (IRI) because the original Midlarsky study was analyzed using these multidimensional components of empathy. The fantasy empathy (FS), perspective taking (PT), personal distress (PD), empathic concern (EC) subscales were included in another stepwise discriminant function analysis and the empathy construct from the IPIP was excluded to prevent any multicollinearity effects. However, the empathy constructs measured by the IRI (perspective taking, personal distress, empathic concern, fantasy empathy) did not significantly predict classification into the intervention (yes) or intervention (no) groups. Results from this analysis identified realism of the scenario as the only significant variable.

Primary Multivariate Analysis

Hypothesis 3. Hypothesis 3 suggested that a history of directly experiencing peer victimization experiences would positively impact intervention behavior. This hypothesis was not confirmed.

To address Hypothesis 3, a fourth multivariate analysis was performed to determine to what extent intervention by participants is associated with peer victimization history and variables related to the viability of the virtual medium. This analysis included two peer victimization history variables and experience in the virtual world and was found to be significant. In this analysis, the peer victimization history variables included whether or not participants witnessed peer victimization, or whether they were victims of peer bullying. The significant function had an eigenvalue of .065 accounted for 100% of the discriminant function variance, and had a canonical correlation of .25, Wilks's $\Lambda = .94$, $\chi^2(1, N = 101) = 6.228$, $p < .05$. The one variable identified in this function was perceived realism of the scenario (1.000). Peer victimization history variables were not significant. The structure matrix of this function is presented in Table 11 and group centroids in Table 12. The classification table shown in Table 13 indicates that these two functions correctly classified 60.4% of the group members, including 55.8% of those who intervened and 65.3% of those who did not.

Table 11

Structure Matrix for Discriminant Functions

Variable	Function 1
RealismScenario	1.00
RealismWorld	0.35
Immersion	0.24
PeerWitness	0.11
PeerVictim	0.08

Table 12

Centroids

Group	Function 1
No	-0.26
Yes	0.25

Table 13

Classification Table

Actual Group	N	Predicted "No"	Predicted "Yes"
No	49	32 65.3%	17 34.7%
Yes	52	23 44.2%	29 55.8%

Additional Analyses

Principal Component Analysis

A principal components analysis (PCA) was run on six major personality variables and three virtual medium variables to ascertain whether or not expected groups of variables loaded together. The purpose of this analysis was to further explicate the results in the former results sections. The suitability of PCA was assessed prior to analysis. Inspection of the correlation matrix showed that all variables had at least one correlation coefficient greater than 0.3. The overall Kaiser-Meyer-Okin (KMO) measure was 0.69 with individual KMO measures all greater than 0.55. Bartlett's Test of Sphericity was statistically significant ($p < .0005$) indicating that the data were likely factorable.

PCA revealed three components that had eigenvalues greater than one and which explained 35.2%, 20.4%, and 12.7% of the total variance, respectively. Visual inspection of the scree plot indicated that three components should be retained (Cattell, 1966), as the three component solution met the interpretability criterion and explained 68.3% of the total variance. A Varimax orthogonal rotation was employed to aid interpretability. The rotated solution exhibited simple structure (Thurstone, 1947). The interpretation of the data suggests strong loadings of personality (altruism) items on Component 1, and virtual medium immersion items on Component 2, and risk taking on Component 3.

Table 14

Rotated Structure Matrix with PCA with Varimax Rotation

Rotated Component Coefficients				
Items	Component 1	Component 2	Component 3	Communalities
Altruism	0.83	-0.10		0.70
Social Responsibility	0.80		-0.35	0.77
Empathy	0.80		0.10	0.65
Morality	0.77		-.047	0.81
Locus of Control	0.64	0.21	0.10	0.46
RealismWorld		0.85	-0.15	0.74
Immersion		0.78	0.16	0.63
RealismScenario		0.68		0.47
Risk Taking			0.95	0.90

Additional Analyses

Top 30% of Sample Who Experienced Scenario as Real

Based on the main analyses that found significant differences among participants who perceived the scenarios as realistic, additional analyses were conducted to ascertain whether or not there might be personality differences among individuals who perceived the scenarios as most realistic. The results for the top 30% (i.e. individuals who rated the scenarios as a “5”, “6” or “7” on the realism scale) were analyzed but no significant differences were found among those who intervened in the scenarios and those who did not. Table 12 presents the ANOVA results. A stepwise discriminant functional analysis also confirmed that among the top 30% of sample (for experiencing the scenario as realistic), there were no distinguishing factors.

Participant Group Membership Predicting Behavior if in Similar Condition

Due to existing research that suggests that identification with one’s group membership may elicit empathic feelings for others who belong to a similar identity, ANOVAs were conducted to detect any significant differences on an intragroup level. However, no significant differences were found between those who intervened and those who did not for the sub-group of participants who identified as South Asian and were randomly assigned to the South Asian victim condition (3 total participants), or for the sub-group of participants who identified as Jewish and were randomly assigned to the Jewish victim condition (1 total participant), or the sub-group of participants who identified as bisexual/homosexual and were randomly assigned to the GLBT victim condition (3 total participants).

Table 15

Group Differences Among Participants who Intervened and Participants who did NOT Intervene

	Intervene (N = 23)		Intervene (N = 8)		t	p*
	M	SD	M	SD		
IPIP: Locus of Control	78.30	9.66	79.00	10.61	0.03	0.87
IPIP: Autonomy	14.57	2.86	13.75	4.13	0.38	0.54
IPIP: Risk-Taking	32.35	5.87	30.63	4.84	0.55	0.46
IPIP: Social Responsibility	40.61	7.37	40.50	6.85	0.00	0.97
IPIP: Tolerance	26.83	7.11	22.88	4.97	2.09	0.16
IPIP: Morality	40.78	6.03	38.25	6.86	0.98	0.33
IPIP: Altruism	42.17	5.34	43.63	5.97	0.41	0.53
IPIP: Empathy	40.17	3.07	38.13	8.44	1.02	0.32
Total IRI	62.87	13.53	57.50	4.99	1.18	0.29
IRI_EC	21.70	3.07	21.25	4.06	0.11	0.75
IRI_FS	17.74	4.96	20.00	4.60	1.28	0.27
IRI_PT	21.13	5.64	19.25	4.06	0.75	0.39
IRI_PD	11.70	5.45	8.13	3.04	3.06	0.09
RealismScenario	5.57	0.73	5.25	0.71	1.13	0.30
Immersion	4.70	1.84	4.75	1.28	0.01	0.94
RealismWorld	4.52	1.90	5.38	1.19	1.40	0.25

Note1: Excludes #588 from IPIP scales and #529 from IRI.

Note2: Only the top 30% of the sample for 'realism of the scenario' was used in this analysis.

Chapter IV

DISCUSSION

The purpose of this study was to determine whether or not the personality correlates of rescuers and bystanders can be ascertained using a virtual simulation of an arousing scenario. Research on variables discriminating Holocaust-era rescuers and bystanders (Midlarsky, Fagin-Jones & Nemeroff, 2006; Midlarsky, Fagin-Jones, 2007) examined this premise and determined that certain altruistic personality correlates could correctly predict membership into a rescuer or bystander group. The larger body of research has also supported the notion that altruistic individuals can be characterized by higher levels of empathy and the bystander literature has indicated that emotionally arousing scenarios elicit helping behavior. This study sought to expand the existing literature into the virtual space and examine: 1) whether or not helping behavior can be partially explained by the personality of the individual, and 2) whether or not the virtual space can adequately replicate naturalistic experimental spaces.

In this section I discuss the results from this experiment and explore possible limitations of the experiment. Furthermore, alternative explanations for the findings are presented and suggestions for future research are offered.

Personality Correlates of the Rescuer and Bystander

Hypothesis 1 predicted that individuals who intervened in the virtual scenario would exhibit similar personality characteristics to those of Holocaust rescuers. Hypothesis 2 predicted that individuals who did not intervene in the virtual scenario would exhibit similar personality characteristics to the Holocaust bystanders. With the exception of empathy, none of the other personality correlates from the Midlarsky study predicted whether or not an individual would

intervene or not intervene in this study's virtual scenario. Due to the significant differences in the contexts of both studies, the results of this study are comprehensible.

In contrast to the studies by Midlarsky and her collaborators (Midlarsky, Fagin Jones, & Corley, 2005; Midlarsky, Fagin Jones & Nemeroff, 2006; Fagin Jones & Midlarsky, 2007), this experiment employed a virtual environment which relied highly on the individual's level of engagement, and sought to elicit behavior in a one-time event. The rescuers and bystanders in the Midlarsky study engaged in long-term behavior in a life-threatening situation which defined their categorization as a rescuer or bystander. In general, it is likely that the behaviors of the rescuers and bystanders in the Midlarsky study required thought, awareness of their moral code, and the willingness to take risks. Due to the historical context of the Midlarsky study, individuals in that study were likely exposed to the horrors of the Holocaust before they were faced with the decision of whether or not to help. The rescuers and bystanders faced with the likelihood that if they helped, exposure of their actions would result in torture and death.

The participants in the present study were defined as interveners and non-interveners based on a spontaneous reaction to an event in a virtual reality medium. During the debriefings, individuals who intervened often noted that they experienced an emotional and visceral reaction to the event. Personal beliefs about helping those in a more vulnerable position were discussed after they had engaged in the experimental portion of the experiment. Additionally, individuals who did not intervene noted several reasons including, but not limited to, ambiguity about whether or not the bully and victim in the scenario were friends who were arguing, or if the victim was being assailed for less personal reasons. Thus, the consequences for the individuals in the scenario were unclear, and did not entail dire outcomes. However, despite these anecdotal explanations for non-intervention, no significant differences were found between the two groups

due to: perception of the scenario as an emergency, history of previous peer victimization experiences, in-group or out-group perceptions, and identification with a minority status. For individuals who did intervene, a significant component was the perception of scenario as a realistic. Thus, the quality of feelings activated by the scenario was an influential factor.

Limitations

In addition to the limitations presented in the preceding section, ecological validity of the virtual world and plausibility of the scenario appear to have been important factors. Technical issues with the software and equipment influenced the fluidity and hence, credibility, of the scenarios. For example, many participants cited the speed of the computers, difficulty with navigating smoothly in the virtual world, and glitches in the system as impeding their experience of feeling immersed in the world. Additionally, participants were aware that they were in a virtual world and that the avatars were not real and could not actually feel pain or become physically wounded. Emotional pain was the only aspect of reality that the avatars could potentially experience as they were being controlled by humans. The deception employed at the beginning of the experiment suggested that non-scripted avatars who were not connected to the experiment could potentially interact with the participant. The emergence of empathy as a distinguishing factor between those who intervened and those who did not appears to be supported by the notion of connecting to the potential emotional pain experienced by the human who was controlling the victim avatar.

Another possible limitation of this study includes the impact of one engaging as an avatar (as opposed to one's real self). While participants in this study had the ability to customize their avatars, most individuals who actually engage in Second Life spend far more time in their customization process than was permitted in this study. Due to time restrictions, our participants

were allotted ten minutes to choose and customize their avatars. This facet of immersion was also affected by speed of the computer (i.e. how quickly body parts could be altered) and ease with technology (i.e. feelings of comfort and technological capability in manipulating their avatar's characteristics and maneuvering in a virtual environment). It's possible that the initial frustrations with the process of customizing one's avatar and the limited time allotted for learning a new environment may have resulted in relatively limited engagement in the experiment. However, despite technological issues and methodological limitations, feelings related to one's avatar (i.e. perception of their avatar as more attractive or physically fit) were not significantly different between those who intervened and those who did not. Thus, ecological validity as related to the avatar does not appear to be compromised. Several participants who engaged in the scenario noted that their behavior in the virtual world was representative of their behavior in the real world if they had experienced similar real-life scenarios.

Other limitations include generalizability of this experiment to other virtual platforms (i.e. other video or multi-player games), limited technological ability of the designer, and the population sample. This experiment occurred in the context of Second Life and thus, in a unique environment where characteristics of competition and having a defined goal (i.e. save the princess) were not present. Other virtual environments may elicit differing behavior based on enhanced levels of engagement and immersion due to the distinct presence of in groups and out groups, having a clear adversary, enhanced graphics, and more realistic avatars and environments. For example, the avatars in Second Life have limited facial expressions and in animated (scripted) interactions, the lips of the avatars do not move (although they do move during in vivo interactions). Realism of bodily movements are also heavily dependent on the technological ability of the designer to accurately code motion and non-verbal behavior.

Additionally, the majority of the participants in this study reported that they did not engage in gaming and thus, do not have the personal history or experience of feeling connected to virtual environments. However, although this is a notable aspect of experiencing immersion, there were no significant differences between hours playing video games on intervention behavior.

A final limitation is the generalizability of this study due to the sample employed in this study. The randomly selected sample was recruited from the New York City metropolitan area via advertisements on the Teachers College website, Craigslist.com, word of mouth, and fliers in the Upper Manhattan area. Thus, the majority were single (84%), in graduate school (71%), and between the ages of 23-29 (52%). The majority of this sample were also female (74%), and the racial and religious diversity generally represented the Teachers College population.

Implications

Despite the limitations of this study and that those intervening here did not have personalities like those of the Holocaust-era rescuers, a notable factor is that empathy and the perception of the scenario as real were factors that significantly affected intervention behavior. Future studies may examine the role of affect in helping behavior in the virtual space (to ascertain whether intense affective experiences will elicit automatic thoughts/core beliefs which motivate helping) and how different virtual platforms may elicit nuances in helping behavior or motivations for helping (i.e. if multi-player games will elicit the perspective taking aspect of empathy).

Conclusions

In sum, this study provided evidence that empathy is significantly related to helping behavior, and that the realism of an event is important in activating behavior to help a more distressed individual.

REFERENCES

- Adams, F. M. & Osgood, C. E. (1973). A cross-cultural study of the affective meanings of colour. *Journal of Cross-cultural Psychology*, 4: 135–56.
- Adler L, Iverson A (1974) Interpersonal distance as a function of task difficulty, praise, status, orientation, and sex of partner. *Journal of Perceptual and Motor Skills*. 39:683–692
- Allen, J. B., & Ferrand, J. L. (1999). Environmental locus of control, sympathy, and proenvironmental behavior: A test of Geller's actively caring hypothesis. *Environment and Behavior*, 31, 338–353.
- Anti-Defamation League and Survivors of the Shoah Visual History Foundation. (2003). The Pyramid of Hate. Retrieved from http://archive.adl.org/education/courtvtv/pyramid_of_hate.pdf.
- Argyle M & Dean J. (1965). Eye-contact, distance and affiliation. *Sociometry*, 28:289-304.
- Bailenson, J.N., & Yee, N. (2007). Virtual interpersonal touch and digital chameleons. *Journal of Nonverbal Behavior*, 31, 225-242.
- Bailenson, J.N. & Yee, N. (2007). Virtual interpersonal touch: Haptic interaction and copresence in collaborative virtual environments. *International Journal of Multimedia Tools and Applications*, 37(1), 5-14.
- Bar-Tal, D., Raviv, A., & Leiser, T. (1980). The development of altruistic behavior: Empirical evidence. *Developmental Psychology*, 16, 516–524.
- Batson, C.D. (1991). *The altruism question: Toward a social-psychological answer*. Hillsdale, NJ: Erlbaum.
- Batson, C. D. (1997). Self-other merging and the empathy-altruism hypothesis: Reply to Neuberg et al. (1997). *Journal of Personality and Social Psychology*, 73, 517–522.

- Berkowitz, L., & Lutterman, K. G. (1968). The traditionally socially responsible personality. *Public Opinion Quarterly*, 32, 169–187.
- Bierhoff, H., Klein, R., & Kramp, P. (1991). Evidence for the altruistic personality from data on accident research. *Journal of Personality*, 59, 263–279.
- Bignell, S. & Parson, V. (2010). Best practices in virtual world learning: A guide to using problem based learning in second life.[Version 2.1]. Retrieved from:
<http://previewpsych.org/BPD2.0.pdf>.
- Blascovich, J., & Bailenson, J. N. (2011). *Infinite Reality - Avatars, Eternal Life, New Worlds, and the Dawn of the Virtual Revolution*. New York: William Morrow.
- Blinka, L. (2008). The Relationship of Players to Their Avatars in MMORPGs: Differences between Adolescents, Emerging Adults and Adults.
Cyberpsychology: Journal of Psychosocial Research on Cyberspace, 2,1,article 5.
- Botterbusch, H.R, & Talab, R.S. (2009). Copyright and you: ethical issues in second life.
TechTrends, 53(1), 9-13.
- Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research*, 1, 245-276.
- Cheetham, M., Pedroni, A., Antley, A., Slater, M., Jänke, L. (2009). Virtual milgram: Empathic concern or personal distress? Evidence from functional MRI and dispositional measures. *Frontiers in Human Neuroscience*. 3.
- Clark, R. D., & Word, L. E. (1974). Where is the apathetic bystander? situational characteristics of the emergency. *Journal of Personality and Social Psychology*, 29(3), 279-287.
- Clary, E. G., & Orenstein, L. (1991). The amount and effectiveness of help. *Personality and Social Psychology Bulletin*, 17, 58–64.

- Crozier, W.R., & Skiliopidou, E. (2002). Adult recollections of name-calling at school. *Educational Psychology, 22*, 113-124.
- Craig, W. & Pepler, D. (1997). Observations of bullying and victimization in the school years. *Canadian Journal of School Psychology, 2*, 41–60.
- Darley, J. M., & Latane, B. (1968). Bystander intervention in emergencies: Diffusion of responsibility. *Journal of Personality and Social Psychology, 8*(4), 377-383.
- Darley, J. M., Teger, A. I., & Lewis, L. D. (1973). Do groups always inhibit individuals' responses to potential emergencies? *Journal of Personality and Social Psychology, 26*(3), 395-399.
- Davis, M. H. (1980). A multidimensional approach to individual differences in empathy. *JSAS Catalog of Selected Documents in Psychology, 10*, 85.
- Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology, 44*, 113-126.
- Department for Education (1994) Don't Suffer in Silence. London: HMSO.
- Demo, D. H. (1985). The measurement of self-esteem: Refining our methods. *Journal of Personality and Social Psychology, 48*, 1490-1502
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment, 49*, 71-75.
- Eisenberg, N. (Ed.) (1982). *The development of prosocial behavior*. New York: Academic Press.
- Eisenberg, N. (2002). Emphy-related emotional responses, altruism, and their socialization in R.J. Davidson & A. Harrington (Eds.). *Visions of compassion: Western scientists and Tibetan Buddhists examine human nature* (p.131-164). London: Oxford University Press.

- Eslea, M., & Rees, J. (2001). At what age are children most likely to be bullied at school? *Aggressive Behavior*, 27, 419-429.
- Fagin Jones, S., & Midlarsky, E. (2007). Courageous rescue during the Holocaust: Personal and situational correlates. *Journal of Positive Psychology*, 2(2), 136-147.
- Farrington, D.P. (1993). Understanding and preventing bullying. *Crime and Justice*, 17, 381-458.
- Ferguson, M., & Barry, B. (2011). I know what you did: The effects of interpersonal deviance on bystanders. *Journal of Occupational Health Psychology*, 16(1), 80-94.
- Fischer, P., Krueger, J. I., Greitemeyer, T., Vogrincic, C., Kastenmüller, A., Frey, D. (2011). The bystander-effect: A meta-analytic review on bystander intervention in dangerous and non dangerous emergencies. *Psychological Bulletin*, 137(4), 517-537.
- Fleming, J. S., & Courtney, B. E. (1984). The dimensionality of self-esteem: II. Hierarchical facet model for revised measurement scales. *Journal of Personality and Social Psychology*, 46, 404-421.
- Frings, D., Abrams, D., Randsley, d. M., & Marques, J. (2010). The effects of cost, normative support, and issue importance on motivation to persuade in-group deviants. *Group Dynamics: Theory, Research, and Practice*, 14(1), 80-91.
- Funder, D. C. & Sneed, C. D. (1993). Behavioral manifestations of personality: An ecological approach to judgmental accuracy. *Journal of Personality and Social Psychology*, 64, 479-490.
- Gosling, S. D., Ko, S. J., Mannarelli, T., & Morris, M. E. (2002). A room with a cue: Judgments of personality based on offices and bedrooms. *Journal of Personality and Social Psychology*, 82, 379-398.

- Guagnano, G. (1995). Locus of control, altruism, and agentic disposition. *Population & Environment: Journal of Interdisciplinary Studies*, 17, 63–77.
- Gaertner, S. L., & Dovidio, J. F. (1977). The subtlety of white racism, arousal, and helping behavior. *Journal of Personality and Social Psychology*, 35(10), 691-707.
- Garcia, S. M., Weaver, K., Moskowitz, G. B., & Darley, J. M. (2002). Crowded minds: The implicit bystander effect. *Journal of Personality and Social Psychology*, 83(4), 843-853.
- Georgesesen, J.C., Harris, M.J., Milich, R., & Young, J. (1999). “Just teasing...”: Personality effects on perceptions and life narratives of childhood teasing. *Personality and Social Psychology Bulletin*, 25, 1254-1267.
- Glantz, K., Rizzo, A., & Graap, K. (2003). Virtual reality for psychotherapy: current reality and future possibilities. *Psychotherapy: Theory, Research, Practice, Training*, 40(1/2), 55-67.
- Gleason, K. A., Jensen-Campbell, L. A., & Ickes, W. (2009). The role of empathic accuracy in adolescents’ peer relations and adjustment. *Personality and Social Psychology Bulletin*, 35, 997-1011.
- Gore, P.M. & Rotter, J.B. (1963). A personality correlate of social action. *Journal of Personality*, 31, 58-64.
- Goldberg, L. R. (1999). A broad-bandwidth, public domain, personality inventory measuring the lower level facets of several five-factor models. In I. Mervielde, I. Deary, F. De Fruyt, & F. Ostendorf (Eds.), *Personality Psychology in Europe*, Vol. 7 (pp. 7-28). Tilburg, The Netherlands: Tilburg University Press.
- Goldberg, L. R., Johnson, J. A., Eber, H. W., Hogan, R., Ashton, M. C., Cloninger, C. R., & Gough, H. C. (2006). The International Personality Item Pool and the future of public-domain

- personality measures. *Journal of Research in Personality*, 40, 84-96.
- Gough, H. C. (2006). The International Personality Item Pool and the future of public-domain personality measures. *Journal of Research in Personality*, 40, 84-96.
- Hakansson, J. (2003). Exploring the phenomenon of empathy. (Doctoral dissertation).
Retrieved from
http://www.communicationcache.com/uploads/1/0/8/8/10887248/exploring_the_phenomenon_of_empathy.pdf.
- Hancock, J., Peña, J. & Merola, N. (2006). *Avatar color and social identity effects on attitudes and group dynamics in online video games*. Paper presented at the annual meeting of the International Communication Association, Dresden International Congress Centre, Dresden, Germany.
- Haynie, D. L., Nansel, T., Eitel, P., Crump, A. D., Saylor, L., Yu, K., & Simons-Morton, B. (2001). Bullies, victims and bully/victims: Distinct groups of at-risk youth. *Journal of Early Adolescence*, 21, 29-49.
- Hudson, J. M., & Bruckman, A. (2004a). The Bystander Effect: A Lens for Understanding Patterns of Participation. *Journal of the Learning Sciences*, 13(2), 169-199.
- Huston, T. L., & Korte, C. (1976). The responsive bystander: Why he helps. In T. Lickona (Ed.), *Moral development and behavior* (pp. 269–283). New York: Holt.
- International Personality Item Pool: A Scientific Collaboratory for the Development of Advanced Measures of Personality Traits and Other Individual Differences (<http://ipip.ori.org/>). Internet Web Site.
- Kane, R. J., & Kane, R. A. (2000). *Assessing older persons*. New York: Oxford University Press.
- Kennedy, R.S., Lane, N.E., Berbaum, K.S. & Lilientha, M.G. (1993). Simulator sickness

- questionnaire: an enhanced method for quantifying simulator sickness. *International Journal of Aviation Psychology*, 3(3): 203-220.
- Korn, S., Kullis, M., & Schafer, M. (2002). *Self and peer perceived stability of bullying roles in secondary school. A one-year follow-up*. Talk presented at the Biannual Meeting of German Psychological Society (DGPs). Berlin, Germany.
- Kraus, M. W., Côté, S., & Keltner, D. (2010). Social class, contextualism, and empathic accuracy *Psychological Science*, 21, 1716-1723.
- Kerbs, R. W. (2005). Social and ethical considerations in virtual worlds. *The electronic library*, 5(23), 539-547.
- Krebs, D. (1975). Empathy and altruism. *Journal of Personality and Social Psychology*, 32(6), 1134-1146.
- Krebs, D. L. (1970). Altruism: An examination of the concept and a review of the literature. *Psychological Bulletin*, 73(4), 258-302.
- Latané, B., & Nida S. (1980). Social impact theory and group influence: A social engineering perspective. In P. B. Paulus (Ed.), *Psychology of group influence*, (pp. 3-34). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Latané, B. & Nida S. (1981). Ten years of research on group size and helping. *Psychological Bulletin*, 89, 308-324.
- Levine, M., & Crowther, S. (2008). The responsive bystander: How social group membership and group size can encourage as well as inhibit bystander intervention. *Journal of Personality and Social Psychology*, 95(6), 1429-1439.
- Levy, P., Lundgren, D., Ansel, M., Fell, D., Fink, B., & McGrath, J. E. (1972). Bystander effect in a demand-without-threat situation: Erratum. *Journal of Personality and Social*

- Psychology*, 28(2), 292.
- Lorr, M. & Wunderlich, R.A. (1986). Two objective measures of self-esteem. *Journal of Personality Assessment*, 50, 1, 18-23.
- Lyubomirsky, S., & Ross, L. (1997). Hedonic consequences of social comparison: A contrast of happy and unhappy people. *Journal of Personality and Social Psychology*, 73, 1141-1157.
- Lyubomirsky, S., & Tucker, K. L. (1998). Implications of individual differences in subjective happiness for perceiving, interpreting, and thinking about life events. *Motivation and Emotion*, 22, 155-186.
- Lyubomirsky, S., & Lepper, H. S. (1999). A measure of subjective happiness: Preliminary reliability and construct validation. *Social Indicators Research*, 46, 137-155.
- Lyubomirsky, S., & Ross, L. (1999). Changes in attractiveness of elected, rejected, and precluded alternatives: A comparison of happy and unhappy individuals. *Journal of Personality and Social Psychology*, 76, 988-1007.
- Lyubomirsky, S. (2001). Why are some people happier than others?: The role of cognitive and motivational processes in well-being. *American Psychologist*, 56, 239-249.
- McLaughlin, C., Arnold, R., Boyd, E. (2005). Bystanders in schools: What do they do and what do they think? Factors influencing the behaviour of English students as bystanders. *Pastoral Care in Education*, 23(2), 17-22.
- Meier, B. P., Robinson, M. D., & Clore, G. L. (2004). Why good guys wear white: Automatic inferences about stimulus valence based on color. *Psychl Science*, 15, 82-87.
- Miller, J. & Vaillancourt, T. (2007). The relation between childhood peer victimization and adult perfectionism: Are victims of indirect aggression more perfectionistic? *Aggressive*

- Behavior*, 33, 1-12.
- Midlarsky, E. (1968a). Some antecedents of aiding under stress. *Proceedings of the 76th Annual Convention of the American Psychological Association*, San Francisco, CA (pp. 19-41).
- Midlarsky, E., & Kahana, E. (1994). *Altruism in later life*. Thousand Oaks, CA: Sage.
- Midlarsky, E., & Midlarsky, M. (1973). Some determinants of aiding under experimentally-induced stress. *Journal of Personality*, 41, 305-327.
- Midlarsky, E., & Midlarsky, M. (2004). Echoes of genocide: Trauma and ethnic identity among European immigrants. *Humboldt Journal of Social Relations*, 28(2), 39-54.
- Midlarsky, E., Fagin Jones, S., & Corley, R. P. (2005). Personality correlates of heroic rescue during the holocaust. *Journal of Personality*, 73(4), 907-934.
- Midlarsky, E., Fagin Jones, S., & Nemeroff, R. K. (2006). Heroic rescue during the holocaust: Empirical and methodological perspectives. In R. R. Bootzin, & P. E. McKnight (Eds.), *Strengthening research methodology: Psychological measurement and evaluation*. (pp. 29-45) Washington, DC, US: American Psychological Association.
- Midlarsky, E., Kahana, E., Corley, R., Nemeroff, R., & Schonbar, R. (1999). Altruistic moral judgment among older adults. *International Journal of Aging and Human Development*, 49, 39-53.
- Nassiri, N., Powell, N. & Moore, D. (2010). Human interactions and collaborative space in virtual environments. *Virtual Reality*. 14: 229-240.
- Nickell, G. (1998). The helping attitude scale. Nickell, G. S. (1998). Retrieved 13 October 2011, from <http://www.mnstate.edunickellAPA20199820paper.pdf>.
- Nordgren, L. F., Banas, K., MacDonald, G. (2011). Empathy gaps for social pain: Why people

- underestimate the pain of social suffering. *Journal of Personality and Social Psychology*, 100(1), 120-128.
- O'Connell, P., Pepler, D. & Craig, W. (1999) Peer Involvement in Bullying: Insights and Challenges for Intervention. *Journal of Adolescence*, 22, 437-52.
- O'Moore, M., Seigne, E., McGuire, L., & Smith, M. (1998). Victims of workplace bullying in Ireland. *The Irish Journal of Psychology*, 19, 345-357.
- Oliner, S. P., & Oliner, P. M. (1988). *The altruistic personality: Rescuers of Jews in Nazi Europe*. New York: Free Press.
- Ostendorf (Eds.), *Personality Psychology in Europe*, Vol. 7 (pp. 7-28). Tilburg, The Netherlands: Tilburg University Press.
- Pavot, W. G., Diener, E., Colvin, C. R., & Sandvik, E. (1991). Further validation of the Satisfaction with Life Scale: Evidence for the cross-method convergence of well-being measures. *Journal of Personality Assessment*, 57, 149-161.
- Pavot, W., & Diener, E. (1993). Review of the Satisfaction with Life Scale. *Psychological Assessment*, 5, 164-172.
- Pavot, W., & Diener, E. (2008). The Satisfaction With Life Scale and the emerging construct of life satisfaction. *Journal of Positive Psychology*, 3, 137-152
- Penner, L.A., & Finkelstein, M. A. (1998). Dispositional and structural determinants of volunteerism. *Journal of Personality and Social Psychology*, 74, 525-537.
- Piliavin, I. M., Piliavin, J. A., & Rodin, J. (1975). Costs, diffusion, and the stigmatized victim. *Journal of Personality and Social Psychology*, 32(3), 429-438.
- Piliavin, J. A., & Piliavin, I. M. (1972). Effect of blood on reactions to a victim. *Journal of Personality and Social Psychology*, 23(3), 353-361.

- Rigby, K. & Johnson, B. (2005). Introduction to the international bystander project. *Pastoral Care in Education*, 2, 6-9.
- Rizzo, A., Schultheis, M. & Rothbaum, B. (2003). Ethical issues for the use of virtual reality in the psychological sciences. In Bush, S.S. & Drexler, M.L. (Eds.), *Ethical Issues in Clinical Neuropsychology* (pp. 243-280). The Netherlands, Swets & Zeitlinger B.V. Lisse Publications.
- Romer, D., Gruder, C. L., & Lizzadro, T. (1986). A person-situation approach to altruistic behavior. *Journal of Personality and Social Psychology*, 51, 1001–1012.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Ross, A. S. (1971). Effect of increased responsibility on bystander intervention: The presence of children. *Journal of Personality and Social Psychology*, 19(3), 306-310.
- Ross, A. S., & Braband, J. (1973). Effect of increased responsibility on bystander intervention: II. the cue value of a blind person. *Journal of Personality and Social Psychology*, 25(2), 254-258.
- Roth, D.A., Coles, M.E., & Heimberg, R.G. (2002). The relationship between memories for childhood teasing and anxiety and depression in adulthood. *Journal of Anxiety Disorders*, 16, 149-164.
- Rovira, A., Swapp, D., Spanlang, B., Slater, M. (2009). The use of virtual reality in the study of people's responses to violent incidents. *Frontier Behavioral Neuroscience* 3(12).
- Salmivalli, C. (1996) Bullying as a Group Process: Participant Roles and Their Relations to Social Status within the group. *Aggressive Behaviour*, 22, 1–15.
- Salmivalli, C. (1999) Participant Role Approach to School Bullying: Implications for

- Interventions. *Journal of Adolescence*, 22, pp 453–9.
- Salmivalli, C., Ojanen, T., Haanpää, J., & Peets, K. (2005). "I'm OK but you're not" and other peer-relational schemas: Explaining individual differences in children's social goals. *Developmental Psychology*, 41(2), 363-375.
- Savin-Williams, R. C. , & Jaquish, G. A. (1981). The assessment of adolescent self-esteem: A comparison of methods. *Journal of Personality*, 49, 324-336.
- Schäfer, M., Korn, S., Brodbeck, F., Wolke, D., & Schulz, H. (2005). Bullying roles in changing contexts: The stability of victim and bully roles from primary to secondary school. *International Journal of Behavioral Development*. 29(4). 323-335
- Schwartz, S. H., & Clausen, G. T. (1970). Responsibility, norms, and helping in an emergency. *Journal of Personality and Social Psychology*, 16(2), 299-310.
- Schwartz, S. H., & Gottlieb, A. (1976). Bystander reactions to a violent theft: Crime in Jerusalem. *Journal of Personality and Social Psychology*, 34(6), 1188-1199.
- Schwartz, S. H., & Gottlieb, A. (1980). Bystander anonymity and reactions to emergencies. *Journal of Personality and Social Psychology*, 39(3), 418-430.
- Second Life (2005). Second Life: Basic Overview. Retrieved 3rd October, 2005 from:
<http://secondlife.com/whatis/>
- Shotland, R. L., & Heinold, W. D. (1985). Bystander response to arterial bleeding: Helping skills, the decision-making process, and differentiating the helping response. *Journal of Personality and Social Psychology*, 49(2), 347-356.
- Slater, M., Antley, A., Davison, A., Swapp, D., Guger, C., Barker, C., Pistrang, N., and Sanchez Vives, M. V. (2006). A virtual reprise of the Stanley Milgram obedience experiments. *PLoS ONE* 1, e39. doi: 10.1371/journal.pone.0000039.

- Slater, M. (2009) Place illusion and plausibility can lead to realistic behaviour in immersive virtual environments. *Philos Trans R Soc Lond B Biol Sci*, 364(1535), 3549-3557.
- Slater, M., Lotto, B., Arnold, M., Sanchez-Vives, V. (2009). How we experience immersive virtual environments: the concept of presence and its measurement. *Anuario de Psicología*, 40(2), 193-210
- Staub, E. (1968). The effects of success and failure on children's sharing behavior. *Paper presented at the 39th annual meeting of the Eastern Psychological Association*. Washington, D. C.
- Stevens, J. (1996). *Applied statistics for the social sciences* (3rd edition). Mahway, NJ: Erlbaum.
- Stotland, E., Mathews, K. E., Sherman, S. E., Hansson, R. O., & Richardson, B. Z. (1978). *Empathy, fantasy and helping*. Beverly Hills, CA. Sage.
- Suedfeld, P. (2000). Reverberations of the holocaust fifty years later: Psychology's contributions to understanding persecution and genocide. *Canadian Psychology/Psychologie Canadienne*, 41(1), 1-9.
- Turkle, S. (1995). *Life on the screen: Identity in the age of the Internet*. New York: touchstone.
- Venkataramani, V., & Dalal, R. S. (2007). Who helps and harms whom? Relational antecedents of interpersonal helping and harming in organizations. *Journal of Applied Psychology*, 92, 952-966.
- Voelpel, S., Eckhoff, R., & Förster, J. (2008). David against Goliath? Group size and bystander effects in virtual knowledge sharing. *Human Relations*, 61(2), 273-297.
- Wang, C-C., & Wang, C-H. (2008). Helping others in online games: Prosocial behavior in

- cyberspace. *CyberPsychology & Behavior*, 11, 344-346.
- Wilson, J. P., & Petruska, R. (1984). Motivation, model attributes, and prosocial behavior. *Journal of Personality and Social Psychology*, 46, 458-468.
- Yee, N. (2006). The Demographics, Motivations and Derived Experiences of Users of Massively-Multiuser Online Graphical Environments. *PRESENCE: Teleoperators and Virtual Environments*, 15, 309-329.
- Yee, N., & Bailenson, J. (2007). The proteus effect: The effect of transformed self-representation on behavior. *Human Communication Research*, 33, 271-290.
- Yee, N.Y., Bailenson, J.N., Urbanek, M., Chang, F., & Merget, D. (2007). The unbearable likeness of being digital: The persistence of nonverbal social norms in online virtual environments. *CyberPsychology & Behavior*, 10, 115-121.
- Yee, N., Harris, H., Jabon, M., Bailenson, J.N. (2011). The Expression of Personality in Virtual Worlds. *Social Psychology and Personality Science*, 2 (1), 5-12.
- Yechiam, Eldad, and Barron, G. (2003). Learning to ignore online help requests. *Computational and Mathematical Organization Theory*. 9(4). 327-339.

Appendix A

Study Constructs and Corresponding Scales

Experimental Phase	Scale	Construct
Pre-Test Measures	International Personality Item Pool (IPIP) (Goldberg, 1999)	Locus of Control Autonomy Risk taking Social Responsibility Authoritarianism Altruism Morality Empathy
	Interpersonal Reactivity Index (IRI) (Davis, 1980, 1983)	Empathic Concern Fantasy Empathy Perspective Taking Personal Distress
	Subjective Happiness (Lyubomirsky & Lepper, 1999)	Happiness
	Rosenberg Self-Esteem (Rosenberg, 1965)	Self-Esteem Scale
	Satisfaction with Life (Diener & Emmons, 1985)	Satisfaction with Life
	Helping Attitude Scale (Nickell, 1998)	Helping Attitudes
Intervention	Coded from observation of the virtual scenario	Intervention Response
Post-Test Measures	Open-ended questions	Peer Victimization/ Experience in Virtual World/ Bystander Variables
	Simulator Sickness Questionnaire	Simulator Sickness

Appendix B

International Personality Item Pool (Goldberg, 1999)

(+) keyed responses: 5 = Very Inaccurate to 1 = Accurate

(-) keyed responses: 5 = Accurate to 1 = Very Inaccurate

Locus of Control:

- | | | |
|-----|------------------|---|
| (+) | keyed responses | <p>Feel comfortable with myself.
 Believe that my success depends on ability rather than luck.
 Just know that I will be a success.
 Come up with good solutions.
 Love life.
 Act comfortably with others.
 Feel up to any task.
 Like to take responsibility for making decisions.
 Take the initiative.
 Make a decision and move on.</p> |
| (-) | keyed responses: | <p>Believe that unfortunate events occur because of bad luck.
 Believe that the world is controlled by a few powerful people.
 Feel that my life lacks direction.
 See difficulties everywhere.
 Habitually blow my chances.
 Believe some people are born lucky.
 Dislike taking responsibility for making decisions.
 Am less capable than most people.
 Dislike myself.
 Feel that I'm unable to deal with things.</p> |

Autonomy:

- | | | |
|-----|------------------|--|
| (+) | keyed responses: | <p>Am often down in the dumps.
 Am afraid of many things.
 Need reassurance.</p> |
| (-) | keyed responses: | <p>Can manage many things at the same time.
 Think quickly.
 Enjoy being reckless.</p> |

Risk Taking:

(+) keyed responses

- Enjoy being reckless.
- Take risks.
- Seek danger.
- Know how to get around the rules.
- Am willing to try anything once.
- Seek adventure.

(-) keyed responses:

- Would never go hang-gliding or bungee-jumping.
- Would never make a high risk investment.
- Stick to the rules.
- Avoid dangerous situations.

Social Responsibility:

(+) keyed responses

- Would never cheat on my taxes.
- Return extra change when a cashier makes a mistake.
- Would never take things that aren't mine.
- Stay in touch with old acquaintances.
- Think of others first.

(-) keyed responses:

- Cheat to get ahead.
- Don't think laws apply to me.
- Believe that I am better than others.
- Disregard rules.
- Hurt people.

Tolerance/Authoritarianism:

(+) keyed responses:

- Believe in one true religion.
- Tend to vote for conservative political candidates.
- Am devoted to religion.
- Guide my life using religious scriptures.
- Like to stand during the national anthem.
- Believe in sexual modesty.
- Believe that we should be tough on crime.

(-) keyed responses:

- Tend to vote for liberal political candidates.
- Don't consider myself religious.
- Doubt the value of religion.

Morality

(+) keyed responses Would never cheat on my taxes..
Stick to the rules.

(-) keyed responses: Use flattery to get ahead.
Use others for my own ends.
Know how to get around the rules.
Cheat to get ahead.
Put people under pressure.
Pretend to be concerned for others.
Take advantage of others.
Obstruct others' plans

Altruism:

(+) keyed responses Make people feel welcome.
Anticipate the needs of others.
Love to help others.
Am concerned about others.
Have a good word for everyone.

(-) keyed responses: Look down on others.
Am indifferent to the feelings of others.
Make people feel uncomfortable.
Turn my back on others.
Take no time for others.

Empathy:

(+) keyed responses Anticipate the needs of others.
Sense others' wishes.
Love to reflect on things.
Try to stay in touch with myself.
Work on improving myself.

(-) keyed responses: Pretend to be concerned for others.
Don't have a soft side.
Treat people as inferiors.
Am not in touch with my feelings.

Appendix C

Interpersonal Reactivity Index (Davis, 1980, 1983)

A	B	C	D	E
Does not describe me very well				Describes me very well
<ol style="list-style-type: none"> 1. I daydream and fantasize, with some regularity, about things that might happen to me. (FS) 2. I often have tender, concerned feelings for people less fortunate than me. (EC) 3. I sometimes find it difficult to see things from the "other guy's" point of view. (PT) (-) 4. Sometimes I don't feel very sorry for other people when they are having problems. (EC) (-) 5. I really get involved with the feelings of the characters in a novel. (FS) 6. In emergency situations, I feel apprehensive and ill-at-ease. (PD) 7. I am usually objective when I watch a movie or play, and I don't often get completely caught up in it. (FS) (-) 8. I try to look at everybody's side of a disagreement before I make a decision. (PT) 9. When I see someone being taken advantage of, I feel kind of protective towards them. (EC) 10. I sometimes feel helpless when I am in the middle of a very emotional situation. (PD) 11. I sometimes try to understand my friends better by imagining how things look from their perspective. (PT) 12. Becoming extremely involved in a good book or movie is somewhat rare for me. (FS) (-) 13. When I see someone get hurt, I tend to remain calm. (PD) (-) 14. Other people's misfortunes do not usually disturb me a great deal. (EC) (-) 15. If I'm sure I'm right about something, I don't waste much time listening to other people's arguments. (PT) (-) 16. After seeing a play or movie, I have felt as though I were one of the characters. (FS) 17. Being in a tense emotional situation scares me. (PD) 				

18. When I see someone being treated unfairly, I sometimes don't feel very much pity for them. (EC) (-)
 19. I am usually pretty effective in dealing with emergencies. (PD) (-)
 20. I am often quite touched by things that I see happen. (EC)
 21. I believe that there are two sides to every question and try to look at them both. (PT)
 22. I would describe myself as a pretty soft-hearted person. (EC)
 23. When I watch a good movie, I can very easily put myself in the place of a leading character. (FS)
 24. I tend to lose control during emergencies. (PD)
 25. When I'm upset at someone, I usually try to "put myself in his shoes" for a while. (PT)
 26. When I am reading an interesting story or novel, I imagine how I would feel if the events in the story were happening to me. (FS)
 27. When I see someone who badly needs help in an emergency, I go to pieces. (PD)
 28. Before criticizing someone, I try to imagine how I would feel if I were in their place. (PT)
-

Appendix D

Subjective Happiness Scale (Lyubomirsky & Lepper, 1999)

1. In general, I consider myself:

1	2	3	4	5	6	7
not a very person						a very happy happy person

2. Compared to most of my peers, I consider myself:

1	2	3	4	5	6	7
not a very person						a very happy happy person

3. Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you?

1	2	3	4	5	6	7
not a very person						a very happy happy person

4. Some people are generally not very happy. Although they are not depressed, they never seem as happy as they might be. To what extent does this characterization describe you?

1	2	3	4	5	6	7
not a very person						a very happy happy person

Appendix E

Rosenberg Self-Esteem Scale (Rosenberg, 1965)

	SA = Strongly Agree	A = Agree	D = Disagree	SD = Strongly Disagree
1. On the whole, I am satisfied with myself.	SA	A	D	SD
2. At times, I think I am no good at all. *	SA	A	D	SD
3. I feel that I have a number of good qualities.	SA	A	D	SD
4. I am able to do things as well as most other people.*	SA	A	D	SD
5. I feel I do not have much to be proud of.	SA	A	D	SD
6. I certainly feel useless at times.*	SA	A	D	SD
7. I feel that I'm a person of worth, at least on an equal plane with others.	SA	A	D	SD
8. I wish I could have more respect for myself.*	SA	A	D	SD
9. All in all, I am inclined to feel that I am a failure.*	SA	A	D	SD
10. I take a positive attitude toward myself.	SA	A	D	SD

* Reverse coded items.

Appendix F

Satisfaction with Life Scale (Diener & Emmons, 1985)

	Strongly Agree	Agree	Slightly Agree	Neither Agree or Disagree	Slightly Disagree	Disagree	Strongly Disagree
1. In most ways my life is close to my ideal.	7	6	5	4	3	2	1
2. The conditions of my life are excellent.	7	6	5	4	3	2	1
3. I am satisfied with my life.	7	6	5	4	3	2	1
4. So far I have gotten the important things I want in life.	7	6	5	4	3	2	1
5. If I could live my life over, I would change almost nothing.	7	6	5	4	3	2	1

Appendix G

Helping Scale (Nickell, 1998)

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1. Helping others is usually a waste of time.	5	4	3	2	1
2. When given the opportunity, I enjoy aiding others who are in need.	5	4	3	2	1
3. If possible, I would return lost money to the rightful owner.	5	4	3	2	1
4. Helping friends and family is one of the great joys in life.	5	4	3	2	1
5. I would avoid aiding someone in a medical emergency if I could	5	4	3	2	1
6. It feels wonderful to assist others in need.	5	4	3	2	1
7. Volunteering to help someone is very rewarding.	5	4	3	2	1
8. I dislike giving directions to strangers who are lost.	5	4	3	2	1
9. Doing volunteer work makes me feel happy.	5	4	3	2	1
10. I donate time or money to charities every month.	5	4	3	2	1
11. Unless they are part of my family, helping the elderly isn't my responsibility.	5	4	3	2	1
12. Children should be taught about the importance of helping others.	5	4	3	2	1

13. I plan to donate my organs when I die with the hope that they will help someone else live.	5	4	3	2	1
14. I try to offer my help with any activities my community or school groups are carrying out.	5	4	3	2	1
15. I feel at peace with myself when I have helped others.	5	4	3	2	1
16. If the person in front of me in the check-out line at a store was a few cents short, I would pay the difference.	5	4	3	2	1
17. I feel proud when I know that my generosity has benefited a needy person.	5	4	3	2	1
18. Helping people does more harm than good because they come to rely on others and not themselves.	5	4	3	2	1
19. I rarely contribute money to a worthy cause.	5	4	3	2	1
20. Giving aid to the poor is the right thing to do.	5	4	3	2	1

Appendix H

Peer Victimization History

1. Have you ever witnessed bullying behavior?	Yes	No					
2. What did the bullying behavior entail?	N/A	Acts of Prejudice	Name calling	Social avoidance	Social exclusion	Cyber-bullying	Physical violence
3. What did you do?	N/A	Intervene	Nothing				
4. Have you ever been the victim of bullying behavior?	Yes	No					
5. When did it occur?	N/A	Age 0-5	Age 5-10	Age 11-13	Age 14-17	Age 18+	
6. How often did it occur?	One time	A few times	Everyday				
7. What did the bullying behavior entail?	N/A	Acts of Prejudice	Name calling	Social avoidance	Social exclusion	Cyber-bullying	Physical violence
8. Did anyone help you?	Yes	No					

Appendix I

Bystander Variables

1. How important to you is speaking up against discrimination based on race?	Very Important	Important	Neutral	Somewhat important	Not important at all
2. How important to you is speaking up against discrimination based on gender?	Very Important	Important	Neutral	Somewhat important	Not important at all
3. How important to you is speaking up against discrimination based on sexual orientation?	Very Important	Important	Neutral	Somewhat important	Not important at all
4. How important to you is speaking up against discrimination based on disability?	Very Important	Important	Neutral	Somewhat important	Not important at all
5. Do you identify with any minority statuses?	Yes	No			
6. How would you describe the scenario in the experiment	Emergency threat to victim	Non-Emergency threat to victim			
7. Did you perceive any physical or social cost to intervening?	Yes	No			

Appendix J

Virtual Medium Variables

1. How realistic did you find the virtual Teachers College world in Second Life?	7 = Very realistic	6	5	4	3	2	1 = Not at all realistic
2. How realistic did you find the scenarios that occurred in this virtual world?	7 = Very realistic	6	5	4	3	2	1
3. How immersed would you rate yourself in this virtual world?	7 = very immersed	6	5	4	3	2	1
4. Do you feel that the selected avatar was more, less, or equal in attractiveness relative to yourself?	More	Less					
5. Do you typically wear light or dark clothing?	Lighter	Darker					
6. Are you older, younger or the same age as your avatar? By how much?	Older	Younger					
7. Are you more, less or equally physically fit in comparison to your avatar?	More	Less					

Appendix K

Simulator Sickness Questionnaire

Simulator Sickness Questionnaire:

SSQ Symptom	Score				Weight		
	(0) None	(1) Slight	(2) Moderate	(3) Severe	Nausea	Oculomotor	Disorientation
General discomfort					1	1	0
Fatigue					0	1	0
Headache					0	1	0
Eyestrain					0	1	0
Difficulty focusing					0	1	1
Increased salivation					1	0	0
Sweating					1	0	0
Nausea					1	0	1
Difficulty concentrating					1	1	0
Fullness of head					0	0	1
Blurred vision					0	1	1
Dizzy (eyes open)					0	0	1
Dizzy (eyes closed)					0	0	1
Vertigo					0	0	1
Stomach awareness					1	0	0
Burping					1	0	0

Appendix L

INFORMED CONSENT

DESCRIPTION OF RESEARCH: You are invited to participate in an experiment that will examine the use of a virtual reality medium (Second Life) in psychological experiments. You will be asked to take a tour of the Teachers College world in Second Life. If you decide to participate in this study, you will be asked to engage in Second Life scenario, complete questionnaires related to demographic and personality variables, and participate in a debriefing session.

RISKS AND BENEFITS: There are no major risks associated with this study. If you feel physically ill at any point throughout this study, you may end your participation and receive a referral to the nearest medical or health center. If you experience any emotional reactions that will prevent you from continuing to participate in this study, you may end your participation at any point and receive a referral to an appropriate psychological counseling center(s).

While the research offers no direct benefits to you, knowledge gained from this study will help us understand the interplay of technology and psychology. At the end of study, you will have the opportunity to participate in a raffle for a \$50 Visa card.

DATA STORAGE TO PROTECT CONFIDENTIALITY: Your identity and participation in this study will be kept confidential. Information collected will be kept in a secure computer file and access will be limited to research staff. No other person shall be permitted to access to information obtained from you without your written consent. Should any information gathered from you be used for scientific publications presentation, your name will not be mentioned.

TIME INVOLVEMENT: Your participation will take approximately 90 minutes in a single session.

HOW WILL RESULTS BE USED: The results of the study will be presented at academic and research institutions and professional conferences. In addition, it will be published in journals and book chapters, and used for educational purposes.

Appendix M

PARTICIPANT'S RIGHTS

Principal Investigator: Debaki Chakrabarti, M.S.

Research Title: The Application of Virtual Reality Mediums to Psychological Experiments.

- I have read and discussed the Research Description with the researcher. I have had the opportunity to ask questions about the purposes and procedures regarding this study.
- My participation in research is voluntary. I may refuse to participate or withdraw from participation at any time without jeopardy of any kind.
- The researcher may withdraw me from the research at his/her professional discretion.
- If, during the course of the study, significant new information that has been developed becomes available which may relate to my willingness to continue to participate, the investigator will provide this information to me.
- Any information derived from the research project that personally identifies me will not be voluntarily released or disclosed without my separate consent.
- If at any time I have any questions regarding the research or my participation, I can contact the investigator at dc2438@columbia.edu, and she will answer my questions.
- If at any time I have comments, or concerns regarding the conduct of the research or questions about my rights as a research subject, I should contact the Teachers College, Columbia University Institutional Review Board /IRB. The phone number for the IRB is (212) 678-4105. Or, I can write to the IRB at Teachers College, Columbia University, 525 W. 120th Street, New York, NY, 10027, Box 151.
- My signature means that I agree to participate in this study.

Participant's signature: _____ Date: ____/____/____

Name: _____

Appendix N

PROCEDURE

1. Participants were recruited via online advertisements on Craigslist, fliers posted around campuses, and college website. Advertising requested that each interested participant contact the primary research investigator and schedule a 45-90 minute block of time to participate in the experiment.
2. When the participant arrived to the experimental space, he or she was given an informed consent form with a cover story (tour Teachers College in Second Life to examine the viability of virtual mediums in psychological experiments). The participant was also assigned a number that was linked to their research data and randomly assigned to one of seven conditions.
3. The participant was then asked to enter a private alcove of the experimental space. This space enabled the participant to complete the remainder of the experimental session behind a closed door (for privacy and confidentiality). The research team remained in the main office area and was logged onto the virtual world of Second Life on their computers. Second Life is an online social space that allows multiples avatars to be present in the same online space.
4. The participant completed various pre-test measures regarding demographic variables and personality attributes. The measures were completed online using excel forms in google/drive. After the participant completed their forms, he/she clicked the “submit” button and their answers were automatically uploaded to an excel spreadsheet on google/drive.
5. The participant was teleported to the virtual TC world (<http://www.tc.columbia.edu/computing/techinit.asp?Id=Technology+Initiatives+%40+TC&Info=Second+Life>) and the Second Life program was displayed on the screen. The participant was given directions on how to pick an avatar from a series of pre-set choices within the program,

and how to customize their avatar (i.e. modify pigmentation, skin tone, make-up, eye color, hair style, clothing, shoes). The participant was given 10 minutes to pick/customize an avatar with the direction to “create an avatar that best represents you.” The participant was initially given verbal instructions on how to pick/customize their avatar and then given written instructions to refer to for after the research assistant left the participant alone.

6. The participant was given verbal and written directions on how to move, how to adjust camera angles, and how to speak in the virtual world. The participant was also given a map of the virtual TC world.
7. The participant was given instructions to explore the virtual TC world. In conditions 2-6, the participant was approached by a security guard avatar who instructed the participant to “sign-in” at the security desk of the virtual Zankel building (parallel to an actual building within Teachers College where individuals without a TC ID are asked to sign-in for security purposes).
8. As the participant approached the virtual security desk, an animated altercation with predetermined scripts and movements occurred between two avatars. After the initial altercation, confederates who were part of the research team reacted to the participant in in-vivo. The participant’s original response (i.e. movements and language) toward the two actors was recorded via Camtasia software.
9. The participant completed post-test measures regarding peer victimization experiences, bystander behavior, and the utility of Second Life as a mechanism for creating realistic experiences for use in psychological experiments. These measures were located online on a excel forms in google/drive. Similar to the pre-test measures, after completion of the measures, the participant clicked on the “submit” button and their answers were automatically uploaded to an online excel spreadsheet.

10. The participant participated in a debriefing that discussed the purpose of the experiment, answered any questions regarding the experiment, and elicited feedback about the experiment.
11. At the end of the debriefing, participants were thanked for their time and given the opportunity to decide if they would like to be included in a raffle for a \$50 VISA gift card.
12. If the participant indicated that they were either physically or mentally affected by the experiment (i.e. motion sickness, trauma reaction to the scenario), the participant was referred to various appropriate resources (i.e. health center, counseling center).