

CYBERBULLYING IN 'LEFT 4 DEAD 2': A STUDY IN COLLABORATIVE PLAY

by

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ABSTRACT
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Under the Supervision of Edward A. Mabry, Ph.D.

This study sought to further our understanding of the role of cyberbullying in the cooperative team-based game *Left 4 Dead 2* (L4D2). A sample of 41 4-person groups generated a total $n = 415$ messages used for evaluating the behavioral content of game play. Four hypotheses were advanced assessing cyberbullying behavior and game outcome (success vs. failure), group cohesion, target participation, and perceptions of bullies. Out of the 41 groups 25 groups had cyberbullying behavior present and 16 groups had prosocial behavior. Overall, cyberbullying behavior had little effect on game outcome, group cohesion and target participation. Groups using only prosocial messages were more successful than groups with cyberbullying messages and had a significantly better survival score when prosocial messages occurred late in the game. Additionally, cyberbullying behavior and prosocial behavior increased a sense of belonging compared to groups where cyberbullying occurred earlier in the game. Furthermore, the amount of cyberbullying in groups generated no effect on target participation. Finally, players considered leaders influence the game more than non-leaders and players identified as both leader and cyberbully generate no effect on game influence compared to players not identified as both

cyberbully and leader. Results are discussed in terms of study limitations and possible conceptual and operational applications.

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Cyberbullying in “Left 4 Dead 2”: A Study in Collaborative Play

Chapter 1: Introduction and Review of Literature

Bullying is aggressive, repeated, and intentional behavior toward an individual due to a power imbalance is unable defend themselves (Olweus, 1993, 2001, 2010; Slonje & Smith, 2008). Bullying constitutes an “interpersonal activity that arises within the context of dyadic and group interaction” (Menesini, Melan, & Pignatti, 2000, p. 262). Bullying taking place in technologically mediated social contexts like online discussion groups and chat rooms is typically referred to as *cyberbullying*. Recent studies (Dooley, Pyszalski, & Cross, 2009; Privitera, & Campbell, 2009; Slonje & Smith, 2008; Spears, Slee, Owens, & Johnson, 2009) indicate however that cyberbullying has distinct (and potentially more damaging) characteristics from face-to-face bullying. The evidence of the potentially damaging characteristics has recently become particularly salient with media accounts of cyberbullying leading to the suicides of young men and women (see Pilkington, 2010 for the stories of Phoebe Prince, Tyler Clementi, and others), reinforcing the importance of understanding the potential impacts and manifestations of cyberbullying in varying contexts.

Bullying and cyberbullying research occurs most frequently among student populations, and focuses on interactions within the school environment (see Olweus), while bullying research among an adult population focuses almost exclusively on the organizational context (see Privitera, & Campbell, 2008; Hodson, Roscigno, & Lopez, 2006). What is most interesting regarding the contexts in which bullying and cyberbullying is studied is the obligation by participants to spend time at work and school. The average full-time employee spends 37.5 hours per week working, while the

average student spends 30 hours with schoolwork (Bureau of Labor Statistics, 2009).

Very little research focuses on bullying behavior taking place within the context of adult leisure activities such as video games, which accounts for 21 hours per week of our time on average (Kulovitz & Mabry, 2012; Yee, 2010).

Rationale

Study of cyberbullying communication creates an understanding to identify the destructive outcomes the function of cyberbullying across contexts. Several studies find that both bully and victim are affected not only by the act of bullying, but also by the dominant/submissive power disparity (Duncan, 1999; Menesini, Melan, & Pignatti, 2000). Using students age 8-11 who peer nominated bullies and victims, Menesini, et al., (2000) engaged bully-victim pairs in both competitive and collaborative games. While the competitive game resembled Parcheesi, the cooperative game involved operating a series of pulleys and levers simultaneously by the bully-victim pair to achieve a goal. A dominant-submissive relationship emerged during the cooperative game when interdependence was necessary.

Power imbalance leads to low self-esteem, depression, anxiety, and insecurity in victims (Duncan, 1999; Namie, 2003; Rigby & Slee, 1992). Bullies report poor relationships with family, and describe low emotional supportive behavior, lack of empathy, high dominance needs, and a positive view of aggression (Bowes, Maughan, Caspi, Moffitt, & Arseneault, 2010; Duncan, 1999). Additionally, victims report fewer friends, more suicidal thoughts, and feeling isolated and unsafe (Duncan, 1999).

The social and physical ramifications of experiencing bullying behavior cannot be disregarded as something from which the bully and victim will “get over” or “move on”.

Thus, research can identify prevention or curative behaviors. Additionally, the majority of research on bullying and cyberbullying has been conducted in Europe and Asia with a focus on the school context (Twyman, Saylor, Taylor & Comeaux, 2010) paying little attention to social contexts beyond the classroom. Because cyberbullying utilizes communication technology, the potential exists for cyberbullying to take place in a variety of contexts; therefore researchers need to do more to understand the scope of cyberbullying, particularly in voluntary activities such as video games.

Video games occupy a meaningful amount of our free time and income. Globally, people play video games three billion hours per week (Sydell, 2011, April), spend over \$3.8 billion dollars annually (Massively, 2010), and with every new release, video games push the boundaries of technological innovation. Interpersonal communication permeates video game content, penetrating conversations within games as well as associated conversations about video games. From external forums to in-game forays, video games are no longer a solitary act (Schott & Hodgetts, 2006) with communities forming around the genre. Given the large amount of time spent within and talking about gaming environments, exploring cyberbullying behavior in the video game context lends a unique perspective to existing literature and aid in the understanding of the outcomes.

Online video games provide an attractive opportunity to study group behaviors, particularly cyberbullying, since video games provide the interactive competitive/collaborative environment necessary for cyberbullying. Cyberbullying represents difficult experience to examine since it is often not easy to observe and difficult to access diverse populations for study (Kulovitz & Mabry, 2012); however, using online games may help resolve these issues. Online video games contain social

interaction, competitive and collaborative environments, emotional investment, and often goal or task oriented objectives, all within a diversely populated environment (Ivory, 2008). Group communication scholars are now using online video games and virtual environments to study group behavior because of the benefits these environments provide research. Online video games provide naturally occurring environments for study, provide diverse random samples, and exposure to difficult to study events such as cyberbullying (Wirth, Feldberg, Shouten, van den Hoof, Williams, 2012).

The following literature review elaborates on bullying, cyberbullying, and related concepts (e.g. hazing and aggression), centering on the context of video games. The 2009 online video game *Left 4 Dead 2* provides a framework to explore cyberbullying behavior occurring during collaborative video game play. After a brief rationale for both the independent and combined study of cyberbullying behavior and video game play, definitions, and a review of literature are provided.

Literature Review

Bullying research began in Europe as a response to playground aggression in the early 1980s, quickly expanding beyond European borders as school intervention programs proved successful (see Olweus, 2005). Still considered a topic of “international concern” (Monks, Smith, Naylor, Barter, Ireland, & Coyne, 2009, p. 147) the Centers for Disease Control and Prevention (CDC) deems bullying and cyberbullying a “major public health concern” (CDC, 2013) and promotes “prosocial bystander involvement” (CDC), yet still only addresses a youth audience. Although bullying and cyberbullying research and intervention has its roots in a school environment, it is important to understand that bullying and cyberbullying behavior is not limited to just youth

populations but impacts adults in the workplace (Einarsen & Raknes, 1999, Roscigno, & Lopez, 2006), family systems (Duncan, 1999), and adult and youth activities outside of work and school (Menesini, Melan, & Pignatti, 2000; Monks et al., 2009).

As bullying research and youth-targeted interventions expanded, so too did communication technology. Bullying shifted from an exclusively face-to-face encounter to online interactions such as e-mail and chat rooms. Dubbed “cyberbullying,” (see Monks et al., 2009 for review) this new form of bullying was thought to be a new contextual category; however, research revealed cyberbullying as a completely new type of bullying altogether. While the specific characteristics of cyberbullying are discussed later in this literature review a conceptual distinction must be made between bullying and cyberbullying, ensuring that the distinct features of cyberbullying are not misunderstood from the outset.

Face-to-face bullying is characterized by a power imbalance and is defined as aggressive, repeated, intentional behavior toward individuals who cannot easily defend themselves (Olweus, 1993; 2001; 2010; Slonje & Smith, 2008) and can occur in both dyadic and group interaction (Menesini, Melan, & Pgnatti, 2000). Generally there are three main types of bullying that include: (a) physical (e.g. hitting, shoving), (b) indirect or relational (e.g. third-party attacks, damage to reputation), and (c) verbal (e.g. name-calling, teasing) (Slonje & Smith, 2008). Examples of bullying among middle school and high school students include verbal aggression, social exclusion/isolation, physical aggression, lies and false rumors, property damage, threats, and racial/sexual aggression (Menesini et al., 2000; Olweus, 2010), while the most common bullying behaviors in the

workplace are social exclusion/isolation, rumor-mongering, and general domination (Einarsen, Raknes, & Matthiesen, 1994; Hodson et al., 2006).

Aggressive Actions: Hazing, Teasing, or Bullying

Bullying and cyberbullying are linked to potentially aggressive behaviors such as hazing and teasing, these concepts are different in definition and behavior. Bullying is characterized by an imbalance of power and is repeated behavior over a series of interactions, whereas general aggression can involve “a mutual exchange of threats or insults between two or more individuals” (Dempsey, Sulkowski, Dempsey, & Storch, 2011; Monks et al., 2009). Essentially, aggressive behavior could contain an equal balance of power between individuals and may occur only once. Hazing and teasing occasionally occur as bullying, depending on the level of power granted and the amount of recurrence; however, bullying does not require hazing and teasing. In fact, hazing and teasing are not always considered aggressive and are not defined as being solely negative (Mills & Carwile, 2009; VanRaalte, Cornelius, Linder, Brewer, 2007); bullying and cyberbullying are almost always considered undesirable, aggressive and intentional behaviors.

Hazing. Hazing is most often associated with Greek letter organizations and sports teams (at all levels of skill and profession), but can arise in any group or organization. Designed to grant newcomers membership and create community spirit (Johnson, 2011), hazing is a rite of passage “expected of someone that joins a group, which humiliates, degrades, abuses, or endangers its victims” (Edelman, 2005, p. 310). Hazing essentially proves that the newcomer or hazee has gone through a required ordeal that initiates them into the overall group identity.

Group identity is an important aspect of hazing that includes both costs and benefits to the individual members and is directly related to group cohesiveness. Ingroup benefits for membership include survival, protection, status, and access to resources, while ingroup costs include time, money, social pressure, and the energy to further group goals (Van Raalte et al., 2007). The balance between costs and benefits correlates with cohesiveness at the group level and individual feelings of liking and identity.

Van Raalte et al. (2007) examined undergraduate athletes from all types of sports (e.g. gymnastics, basketball, wrestling, etc.) and evaluated whether hazing serves to enhance team cohesion. Individual team members filled out a series of questionnaires that were compared to a hazing index, a catalog of behaviors that ranged from acceptable (e.g. attending practice) to unacceptable (e.g. destroying property). While the overall results of the study indicate that hazing is not associated with greater team cohesiveness, Van Raalte et al. discovered that hazing was connected with lower levels of task cohesiveness but was not connected social cohesiveness.

Van Raalte et al.'s findings suggest that hazing may serve two different purposes when associated with group cohesiveness. When related to tasks, or accomplishing everyday jobs within the group, hazing may not motivate team cohesiveness; however, when related to the social aspects of the team, hazing may encourage team cohesiveness and function as a team building strategy. Van Raalte et al. only looked at individual member perspectives rather than studying sport teams as a whole group, thus it is unknown how task and social cohesiveness functions from within a group.

Examining hazing and elements of group cohesion, Richardson, Wang, and Hall (2012) investigated whistle blowing (or the reporting of hazing from within a group) in

undergraduate fraternities and sororities. The study presented participants with hazing scenarios (categorized as not severe, moderately severe, and most severe) followed by a survey that measured behavioral beliefs, outcome evaluations, attitude toward the behavior, normative beliefs, motivation to comply, and subjective norms. Richardson et al. discovered that the level of severity moderated behavioral intentions and due to feelings of conformity it “may be difficult to violate group cohesion” (p. 173). Richardson, et al.’s findings suggest that individual members within groups that use hazing are less likely to blow the whistle because of cohesiveness within the group. Additionally the severity of a hazing situation matters to the types of behavior that is demonstrated by group members.

Hazing behaviors range widely in severity in which the level of severity matters significantly when gauging how the hazee will associate with the group overall. Hazing severity impacts everything from in-group contributions to individual feelings of belonging and includes acts such as scarification, sleep deprivation, servile labor, physical assaults, sexual and alcohol abuse, and even death (Cimino, 2011). For example, in a study investigating the relationship between group cohesion and the degree of hazing cruelty, Cimino (2011) discovered that the more a group was cooperative and the more an individual contributed to the group, the more severe the hazing.

Similarly, Johnson (2011) found that certain groups (mainly male-only groups) are more cohesive when the hazing is more severe, including behaviors such as pain, violence, and degradation. Severe hazing association with overall group cohesiveness and individual contributions suggests that an individual’s feelings of belonging and group identity is more important than what group members are willing to endure for

membership. Additionally, the fact that group members are willing to endure may suggest that the benefits of group membership outweigh the threat of severe hazing and members are willing to take the risk.

Although not transparently focusing on bystanders as an element of group behavior, hazing researchers often include and mention “relevant others” (Cimino, 2011; Richardson, et al., 2012). These relevant others are not members of the group participating in hazing but rather are secondarily involved in the hazing by being observers, policy makers, relatives, or confidants of those involved. Much like the bystander effects reported by research on bullying and cyberbullying behavior (see Dooley, Pyzalski, & Cross, 2009; Kulovitz and Mabry 2012), witnesses of hazing may provide an indicator of the social factors affecting hazing groups such as university-implemented policies against hazing (Edelman, 2005), or intervention programs (Monks et al., 2009). While there are no specific hazing studies that focus on bystanders (see Cimino, 2011 for review) it is important to note that there may be some potential parallels between cyberbullying bystander experiences and hazing. For example, bystanders in cyberbullying situations often help supply the bully with power simply by being present and doing nothing (Easton & Aberman, 2008; Slonje & Smith, 2008), a group effect that may occur in hazing scenarios.

Teasing. Related to hazing, and often confused with bullying and cyberbullying, teasing occupies a fine line between humor and humiliation. Teasing, the combined communicative act of play and degradation, is often categorized as aggressive, but is not always depending on context, intention, and relationship between the persons engaging in the act of teasing. In fact, unlike bullying, teasing at times communicates positive

emotions (Mills & Carwile, 2009), parallels hazing in-group behavior by showing solidarity and inclusion (Mottet & Thweatt, 1997), and is directly connected to humor between peers (Jones & Newman, 2005). In a study of adolescent classmates and friends, Jones & Newman (2005) discovered that any amount of teasing about weight resulted in high negative affect and low humor, but all other teasing, especially between friends, resulted in low negative affect and high humor. Essentially, if teasing is between friends and the intention is well-meaning then the teasing is non-aggressive; however, if the relationship is not well-defined and/or the intention is ill-mannered or touches on a taboo topic, teasing becomes aggressive.

Cyberbullying: Definitions, Types, and Behaviors

Only recently have studies begun to conceptually separate the act of bullying from the act of cyberbullying (see Dooley, Pyzalski, & Cross, 2009; Kulovitz & Mabry, 2012; Nocentini, Calmaestra, Schultze-Krumbholz, Scheithauer, Ortega, & Menesini, 2010; Slonje & Smith; 2007). When investigations into bullying began to explore the connections between bullying and communication and Internet technologies, it was thought that “cyberbullying” was just another bullying context (i.e. bullying on the internet); however, as studies continued, cyberbullying began demonstrating distinct and unique characteristics when compared to face-to-face bullying. With ongoing research focusing on these unique characteristics, researchers conceptualize bullying and cyberbullying as two distinct but related phenomena.

Initial explorations into cyberbullying defined the phenomena narrowly as “bullying using an electronic medium” (Dooley, Pyzalski, & Cross, 2009, p. 182; see Ang & Goh, 2010); however, more developed definitions describe cyberbullying as using

information and communication technologies (ICT) to harm others via direct attack, impersonation, manipulation or exclusion (Nocentini et al., 2010; Pearce, Cross, Monks, Waters, & Falconer, 2011; Roberto, Eden, Savage, Deiss, & Ramos-Salazar, 2010). The most comprehensive explanation of cyberbullying, and the one that is used as the conceptual framework for this research, is outlined by Nocentini et al. (2010), who identify cyberbullying as intentional, repetitive, power imbalanced, potentially anonymous, and public. There exists a high potential for bullies to disguise or hide identity online, something unique to ICT or computer mediated communication (CMC). Additionally, ICT permit bullies to dispense aggression to large audiences (whether it is directed at one person or a group). For example, a bully targeting one individual remains anonymous to the victim and bystanders by using a fake screen name and posting derogatory and false comments about the victim to a public forum, something impossible in face-to-face bullying.

Nocentini, et al.'s experimental study was the first to address how inconsistent cyberbullying terminology created a behavioral construct most often used for study. The study's definition of cyberbullying is by far the most comprehensive, and is consistent with previous studies of its type (see Menesini, Nocentini, Calussi, 2011); however, the experiment used European adolescent focus groups to test their cyberbullying construct, which may or may not be applicable to other populations. Although it is unrealistic to assume original scholarships such as Nocentini, et al.'s will include an wide-ranging population sample, it is also unrealistic to assume that their conceptual findings will pertain directly to studies focusing on a different population types. Given that the present

study centers on an adult population in a voluntary context, there may be variations in how cyberbullying is manifested in the experimental design.

Types of Cyberbullying: Overt and Covert. As research on cyberbullying continues to expand, a new potential factor in cyberbullying is beginning to emerge; that is, cyberbullying demonstrates characteristics of both covert and overt behaviors through the use of CMC. Echoing Nocentini et al.'s (2010) findings of potential anonymity and the public nature of cyberbullying, Kulovitz and Mabry (2012) and Spears et al. (2009) identified covert and overt cyberbullying strategies. Covert cyberbullying is “often used to loosely describe those behaviors which are less obvious and are more difficult to ascribe to anyone in particular” (Spears et al., 2009, p. 189) and includes behaviors such as being avoided or excluded, blackmailed or put under pressure (Kulovitz & Mabry, 2012). Overt cyberbullying behaviors includes such behavior as flaming, aggression/arguing, name-calling, etc. (Kulovitz & Mabry, 2012). Additionally, covert cyberbullying can be more damaging to victims since it is harder to identify a concealed perpetrator and thus more difficult to retaliate. The presence of covert cyberbullying suggests that more attention needs to focus on the type of cyberbullying behavior that is occurring, as one may be harder to detect and/or may require different types of intervention strategies.

Cyberbullying and Computer Mediated Communication: How and Why Cyberbullying Happens. Computer-Mediated environments, such as instant messaging, video games, and blogs, often parallel the cyberbullying characteristics outlined by Nocentini et al., (2010) (intentional, repetitive, power-imbalanced, potentially anonymous, and public). In particular, the public nature and potential for anonymity of

cyberbullying may be explained by certain features inherent in computer-mediated (CMC) environments. For example, Spears et al.'s (2009) findings that cyberbullying felt more secretive and concealed (covert) is reflected in the anonymity and identity disembodiment afforded by CMC. The bully and/or target, if so inclined, can easily conceal the identity online. Consequently, the ability to disseminate information and/or to engage in cyberbullying behavior online is not limited to the school children on a playground, or the boardroom at the office; cyberbullying can be circulated and publicized to anyone with access to the Internet.

Exploring this concept further, Twyman, Saylor, Taylor, and Comeaux (2010) compared children (age 11 to 17) exposed to cyberbullying and face-to-face bullying to children not exposed to bullying or cyberbullying. Before completing self-report measures (student observation of school bullying, Reynolds bully victimization scale for schools (see Twyman et al., 2010), and activities and beliefs checklist for students) participants were screened by researchers and those exposed to bullying/cyberbullying were matched with those who were not exposed. Twyman et al. (2010) found that some participants were only bullies online and not at all face-to-face, which is attributed to the fact that the bullies were “disinhibited by the anonymity and physical distancing from the target” (p. 198). Essentially, the online anonymity leads to decreased inhibitions because there are fewer consequences for the bullies' behavior. It is much more difficult to punish or prevent the bullying behavior of an individual whose real identity is obscured by online anonymity; fundamentally, there are fewer costs for engaging in bullying behavior online because the risk of getting caught are far less than face-to-face encounters.

Additionally, the hyperpersonal model of communication (Walther, 2007), which explains online impression management and interaction, may explain some of the characteristics of cyberbullying. Hyperpersonal communication takes advantage of the technology, allowing users to manipulate the media to “enhance their relational outcomes” (p. 2540), and “facilitate desired relationships” (p. 2538). This is because the technology of CMC (e.g. Skype, text messaging) when compared to equivalent face-to-face interactions is more editable, allows more time for message creation, is physically isolated from the receiver, and allows for greater thought to be put towards message creation (Walther, 2007). While Walther originally intended the hyperpersonal model to explain how online interactions expand positively beyond interpersonal communication to form relationships, the hyperpersonal model can also describe cyberbullying if the preferred outcome is a bully/target relationship. For example, the desired relationship for the bully is to be the one in power, thus CMC is well-suited to achieve this relational goal. The manipulation of the media and physical isolation of CMC furnishes bullies with more tools to pursue the dominant/submissive relationship desired.

Cybergroups and Cyberbullying. Bullying and cyberbullying implicates more than just the bully and the target, pressing researchers to look at bullying behavior as a group activity. Bystanders involve by intervening in the bullying, observing and doing nothing, or recruited by the bully to victimize (Dooley et al., 2009; Easton & Aberman, 2008; Kulovitz & Mabry, 2012); regardless, the bystander plays an integral role in creating a group dynamic. Additionally, cyberbullying can also present in already established virtual groups such as chatrooms, video games, or social media (see Kulovitz & Mabry, 2012).

Exploring this inherent social aspect of bullying behavior, Easton & Aberman (2008) led focus groups of students age 9-12, engaging them as witnesses to bullying. Easton and Aberman learned that while bystanders have empathy for the victims, the messages support the bully because they are either afraid of the bully, friends with the bully, or agree with the bully. According to Easton & Aberman, the need for self-preservation on the part of the bystander; regardless of whether they have empathy for the victim, they support the bully to save themselves. Although the researchers focused on face-to-face bullying, their findings illustrate the important role that bystanders play in bullying; even when bystanders do nothing, their presence implicates them in the process.

While comparing competitive and collaborative groups at play, Menesini, Melan, and Pignatti (2000) found a clear distinction between command and compliant behaviors in collaborative play, but not in competitive play. The bullies (or higher power participants) were more aggressive, issued more commands, and demonstrated more regulative behavior, while victims (or the weaker participants) yielded more frequently and complied more with commands. Menesini, et al.'s findings suggest that the players are motivated to perform well in order to complete the game and that bullying may be used as a tactic by some to achieve this goal and function as a cohesive group. Given that bullies used more commands and victims yielded to those commands there may be some connection between group leadership and bullying behavior. For example, since the bullies are directing in-group behavior, they may be perceived by others as the leaders of the group.

Specifically exploring cyberbullying from a group perspective Kulovitz & Mabry (2012) surveyed video game players about experiences with cyberbullying in online

games. Echoing Slonje & Smith's (2008) findings Kulovitz & Mabry found that in general cyberbullies spent more time online compared to the targets of cyberbullying, which may suggest that cyberbullies are more skilled or motivated to manipulate the online environment, although more research needs to be conducted to explore these findings in more depth. Kulovitz & Mabry also discovered that victims or targets of cyberbullying tended to be more sensitive to bullying when others were being bullied, but chose not to intervene. Consistent with Easton & Aberman's (2008) focus group results there seems to be an element of self-defense on the part of the victim-bystander. Previous cyberbullying in the past seems to make the victim-bystander more aware of cyberbullying taking place, but they refuse to get involved to avoid becoming the victim once again.

The finding most applicable to the environment of video games as a group is that cyberbullying tends to be seen by players as punishment for poor performance. This finding is echoed by Shafer (2012) who found increased hostility and enjoyment in games that position player against player (player versus player, non-collaborative). These outcomes indicate that cyberbullying in online games may be used as a norming strategy to regulate the behavior of players in the game environment. If the players deviate from the standard pattern of interaction they are punished, or coaxed via cyberbullying, to adhere to the norm. Additionally, the increase in aggression and conversely enjoyment may represent group cohesiveness in much the same way that hazing displays group cohesiveness when more severe forms of hazing are enacted; however, more research needs to be done on the potential connection between cyberbullying and group cohesiveness in online games.

Online Video Games as Cybergroups

Historically video games (meaning any digital form of gameplay) have received mostly negative attention in research and popular press, blamed for causing violence in adolescents, social isolation, and low empathy (Ivory, 2008). Conversely, contemporary research finds that most video games possess an “intrinsic social component” (Ivory, 2008, p. 363), can be prosocial, interactive, responsive, and promote overall health and well-being (Jin, 2011; Maillot, Perrot, & Hartley, 2012). Video game players become emotionally invested in the games played as well as the online public spaces that surround the games; we enjoy the games, interact with other game players, and are challenged by the emotional impact of our experience (Bowen, nd).

Video games do not occur in isolation, as they often require participation simultaneously by more than one player, and may require help or information from online forums, discussion boards and so on. In fact, community in some games is so important that players are managing the online connections to games even after their death. Websites such as slightlymorbid.com and deathswitch.com will inform specified players in your online game community of your death (providing notes, videos, etc., whatever you choose) and provide your family and friends with your game character and login information. (Svensson, 2009 March).

Since video games require participation by multiple players, an integral component that affects group dynamics are the temporal changes that occur within the group. In a review of time changes within groups, Arrow, Poole, Henry, Wheelan, & Moreland (2004) explain that groups not only change over time but often early groups focus on inclusion and dependency while groups established for some time are marked by

conflict and negotiation. Exploring the temporal changes in first-person shooter (FPS) games, Weber, Behr, Tamborini, Ritterfeld, and Mathiak (2009) found that when players engaged in video games for an extended period of time their arousal, or stimulation with the game, decreased. Although there is no specific research and cyberbullying and changes over time, these findings suggest that cyberbullying early in a game may differ from cyberbullying occurring later in a game.

Additionally, a recent game has been credited with solving a complex biochemical problem (see Khatib & DiMaio, 2011). Researchers having difficulty solving a protein structure challenged a community of *Foldit* players (an online game for modeling protein structures) to solve the problem. Relying on community groups, game skills, and human intuition, *Foldit* players successfully modeled the protein structure without the use of elaborate modeling programs.

Online video games similar to *Foldit* and players choosing “nonkilling sprees” (Dougherty, 2012 January) in otherwise aggressive games are paving the way for a new genre of gameplay. Researchers and players refer to deliberately passive games and gameplay as prosocial (see Greitemeyer & Oswald, 2010a; 2010b for review). As the name suggests, prosocial games are designed and played to inspire collaboration, rather than competition, between players.

Prosocial Gameplay. Prosocial video games (relatively nonaggressive collaboration-based games such as *Animal Farm* or *Super Mario Sunshine*) receive credit with helping people recover from stress (Reinecke, 2009), encouraging helping behavior, and increasing empathy (Greitemeyer, & Oswald, 2010a; 2010b). Additionally, prosocial video games simulate real-life scenarios that “change the way people think” (Sydell,

2011, April) when presented with moral situations and decision making. Greitemeyer and Oswald (2010a) found that after playing a prosocial video game participants were more likely to help after a mishap and intervened when someone was being harassed, thus prosocial video games may mediate the relationship between cyberbullying and gameplay.

Video games provide a space for shared identities, interests, and enjoyment, which have been found to promote overall health (Schott & Hodgetts, 2006). In a study examining the connection between exergames (games that promote physical movement such as those on the *Nintendo Wii* and *Xbox Connect*) and older adults, Maillot, Perrot and Hartley (2012) discovered that these types of games improve player health. Overall, the older adults in the study increased physical performance, and became emotionally and cognitively more productive.

Reinecke (2009) tested the potential for video games to help individuals recover from work-related fatigue and general daily hassles, surveying 1,614 people between the ages of 12 and 56. The researchers found that video games used to relax and recover after a stressful event reduced stress and aided in the recovery process. Reinecke et al. collected and grouped all data on the types of video games into one measure, thus a major limitation of this study is the inability to distinguish between video game types (e.g. first-person shooters, role-playing, strategy), although this does not diminish the significance of the findings.

Expanding on Reinecke et al.'s findings Greitemeyer & Oswald (2010b; 2011) explored why prosocial video games may reduce stress and lead to prosocial behavior. Greitemeyer & Oswald (2010b; 2011) conducted laboratory experiments where

participants played video games and were subsequently tested with tasks and surveys. Their laboratory experiments revealed that prosocial video games affect the players' internal state and "primes cognitive associative networks specifically related to prosocial behavior" (Greitemeyer & Osswald, 2011). Essentially, playing prosocial video games triggers players to have more prosocial thoughts, which reduces stress. Players become more likely to enact prosocial behavior after accessing prosocial thoughts (Greitemeyer & Osswald, 2010b; 2011).

Contrary to the prosocial genre, the first-person shooter (FPS) game provides players with realistic firearms and other weaponry that are used to develop often violent war-time narratives (see Hitchens, 2011). While there are other video game types that contrast the prosocial genre (e.g. roleplaying, multiplayer), FPS games best capture the opposing elements while still maintaining some level of collaboration with other players. While prosocial games reduce player stress and emphasize well-being, FPS games tend to foster rapid mental and physical responses, underscoring the anxiety of combat scenarios (Hitchens, 2011).

First-Person Shooter Games – *Left 4 Dead 2*. The first-person shooter (FPS) game is a type of video game that takes on a first-person perspective and often involves the use of weapons to support the player through the game (Hitchens, 2011). The FPS differs from other similar game types (such as first-person perspective role-playing games) since the focus of the FPS is on the weaponry and strategy and not on character or story development. In a comprehensive analysis of FPS games from 1991 to 2009, Hitchens (2011) determined that FPS avatars (the playable main character) across all consoles are mostly Caucasian males in the military (e.g. *Call of Duty: Black Ops*).

Although many FPS games are team-based and collaborative in nature, they are not considered prosocial video games. Unlike prosocial games, the FPS focuses on gaining weaponry and uses fighting as the primary mode to advance the game.

Left 4 Dead 2 (L4D2) both exemplifies the standard of the FPS genre and at the same time rejects the norm. Like most of the titles in the genre, L4D2 takes on a first-person perspective where the player sees the game environment through the eyes of the on-screen character and must use a range of weapons both melee (e.g. chainsaw, axe, strangulation) and projectile (e.g. shotgun, sniper rifle, spit) to advance through levels. L4D2, taking place in Louisiana and Georgia during a zombie outbreak, is rated “M” mature by the Entertainment Software Rating Board for blood and gore, intense violence, and language (ESRB, 2013), thus L4D2 does not fit into the prosocial type video game due to the aggressive content.

What sets L4D2 apart from other FPS is the character environment and the games “fiercely team-oriented style” (Onyett, 2009). The game takes place in the zombie infested cities and bayous of the deep south; there is no military support and the characters, a TV news producer (Rochelle), con-man (Nick), a mechanic (Ellis), and a high school football coach (Coach), must take up arms and fight their way to what safety they can find. Unlike many of the FPS titles, L4D2 forces players to work cooperatively with other players to complete levels, tasks, and generally survive as a team. Many FPS are single-player games, or players compete individually against other players (e.g. Counterstrike); however, L4D2 sets a new precedent for FPS games making team-based gameplay necessary if a player wants to complete the game segments. Exemplifying group collaborative play, “no other game emphasizes teamwork as strongly as this”

(Onyett, 2009), thus L4D2 provides an exceptional form of groups functioning in online video games.

Hypotheses

Cyberbullying and Game Performance

Game success is often measured by the satisfactory completion of a specific task within the game (e.g. effectively rescuing the princess or killing the end boss and completing the mission). In fact, there exists a positive relationship between skillful game performance and the completion of game related tasks; such that game enjoyment is “massively threatened by insufficient performance” (Klimt, Hefner, Vorderer & Roth, 2008, p. 10; see also Wirth, Fledberg, Schouten, van den Hoof, & Williams, 2012). Aggressive intra-group behaviors used to motivate better game performance is a possible consequence of players’ game outcome expectations, especially since cyberbullying behavior within online games has been found to function as punishment for poor performance (Kulovitz & Mabry, 2012). The above implications of online team-based game play leads to the first set of hypotheses:

H1: Groups with higher amounts of cyberbullying will be more likely to experience game success.

H1a: Groups with higher amounts of cyberbullying demonstrated by one or two members will be more likely to experience game success when compared to groups with more equally distributed cyberbullying across group members.

H1b: Groups with higher amounts of cyberbullying earlier in the game will be more likely to experience game success compared to groups with cyberbullying later in the game.

Cyberbullying and Cohesion

Evidence suggests that the successful completion of a task leads to game enjoyment and the unsuccessful completion of a task threatens game enjoyment (Jin, 2011; Klimt et al., 2008; Shafer, 2012; Wirth et al., 2012); however, this may be overshadowed by the concentrations of cyberbullying behavior within the game since cyberbullying has been found to lower satisfaction and create a greater power imbalance (Nocentini et al., 2010; Pearce, Cross, Monks, Waters, & Falconer, 2011; Roberto, Eden, Savage, Deiss, & Ramos-Salazar, 2010). Likewise, group cohesion improves group performance and overall satisfaction such that cohesive groups (those groups reporting a sense of belonging and overall high morale) are more productive and satisfied (Evans, & Dion, 2012; Geidner, 2012; Gianettoni, Clemence, & Staerkle, 2012), thus the following hypotheses have been advanced:

H2: Groups with lower amounts of cyberbullying will be more cohesive than groups with higher amounts of cyberbullying.

Although it is hypothesized that the lower the cyberbullying the more cohesive the group, exactly when cyberbullying occurs may have a positive effect on group cohesion. Evidence suggests that groups set the tone (positive/negative) early in group member interaction rather than later (Keyton, 1999) and that cyberbullying behavior functions as a norming behavior (Kulovitz & Mabry, 2012; Speers et al., 2009) between members. Based on this evidence it is likely that cyberbullying may be used early in the game as a way to regulate group membership, thus producing a cohesive group.

H2a: Groups with higher amounts of cyberbullying demonstrated by one or two members will be more likely to experience higher amounts of overall

group cohesion compared to groups with more equally distributed cyberbullying across group members.

H2b: Groups with higher amounts of cyberbullying earlier in the game will be more likely to experience higher amounts of overall group cohesion compared to groups with cyberbullying later in the game session.

Cyberbullying and Target Participation

Group cohesion and satisfaction with the group increases individual perceptions of cyberbullying behavior based on group performance. Since cyberbullies demonstrate a high need for dominance, which weakens the targets position of power (Duncan, 1999), the lower the cyberbullying the more likely targets will participate. This advances the following hypotheses:

H3: Targets of cyberbullying will participate more in groups with lower overall amounts of cyberbullying than will targets of cyberbullying in groups with higher overall amounts of cyberbullying.

H3a: Targets of cyberbullying will participate more in groups with higher amounts of cyberbullying in one or two members compared to groups with more equally distributed cyberbullying across gameplay or cyberbullying later in game sessions.

H3b: Targets of cyberbullying in groups with higher amounts of cyberbullying earlier in the game will participate less compared to groups with cyberbullying later in the game session.

Cyberbullying and Perceptions of Bullies

Cyberbullies are often the group member who is perceived as having more power when the power differential shifts between bully and victim (Duncan, 1999; Menesini, Melan & Pignatti, 2000). Cyberbullies have also been found to demonstrate more need for dominance (Bowes, Maughan, Caspi, Moffitt, & Arseneault, 2010; Duncan, 1999), which advances the following hypotheses:

H4: Cyberbullies will be more likely to be perceived by participant-observers as group leaders than nonbullies or victims.

H4a: Cyberbullies in groups with higher amounts of cyberbullying in one or two members will be more likely to be perceived by participant-observers as leaders compared to groups with more equally distributed cyberbullying across gameplay.

H4b: Cyberbullies in groups with higher amounts of cyberbullying earlier in the game will be more likely to be perceived by participant observers as leaders compared to groups with cyberbullying later in the game.

Chapter 2: Methodology

This study tested cyberbullying group behavior in the online video game *Left 4 Dead 2* (L4D2) focusing on game outcome, group cohesion, and leader influence. Using four participant observers (also referred to as confederates) to play and record L4D2 video game sessions and four coders to systematically analyze the recordings using a coding protocol, the cyberbullying behavior of L4D2 players was tested. An overview of the game L4D2, explanation of participant and confederate roles, and description of the measures, procedures, and experimental design follows.

The Game: *Left 4 Dead 2*

Left 4 Dead 2 (L4D2) is a first-person shooter co-op (cooperative-based game) released in November of 2009 by Valve Corporation. Players form 4-person teams and play as one of four characters (Nick, Ellis, Coach, or Rochelle) who must survive a post-apocalyptic pandemic. Players are provided with non-upgradable firearms and blunt weapons, which they must pick up throughout gameplay. Players must also rely on team members to heal, complete tasks, and finish predetermined campaigns, which could not be completed without collaboration. In certain games players may play as the “infected” in which they fight against the four human characters. Whether a player is playing as a human survivor or an infected character, the task parameters are the same. That is, be the team to complete your goal and win.

Left 4 Dead 2 was chosen for this research design since the mechanics of game programming help control for in-game variables that would otherwise be exceedingly difficult to account for. L4D2 is comprised of four-person teams, of which the characters cannot be leveled up or customized in anyway. Additionally, weapons cannot be upgraded and there is a set amount of time that players have to complete in-game campaigns, modes, or for specific tasks to be completed with a set end goal determining either task completion or task failure.

These L4D2 game attributes are important because it standardizes the in-game resources that players have access to while also systematizing the style of game that players experience. For example, in a role-playing game such as *World of Warcraft* there are countless objectives and choices (some optional and some required to further the story); however, in L4D2 the players options are predetermined, thus each player

experiences the same game flow. This allows the game outcome and experience to be determined by player involvement and skill rather than character role or game narrative.

Participants

Confederates/Participant Observers

Four confederates, referred to as “participant observers”, were asked to play and record the gameplay as well as observe the behavior of the other three players in the four-person team. *It* was necessary to use confederates since gameplay could only be recorded from a first-person perspective as the game was being played. Both ScreenFlow and FRAPS, the software used for recording (see procedure section for description), are only capable of capturing what is occurring on the players screen, thus the confederates were used to play and record game sessions.

There were two female confederates and two male confederates who ranged in age from 20 to 31 and had all previously played L4D2. Each confederate underwent an individual orientation session, which familiarized them with the recording software, recording process, and the data exchange procedure. In the orientation session the confederates were supplied with the L4D2 game, which was downloaded to their computer, the external hard drive for storage of the recordings (each drive was one terabyte), and the recording software (either ScreenFlow for Mac or FRAPS for PC). Confederates created their own screen name and login information for L4D2 and FRAPS or ScreenFlow. The confederates were allowed to keep the downloaded version of FRAPS or ScreenFlow and L4D2, but were asked to return the external hard drives.

After completing each game session, which lasted approximately 40 minutes, confederates completed a survey (see Appendix A) which asked them about their overall

experiences. The survey asked how often they observed overt and covert bullying, who were the targets and perpetrators of bullying, who the leaders of the group were, and how cohesive the group was overall. The survey included an open-ended question asking confederates to comment on anything significant that experienced while playing the game.

This procedure is consistent with participant observation in online game communities (see Siitonen, 2011). Using participant observation in online game communities is advantageous because participant observation accounts for temporal changes (i.e. the full length of a game session or changes in team members), varying communication channels (i.e. textual, verbal, and nonverbal), and the ability to capture data without “disturbing the ongoing social interactions” (Siitonen, 2011, p. 563). Furthermore, observing online game interactions while participating allows the researcher to get closer to the data through natural interaction.

The confederates did not at any time disclose that they were recording the gameplay or that they were participant observers working on a research team. Due to the environment of L4D2 (players begin the game immediately after being randomized into a 4-person team) there is no logical point of access to inform players of the intent to observe. In fact, the natural gameplay may be disrupted significantly if consent were attempted, as players often feel uneasy with the presence of researchers and can become hostile (Kulovitz & Mabry, 2012). Additionally, players engaging in L4D2 were voluntarily playing the game, which is an open-access game that can be played by anyone with a PC and Internet access; the gameplay is open to natural observation since the groups are self-selected. The researchers obtained a waiver to obtain informed consent

(see Appendix G) from UW-Milwaukee's Institutional Review Board based on these parameters, which was included in the exempt approval letter (see Appendix H).

Non-Confederate Participants

Non-confederate participants were three players with gameplay recorded by the confederate. Non-confederate participants were not informed they were participating in research, did not fill out surveys and did not participate in the research process in any way other than having their gameplay recorded. *It* is impossible to obtain demographics for non-confederate participants since the research design purposefully excluded all information about the participants other than the behavior that could be recorded as they participated in the game. Participation was random and anonymous based entirely on self-selection into the server and game that the participant observers occupied. After logging into L4D2 and selecting the game type (e.g. versus, campaign, etc.) players signal their readiness to play with human team members by clicking "play online" which then indiscriminately places them into the first available server and game.

Due to the anonymous nature of this study *it* was not possible to collect demographic or descriptive data on the individual players, as there was no interaction with them other than to record their gameplay. Nevertheless, Steam, the company that released L4D2 maintains basic level statistics available to the general public. At peak, Steam servers (the computer network that links players to games via the Internet) supports over 5 million users with nearly 9,000 of them participating in L4D2 (Steam, ND). Steam allocates 275 servers for online games with the highest gigabyte use per second in North America (766 Gps) followed by Europe (517 Gps) and Asia (60 Gps).

Recorded Game Sessions

The total number of groups recorded was $n = 59$ with $n = 1,425$ messages. Cohen's (1977) standard case parameters for estimating the statistical power of a sample sufficiently large enough to reject a comparison of mean values for two independent groups was adopted for power analysis. This decision resulted in a projected sample size of: α (2-tailed) = .05, ES (effect size-- d) = .80 (a large effect size), and Pr (estimated probability of rejecting the null hypothesis, power) = .80, and a group sample size of $n_1 = n_2 = ((26) \times 2) = N = 52$. It was assumed that a sample size approximating this level should provide sufficient power for tests of the hypotheses stated in Chapter One. All game generated data and messages (such as statistics, player scores, and character dialogue) were deleted because it was not produced by the player and would have relatively little impact on the team as a whole or add insight into the hypotheses. Therefore, the effective sample size was $n = 41$ groups with $n = 415$ messages. This loss of data reduced the effective sample size below the optimum level of power computed using Cohen's standard formula.

However, Cohen (1977) notes that his power estimates assume comparability of sample population variances and sample population sizes. Cohen cautioned that in situations when both sample population sizes and variances are simultaneously unequal they would be far more susceptible to errors in estimated power. This implies that comparisons of group means in this study (when taken from unequally sized samples), that also have significantly diverging variances produced by their respective populations, could be susceptible to the kind of estimation error that Cohen noted.

Conversely, there is also reason to believe that the measures used in this study could make such concerns about power unnecessary. The literature in group dynamics has generally demonstrated that measures of concepts like group performance, cohesiveness, and a member's informal influence can be reasonably sensitive and robust variables for analyzing groups engaging in tasks that require behavioral coordination and member cooperation (Gulley, Devine, & Whitney, 2012; Shaw, 1981). The L4D2 game is a game with a very strong team survival ethos. The expectation for the player is that success, survival, will require not only one's personal skills but the skills of other members and their willingness to work as a team in advancing toward a team goal of surviving their campaign.

Confederate Effects

Given that confederates (also referred to as participant observers) were required to play the game and interact with participants to record the game sessions, it was necessary to examine their effect on the game. To test any effects that confederates may have had on the game it was noted how many games confederates finished compared to the other players as well as their overall message participation in each session. Out of $n = 41$ games confederates completed only $n = 11$ for a completion rating of 27% and were never the only player to finish (i.e. there was always a non-confederate participant who finished with the confederate). Likewise, out of the $n = 41$ game sessions recorded there were no game sessions where the confederate was the only player speaking or participating overall in the game.

Confederates were never identified as bullies, but were identified as the target of cyberbullying in $n = 8$ groups (19%). Furthermore, confederates were never identified as

leaders, which shows that confederates were not attempting to direct the in game behavior. Overall this indicates that confederates had relatively little effect on the game sessions.

Measures

Cyberbullying Coding Protocol

Four undergraduate students were recruited to analyze the recorded L4D2 game sessions for which they received three credits under Communication 588: Research Practicum. Under the requirements of Communication 588: Research Practicum, the coders were junior standing, had completed an undergraduate communication methods course, and were declared communication majors. Additionally, each coder turned in a written 15-page report about their research experiences that was graded by a full professor in the communication department.

The cyberbullying message codes from Mabry and Kulovitz (2011) were used as the basis for the coding scheme. The original coding system from Mabry and Kulovitz (2011) contained 22 codes in five categories (overt bullying, covert bullying, compliance gaining, group/interpersonal processes, and miscellaneous) that were based on previously tested overt and covert cyberbullying scales. In order to ensure that the coding structure was relevant to L4D2 and captured necessary additional information slight modifications were made.

The coding scheme used in this research (see Appendix B) contained 18 codes in four categories (overt bullying, covert bullying, contextualizing categories, and contextualizing categories specific to L4D2). None of the codes were removed or modified from the overt bullying category and the covert bullying category; however, the

compliance gaining codes (see Mabry & Kulovitz, 2011) were removed entirely from the coding scheme since this research is not concerned with compliance gaining strategies related to cyberbullying behavior in L4D2. Additionally, the group/interpersonal process codes, which included the codes strategy, procedural talk, socializing, sarcasm and argumentativeness were removed and replaced with more general contextualizing codes of apologies, resistance to bullying, positive task reactions, and positive social-emotional reactions.

Based on the fast-paced nature of L4D2, *it* was highly unlikely that procedural talk, strategy discussion and argumentativeness would have time to occur within the game sessions, thus the codes were changed to reflect what would have time to manifest (e.g. apologies, positive task and social-emotional reactions). The codes were changed to simplify the code category for the coders as well as frame the behavior in a cyberbullying context (e.g. resistance to bullying). Additionally, the contextualizing codes of helping behavior, task completion, and game statistics captured L4D2 specific occurrences (i.e. these are unique features of this game).

A reliability analysis using Cohen's Kappa (Cohen, 1960) was conducted to determine inter-coder reliability. Approximately 20% of the 400 coded messages were randomly sampled and independently coded by the researchers. The inter-coder reliability was found to be $Kappa = .917$, indicating a strong agreement; however, code 2-threatening and code 9-slander were not represented in the random sample. As an alternative to rerunning Cohen's Kappa, all messages containing code 2-threatening and code 9-slander were deliberately sampled and coded by the researchers. The inter-coder reliability was found to be a 100% overlap. Additionally, the codes 16-game statistics,

17-task completion, and 18-uncodable were not included in the reliability analysis because codes 16 and 17 were used as dependent variables in the hypotheses testing and code 18 was not represented (see Table 1).

Messages observed in the game were created by the video game players either through direct entry of text through a keyboard, or through a voice channel using a headset or other microphone device. As part of the task of coding, coders entered as messages text that appeared from *FRAPS* screen capture of text or voice capture of audio input. Coders were instructed to transfer captured text messages to worksheets (see code sheet specimen Appendix E). Coders also were instructed to transcribe voice messages that came through the voice channel and place those messages onto the work sheets. For the purposes of coding message units, coders were instructed to identify each textual or voice transcribed message using one of the defined codes for coding (see appendix D).

Questionnaires

For each game session, confederates and coders filled out a survey that captured observations. Confederates and coders identified a group leader, whether the group was cohesive, and asked the level of group leader influence over the group. The perceived cohesion scale from Geidner (2012) was used (see Appendix A) for both the confederates and the coders. This six-item scale used a 5-point Likert-type scale (1 = none; 5 = an extreme amount) to indicate the level of cohesion experienced and observed in the L4D2 game recordings. The perceive cohesion scale has an alpha of .94 and includes questions such as “did you feel/observe that this group was the best of its type” and “Did you feel/observe a sense of belonging to this group”.

Table 1

Message Code Frequencies

Message Codes	Original Code	Codes sampled across coders
1 – Harassment	2	2
2 – Threatening*		
3 – Insults	3	5
4 - Initiating Conflict	6	7
5 - Disrupting Play	2	1
6 - Silence/Ignore	0	0
7 – Extortion	0	0
8 – Teasing	2	2
9 – Slander*		
10- Exclusion	5	5
11 – Apologies	2	2
12 – Resistance to Bullying	2	1
13 – Positive Task Reaction	3	2
14 – Positive Social-Emotional Reaction	3	4
15 – Helping Behavior	61	63

**not included in original Kappa calculation*

The overt cyberbullying construct and the covert cyberbullying construct from the cyberbullying victimization scale and the cyberbully scale (Kulovitz & Mabry, 2012) used by both confederates and coders. Instead of asking all items, confederates and coders were asked “how often did you feel overt cyberbullying took place in L4D2” and “how often do you feel covert cyberbullying took place in L4D2.” Each question was followed by the definition of overt and covert cyberbullying (see Appendix A).

An exploratory factor analysis (EFA) using principal axis analysis with *Varimax* rotation was conducted on the six-item perceived cohesion scale taken from Geidner (2012). Pre-factor analysis of the six-item cohesion scale indicated that the scale was

reliable ($\alpha = .778$, $N = 41$). To interpret factor loadings, an item was considered to have loaded on one factor when it had a value above .6 and below .4 on all other factors.

Table 2

Factor Loadings for Exploratory Factor Analysis with Varimax Rotation of Group Cohesion Scale

Scale Item	Factor 1 – Belonging	Factor 2 – Satisfaction
Did you feel/observe a sense of belonging in this group?	.921	.237
Did you feel that you were (that all players) a member(s) of the group?	.826	.296
Did you see yourself (observe all players) were part of the group?	.937	.246
Were you/did you observe enthusiasm about the group?	.353	.824
Were you/did you observe happiness in the group?	.285	.901
Did you feel/observe that this group was the best of its type?	.149	.814

Note. Factor loadings > .60 are in bold

The EFA yielded a 2-factor solution that accounted for 88.7% of the total variance (see Table 2). Factor one was labeled “belonging” and included the items “did you feel/observe a sense of belonging”, “did you feel/observe all were members of the group”, and “did you see/observe all were part of the group”, and explained 67% of the total variance. The belonging factor was found to be reliable ($\alpha = .948$, $N = 3$).

The second factor was labeled “satisfaction” and included the items “were you/did you observe enthusiasm about the group”, “were you/did you observe happiness in the group”, and “did you feel/observe that this group was the best of its type”, and

explained 21% of the total variance. The satisfaction factor was found to be reliable ($\alpha = .914, N = 3$).

Procedures

Game Recording Process

Data was collected using an online survey for confederates and coders (see Appendix A) and video capturing software, which was operated by the four participant observers. In-game participants playing *Left 4 Dead 2* had gameplay recorded using *FRAPS* or *ScreenFlow*, video capturing software. *FRAPS* provides a combination benchmarking and real-time video capture software designed specifically for online video game recording. *FRAPS* is a windows-based application that can record games using DirectX or OpenGL graphics and captures both audio and video with custom frame rates (7680x4800 and 1 to 120 frames per second). The *FRAPS* software costs \$37.00 (USD) per license for unlimited video recording directly to .jpg, .png, and .tga formats, which then can be easily transferred to other software applications for data analysis and coding. *ScreenFlow* is the Mac equivalent of *FRAPS* produced by *Telestream*, costs \$99.00 (USD) per license and record directly to Mpeg4 as well as .jpg, .png., and .tga formats.

Because *FRAPS* and *ScreenFlow* requires the person recording the gameplay to be a participant in the game, four participant observers (also referred to as confederates) were recruited to play *Left 4 Dead 2* and use *FRAPS* or *ScreenFlow* to record their gameplay. Confederates were provided with the *FRAPS* or *ScreenFlow* software, the *Left 4 Dead 2* video game, a one terabyte external hard drive, and a detailed set of instructions (see Appendix C). The confederates were asked to return the external hard drive, but were welcome to keep the *FRAPS* or *ScreenFlow* software and the *Left 4 Dead 2* video

game. Confederates were required to have played *Left 4 Dead 2* within the past year, have a PC or Mac that meets the minimum system requirements of *Left 4 Dead 2* (Windows 7/Vista/XP operating system; 4.3GHz CPU; 2GB RAM; ATIx800/nVidia 6600 graphics card; DirectX9c sound card). Confederates also attended a training session on how to install *Left 4 Dead 2*, how to operate *FRAPS* or *ScreenFlow*, and how to operate the external hard drives.

Survey Procedures

The online survey for confederates and coders took approximately ten to fifteen minutes to complete and was completed for each of the 41 recorded/coded game sessions. Prior to completing the surveys confederates and coders read an informed consent disclaimer form/page. While participation was voluntary and confederates and coders could choose at any time not to fill out a survey, involvement was not anonymous. In order to track the completion scores, participant screen names, and other game-related data, it was necessary to identify the game sessions by the confederate and coder assigned to each (see Appendix F).

Coder Training

Four undergraduate students received independent research (Communication 588: Research Practicum) credit in the department of Communication for the role as coders. Following Meyers and Seibold's (2012) process on coder training, a face-to-face training session took place with all coders and researchers present, which lasted approximately an hour. During the training the coders each received a 32 GB USB flash drive, the codebook (see Appendix B), coding instructions (see Appendix D), Excel file with codesheet for data recording (see Appendix E), and a test file of a previously recorded

L4D2 game (not included in analysis). The flash drive transferred the recordings of the games from confederate to coder without losing any fidelity in the recordings that may occur during compression of the files. After reviewing the instructions, codebook, and Excel file, and answering any questions, all coders, and researchers independently coded the test file.

After independent coding of the test file by the coders and researchers another face-to-face meeting was held to discuss the reliability of the code choices. Similar to the experiences of Meyers and Seibold (2012) reliabilities were initially very low (approximately 35% agreement between code categories), thus changes were discussed between all coders and researchers and modifications were made to clarify codes and reduce redundancy. Coders and researchers independently coded a different test file using the modified coding scheme and gathered for another face-to-face meeting. Reliabilities using the altered coding scheme were high (approximately 95%), thus no additional changes were made. Each coder provided the finalized coding scheme and a quarter of the recorded game sessions to begin the coding process, which took approximately six weeks.

Research Design

The hypotheses advanced for this study are based on game outcome, group cohesion and relative amounts of cyberbullying behavior observed among team members engaged in playing an online computer-based video game. Group level independent variables for this study are game success (successful vs. unsuccessful) and relative level of observed in-game cyberbullying behavior (high vs. low). The hypotheses advance expectations of how players behavior enacts the group roles of cyberbullying targets or

bullies results in differences in the ways perceived by other players; therefore, the individual level independent variable for testing the hypotheses is cyberbully target or cyberbully based on the relative amount of bullying behavior an individual receives (as a target during gameplay) or engages in as a source of bullying behavior.

Research Variables

Game Performance. Game performance was measured based on the successful completion of a task within the game. Advancement in *Left for Dead 2* is based on the successful completion of a series of campaigns or goals, which framed the task completion in the experimental design. Each game lasts approximately twenty to sixty minutes and is initiated when a group of four players indicate their readiness and loads into the game from the initial server. The game ends either when the designated goal is reached (predetermined by the game) or when all four players are “dead” and the campaign has failed. Successful campaign completion will indicate task success, while unsuccessful completion of the campaign will indicate a failed task. A four-point Likert-type scale was used to indicate the level of task completion. 1 indicates fail, all players died or quite the game; 2 indicates partial fail, only one out of four players completed the game; 3 indicates partial success, only two out of four players completed the game; and 4 indicates success, all players completed the game.

Group Cohesion. Group cohesion was determined by the perceived cohesion scale (Geidner, 2012) completed by confederates and coders. Each group or game session was rated on a 5-point Likert-type scale as not at all cohesive to extremely cohesive as indicated by the experiences of the participant observers and the observations of the

coders. Group cohesion is an individual level variable that is based on coder and confederate perception of the overall group.

Cyberbullying. Cyberbullying was measured using the coding scheme developed by Mabry and Kulovitz (2011) (see Appendix B) described above. Cyberbullying was coded into target behavior and bully behavior and was then divided further into high amounts of cyberbullying behavior versus low amounts of cyberbullying behavior compared to all groups included for analysis in the study. Designation of bully and target roles was based on the relative amounts of bullying behavior initiated or received by each member during gameplay as observed by confederates and coders.

Chapter 3: Results

Initial analyses assessing scale development, coding reliability and descriptive information about participants and game content are reported first. The remainder of the results are organized by hypotheses. Results pertaining to cyberbullying and game performance/outcomes are first reported (hypotheses one), followed by cyberbullying and group cohesion (hypotheses two), cyberbullying and participation (hypotheses three), and finally cyberbullying and leadership identification (hypotheses four).

Descriptive Statistics

The descriptive statistics reported include general information on the number of groups and messages, message codes, game measures, and cohesion scale frequencies. The total number of groups recorded was $n = 59$ with $n = 1,425$ messages. After deleting coded messages that contained game statistics, player scores, and other game-generated communication, the effective sample size was comprised of 41 groups which contained a total of 415 messages. Out of the 41 groups 25 groups contained bullying behavior and

16 groups had no bullying behavior (see Table 3). Out of the 415 messages, 30 were coded as insults (7.2%), followed by exclusion at 28 (6.7%). The least used code was extortion used 1 time (.2%). See Table 4 for a complete breakdown of code frequencies.

Game outcome measured the relative team success or failure of the game. A team as indicated by the number of team members that survived to finish the game session. In 13 groups (31.7%) no group members finished, indicating a failed game. All group members finished in 13 groups (31.7%), indicating a successful game. Additionally, only one group member finished in 6 groups (14.6%), two group members finished in 4 groups (9.8%), and three group members finished in 5 groups (12.2%).

Cohesion Scale

The previous exploratory factor analysis of the cohesion scale items generated two cohesion scale dimensions. The cohesion scale dimension of belonging included items that indicated group members were “part of the group”, while the cohesion scale dimension of satisfaction indicated that members were “happy with the group”. A rating of 1 indicated that no cohesion was observed, 2 indicated very little, 3 indicated some, 4 indicated quite a bit, and 5 indicated that an extreme amount of cohesion was observed.

Table 3

Number of Bullying Messages per Group

Group/Team	Total Messages	Bullying Messages
1	32	5
3	5	1
4	14	2
15	4	4
17	29	2
20	18	2
21	5	5
22	5	3
23	4	2
24	10	7
25	8	7
26	11	5
27	2	1
28	1	1
29	3	3
30	34	9
31	30	15
32	2	1
33	39	21
34	3	2
35	15	2
36	3	2
37	14	10
40	30	2
41	14	5
Total	335	119

Table 4
Frequency Distribution of Message Codes

Code	Frequency	Percentage
Harassment (code 1)	8	1.9
Threatening (code 2)	5	1.2
Insults (code 3)	30	7.2
Initiating Conflict (code 4)	14	3.4
Disrupting Play (code 5)	6	1.4
Silence (Ignore) (code 6)	7	1.7
Extortion (code 7)	1	.2
Teasing (code 8)	13	3.1
Slander (code 9)	7	1.7
Exclusion (code 10)	28	6.7
Apologies (code 11)	7	1.7
Resisting Bullying (code 12)	17	4.1
Positive Task Reactions (code 13)	19	4.6
Positive Social-Emotional Reactions (code 14)	11	2.7
Helping Behavior (code 15)	241	58.1
Uncodable (code 18)	1	.2
Total	415	

Table 5
Cohesion Scale Frequencies

	Scale Rating	Frequency	Percentage
Belonging Dimension	1-None	5	20%
	2-very little	10	40%
	3-some	10	40%
	4-quite a bit	0	0%
	5-an extreme amount	0	0%
	Total	25	
Satisfaction Dimension	1-None	9	36%
	2-very little	11	44%
	3-some	4	16%
	4-quite a bit	1	4%
	5-an extreme amount	0	0%
	Total	25	

Hypotheses

This study advanced several hypotheses concerning cyberbullying in the online video game *Left 4 Dead 2*, examining the phenomena from a group perspective.

Hypotheses projected the effects of cyberbullying on game outcome, group cohesion, and participation by the cyberbullying target and cyberbully. Results of hypotheses testing follows.

Hypothesis One

Hypothesis 1, hypothesis 1a, and hypothesis 1b evaluated the amount of cyberbullying in each game session (high amounts vs. low amounts) and the effect on game success. The amount of cyberbullying in each game session was determined by calculating the distribution of cyberbullying messages across groups and then calculating a high-low cutoff point for only the groups that contained cyberbullying. Out of the 41 groups 25 groups had cyberbullying behavior present and 16 groups had prosocial behavior. Out of the 25 groups that contained cyberbullying behavior 13 groups (52%) had high levels of cyberbullying (3 or more occurrences) and 12 groups (48%) had low levels of cyberbullying (1 or 2 occurrences). The occurrences of cyberbullying behavior refer to the amount of cyberbullying messages that transpired within each group (see Table 3).

Hypothesis 1 predicted that groups with higher amounts of cyberbullying will be more likely to experience game success. Levene's test for equal variances was rejected ($F(1,39) = 6.533, p = .018$), a t-test for unequal variances was conducted. There was no significant difference in game success, $t(23) = -.065, p = .949$ for groups with higher amounts of cyberbullying ($M = 1.50, SD = 1.16$) compared to groups with low amounts

of cyberbullying ($M = 1.54, SD = 1.76$). This test shows the amount of cyberbullying has no effect on game outcome.

To further study the possible effects of cyberbullying on the dependent variable, a chi-square test was also performed. No relationship was found between high/low cyberbullying and game outcome, Pearson's $\chi^2 = 7.37, df = 4, p = .117$; however, the Likelihood Ratio Chi-Square was significant: $\chi^2 = 9.70, df = 4, p = .046$. It is suggested that the use of the Likelihood Ratio test to report chi-square statistics can be more effective when frequency cells are $n = 5$ or lower (Ozdemir & Eydurán, 2005), which is the case in the H1 test. Comparing the relative power of the two chi-square outcomes, the Likelihood Ratio chi square result yielded a 22.2% gain in power compared to the Pearson's chi square test (Cohen, 1977). Thus, these results suggest that there is a slight relationship between high/low cyberbullying and game outcome, such that high cyberbullying contributes to a successful game outcome.

Since H1 only tested groups that contained cyberbullying behavior and the effect on game outcome, a t-test was performed to test whether groups with observed cyberbullying messages ($n = 25$), compared to groups with no observed cyberbullying messages or prosocial groups ($n = 16$), differed in game outcome. Levene's test of equality of error variance was not significant ($F(1,39) = 2.68, p = .109$). A significant difference existed for game success, $t(39) = -2.25, p = .03$ for prosocial only groups ($M = 2.69, SD = 1.81$) compared to cyberbullying only groups ($M = 1.52, SD = 1.47$). Groups using only prosocial messages were more successful than groups with cyberbullying messages.

Hypothesis 1a, which predicted that the groups with higher amounts of cyberbullying demonstrated by one or two members will be more likely to experience game success when compared to groups with more equally distributed cyberbullying across group members, could not be analyzed. The amount and distribution of cyberbullying across players and groups did not provide a sufficiently large enough sample for analyzing this hypothesis and it was dropped from the study.

Hypothesis 1b predicted that groups with higher amounts of earlier game cyberbullying experience greater game success. Out of the 41 groups 14 (34.1%) had cyberbullying occurring early in the game, 11 (26.8%) had cyberbullying occurring late in the game, and 16 (39.1%) were prosocial groups. To establish an early game versus late game midpoint, the total time of each game session was divided at the midpoint and the cyberbullying messages on each side of the midpoint split were tallied. For example, group eight ran for a total of 32 minutes and 28 seconds (32:28) divided at the midpoint, early game occurred before the 16 minute and 14 second (16:14) mark and late game occurred after the 16:14 mark and cyberbullying messages were counted on either side of the split. Groups with no cyberbullying were not included in directly testing H1b and were labeled “prosocial” groups for later analysis.

There was no significant difference between groups, $t(23) = 1.61, p = .120$, with higher amounts of cyberbullying earlier in the game ($M = 1.93, SD = 1.54$) compared to groups with more cyberbullying later in the game ($M = 1.00, SD = 1.26$) and game success. Cyberbullying occurring either early or late in the game has no effect on game success.

To further study the possible effects of the dependent variable, a Likelihood Ratio chi-square test was performed. No relationship was found between cyberbullying occurring early or late in the game and game success, $\chi^2 = 5.70$, $df = 4$, $p = .223$. While the chi-square analysis is not significant, game outcomes are lower on the late side rather than the early side suggesting that bullying earlier in the game leads to better team member survival.

Since H1b only tested groups that contained cyberbullying behavior and its effect on game outcome, a univariate analysis of variance (ANOVA) was performed to determine whether game outcome was affected by groups with cyberbullying occurring early in the game ($n = 14$), groups occurring late in the game ($n = 11$), and prosocial only groups ($n = 16$) where no bullying occurred. The ANOVA analysis was significant, $F(2, 38) = 3.669$, $p = .035$, $\eta^2 = .162$ subsequently, post hoc analyses employed the Sheffe post hoc test ($p \leq .05$). The test indicated that the prosocial groups ($M = 2.69$, $SD = 1.81$) had significantly better survival scores than groups where cyberbullying occurred late in the game ($M = 1.00$, $SD = 1.265$), but were not significantly different from groups where cyberbullying occurred early in the game ($M = 1.93$, $SD = 1.54$). See Table 6 for results.

Table 6

Game Outcome ANOVA

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	18.610	2	9.305	3.669	.035	.162
Intercept	140.280	1	140.280	55.317	.001	.593
Bullying Phases	18.610	2	9.305	3.669	.035	.162
Error	96.366	38	2.306			
Total	275	41				
Corrected Total	114.976	40				

Significant at the $p \leq .05$ level

Table 7
Game Outcome Means

Game Phase	Mean	SD	N
Early Game	1.93	1.542	14
Late Game	1.00	1.265	11
Prosocial Only	2.69	1.815	16
Total	1.98	1.695	41

Hypotheses Two

Hypothesis 2, hypothesis 2a, and hypothesis 2b evaluated the amount of cyberbullying in each game session (high amounts vs. low amount) and the effect on two dimensions of group cohesion (belonging and satisfaction). The same cyberbullying high/low cutoff point used in hypothesis one was used in hypothesis two to analyze the amount of cyberbullying with 13 groups (52%) containing high levels of cyberbullying and 12 groups (48%) containing low levels of cyberbullying. The cohesion scale dimensions were established through the previously reported exploratory factor analysis (see Table 2) and contained the dimension of belonging, which included items that indicated group members were “part of the group”, and the dimension of satisfaction, which indicated that members were “happy with the group”.

Hypothesis 2 posited that groups with lower amounts of cyberbullying will be more cohesive than groups with higher amounts of cyberbullying. Levene’s test for inequality of variance was not statistically significant for cohesion-belonging ($F(2, 23) = 2.33, p = .140$) or cohesion-satisfaction ($F(2, 23) = .727, p = .403$). No significant difference existed between high versus low cyberbullying on the dependent variable of group cohesion-belonging, $t(23) = -.473, p = .636$. Perceived belonging was higher in in

high cyberbullying groups ($M = 2.66, SD = .943$) than in low cyberbullying groups ($M = 2.51, SD = .621$). Additionally, there was no significant difference between group cohesion-satisfaction, $t(23) = .111, p = .914$. High cyberbullying groups ($M = 2.29, SD = .706$) were slightly lower versus low cyberbullying groups ($M = 2.33, SD = .992$). Overall, the amount of cyberbullying has no effect on either group cohesion variables belonging or satisfaction.

H2a, which predicted that groups with higher amounts of cyberbullying demonstrated by one or two members more likely to experience higher amounts of overall group cohesion compared to groups with more equally distributed cyberbullying across group members, could not be analyzed. The amount and distribution of cyberbullying across players and groups did not provide a sufficiently large enough sample for analysis.

Hypothesis 2b predicted that groups with higher amounts of cyberbullying earlier in the game will be more likely to experience higher amounts of overall group cohesion compare to groups with cyberbullying later in the game session. Out of the 41 groups 14 (34.1%) had cyberbullying occurring early in the game, 11 (26.8%) had cyberbullying occurring late in the game, and 16 (39.1%) were prosocial groups. The same midpoint split from H1b was used to determine early versus late game. Groups with no cyberbullying were not included in the testing of H2b and were labeled “prosocial” groups for later analysis.

Levene’s test for inequality of group variance was not statistically significant for cohesion-belonging ($F(2, 23) = .020, p = .888$) or cohesion-satisfaction ($F(2, 23) = .101, p = .754$). There existed a significant difference in group cohesion belonging, $t(23) = -$

2.06, $p = .05$ where cyberbullying occurred early in the game ($M = 2.32$, $SD = .748$) versus cyberbullying occurring late in the game ($M = 2.94$, $SD = .738$). There was no significant difference in group cohesion-satisfaction, $t(23) = -1.20$, $p = .242$, for cyberbullying occurring early in the game ($M = 2.14$, $SD = .909$) versus occurring later in the game ($M = 2.53$, $SD = .715$). While cyberbullying occurring early or late in the game has no effect on perceived group satisfaction, groups with late occurrence of cyberbullying increased the sense of belonging compared to groups where cyberbullying occurred earlier in the game.

Since H2b only tested groups that contained cyberbullying behavior and the effect on game outcome, an ANOVA examined whether group cohesion became affected by groups where cyberbullying occurred early in the game ($n = 11$), groups when occurring late in the game ($n = 14$), and prosocial groups ($n = 16$) that did not experience belonging. A significant ANOVA outcome occurred for group cohesion-belonging $F(2, 38) = 3.76$, $p = .032$. Post hoc analyses using Scheffe post hoc criterion for significance ($p \leq .05$) indicated that the prosocial groups scores on belonging ($M = 2.18$, $SD = .712$) were significantly lower from belonging scores in groups where cyberbullying occurred early in the game ($M = 2.94$, $SD = .738$), but not significantly different from cyberbullying occurring late in the game ($M = 2.32$, $SD = .748$). The ANOVA was not significant for group cohesion-satisfaction $F(2, 38) = .874$, $p = .426$

Hypothesis Three

Hypothesis 3, hypothesis 3a, and hypothesis 3b assessed group participation of cyberbullying targets and the amount of cyberbullying in each game session (high vs. low). The same cyberbullying high/low cutoff point used in hypothesis one served as the

basis for hypothesis three to analyze the amount of cyberbullying. Out of the 25 groups observed with cyberbullying, 13 groups (52%) contained high levels of cyberbullying (3 or more occurrences) and 12 groups (48%) had low levels of cyberbullying (1 or 2 occurrences). The occurrences of cyberbullying behavior refer to the amount of cyberbullying messages that transpired within each group (see Table 3).

Hypothesis 3 posited that targets of cyberbullying will participate more in groups with lower overall amounts of cyberbullying than will targets of cyberbullying in groups with higher overall amounts of cyberbullying. Levene's test of inequality of variance was significant ($F(1,24) = 7.47, p = .012$). There was no significant difference in cyberbullying target participation, $t(15.88) = -1.051, p = .309$ for groups with low amounts of cyberbullying ($M = .701, SD = .680$) compared to groups with high amounts of cyberbullying ($M = 1.79, SD = 1.83$). The amount of cyberbullying in groups generated no effect on target participation.

Hypothesis 3a, which predicted that targets of cyberbullying will participate more in groups with higher amounts of cyberbullying in one or two members compared to groups with more equally distributed cyberbullying across gameplay or cyberbullying later in the game sessions, could not be analyzed. The amount and distribution of cyberbullying across players and groups failed to provide a sufficiently large enough sample for analyzing this hypothesis and was dropped from the study.

Hypothesis 3b predicted that targets of cyberbullying in groups with higher amounts of cyberbullying earlier in the game participate less compared to groups with late session cyberbullying. The early game/late game split used in hypothesis 1b and 2b were incorporated to analyze hypothesis 3b. There was no significant difference between

target participation in groups, $t(23) = .821, p = .420$, with higher amounts of cyberbullying earlier in the game ($M = 3.70, SD = 8.04$) compared to groups with cyberbullying later in the game ($M = 2.72, SD = 4.90$). Cyberbullying occurring either early or late in the game has no effect on cyberbullying target participation.

Hypothesis Four

Hypothesis 4, hypothesis 4a, and hypothesis 4b assessed perceptions of cyberbullies and group leadership. Cyberbullies and leaders were identified by confederates and coders after each game session. After identifying the cyberbully and leader, confederates and coders completed a one-question influence/leadership score for the leader that was identified. The scores ranged from 1 (very little influence) to 4 (an extreme amount of influence). Out of 41 groups 13 groups identified leaders and 20 groups identified cyberbullies. Not all cyberbullies were leaders, thus in 7 groups leaders and cyberbullies were identified by confederates and coders as the same player.

Hypothesis 4 predicted that cyberbullies become perceived by participant observers as group leaders compared to nonbullies or victims. There exists a significant difference in influence, $t(17.10) = 6.32, p < .001$ for players identified as a leader ($M = 2.30, SD = .630$) compared to players not identified as a leader ($M = 1.08, SD = .288$). Players considered leaders influence the game more than non-leaders.

To specifically assess only the groups where cyberbullies and leaders were identified as the same person, another t-test was conducted. There was no significant difference in influence, $t(10) = .190, p = .171$ for players identified as a both cyberbully and leader ($M = 2.57, SD = .534$) compared to players not identified as both cyberbully and leader ($M = 2.00, SD = .707$). Players identified as both leader and cyberbully

generate no effect on game influence compared to players not identified as both cyberbully and leader.

Hypothesis 4a, which predicted that cyberbullies in groups with higher amounts of cyberbullying in one or two members will be more likely to be perceived by participant-observers as leaders compared to groups with more equally distributed cyberbullying across gameplay, could not be analyzed. The amount and distribution of cyberbullying across players and groups failed to provide a sufficiently large enough sample for analyzing this hypothesis and was dropped from the study.

Hypothesis 4b predicted that cyberbullies in groups with higher amounts of cyberbullying earlier in the game or later in the game will be more likely to be perceived by participant observers as leaders compared to groups with cyberbullying later in the game. There was no significant difference in perceived group leaders $t(17.10) = -1.04, p = .306$, and cyberbullying occurring early in the game ($M = 1.57, SD = .755$) or cyberbullying occurring late in the game ($M = 1.90, SD = .831$). Cyberbullying whether occurring early or late demonstrated no relationship perceptions of group leaders.

Chapter 4: Discussion

This study examined cyberbullying in online video games from a group perspective. Specifically, this study explored the effect of cyberbullying and prosocial behavior on game outcome, group cohesion, and participation in the first-person shooter *Left 4 Dead 2*. The following provides a discussion of the implications, and limitations of the results and how the results fit into the larger group communication and video game studies.

Summary of Results

This section reviews the results and interprets the analysis of the data relative to the four hypotheses advanced in chapter one. Overall data analysis indicated that cyberbullying produced little impact on the L4D2 and prosocial behavior seems to be a better indicator of game success, group cohesion, and participation by targets of cyberbullying. A detailed discussion of each hypothesis follows.

Hypothesis One

Hypothesis one speculated that groups with higher amounts of cyberbullying predicts improved game success. Overall, the analysis indicated that cyberbullying behavior generated no effect on the success or failure of the game; however prosocial behavior does impact the game outcome such that prosocial groups were more successful than cyberbullying groups. Prosocial groups may contribute to a more successful game outcome simply because of the upbeat and affirmative tone that it brings to the group; the positivity and reassurance may be enough to encourage team members to perform well.

Since competent performance within the game and the successful completion of a task (in this case finishing the game successfully) are linked (see Klimt, Hefner, Vorderer & Roth, 2008) to game enjoyment, prosocial behavior, and not cyberbullying behavior, may be used as a motivation tool ensuring an enjoyable game experience for the individual player. Previous studies have shown that when a player fails within a game their self-esteem decreases (Klimt, et al., 2008), game enjoyment is threatened (Jin, 2012), and reward centers of the brain are deactivated (Mathiak, Klasen, Ackermann, Shergill, & Mathiak, 2011). Thus, since individual feelings and experiences are threatened by performing badly and the successful completion of the game depends on

group members, motivating your team to perform well is necessary. These findings imply that helping behavior, encouragement, and defending team members against negative behavior is a better motivational tool than bullying team members into action.

Cyberbullying behavior may cause team members to essentially stop performing at a level that maintains game enjoyment or they may stop playing the game altogether.

The surprising aspect about prosocial behavior having an impact on the game outcome is the fact that L4D2 is an inherently aggressive and fast-paced game, yet prosocial behavior endures. One explanation for this may be that the L4D2 game, and for the most part digital games in general, are voluntary groups. No one has to endure cyberbullying behavior and can essentially leave the game anytime they feel threatened, aren't enjoying the game anymore, or simply don't want to tolerate negative behavior.

Hypothesis 1b, which posited that groups with higher amounts of cyberbullying earlier in the game will be more likely to experience game success compared to groups with more cyberbullying later in the game was also not confirmed; thus, when cyberbullying occurs in the game has little impact on game success. However, when prosocial groups were included in the analysis, prosocial behavior occurring late in the game contributed to more game success. This again may be due to goal orientation and game enjoyment such that towards the end of a game the goal of winning becomes more salient and team members encourage and help each other to finish the game successfully.

Studies show that play time in first-person shooter games impacts arousal levels (Weber, 2009) and game enjoyment (Jin, 2012). Weber found that the longer players played a first-person shooter game the greater the level of arousal and the smaller the level of aggression. This directly confirms the finding that prosocial behavior occurring

at the end of a game leads to more game success. Since aggression is negatively related to play time, it makes sense that prosocial behavior would increase towards the end of the game and cyberbullying behavior would have no effect. Fundamentally, players become used to the environment of the game and in a final push to win use prosocial behavior to achieve individual and group goals.

Hypothesis Two

Overall, the amount of cyberbullying did not affect either dimension of group cohesion (belonging or satisfaction); however, the timing of when cyberbullying occurred affected the belonging dimension of group cohesion. Additional analyses looking at the prosocial groups also impacted the belonging dimension of cohesion. Similar to hypothesis one, prosocial behavior occurring late in the game leads to more group cohesion (belonging).

Hypothesis two, which advanced that groups with lower amounts of cyberbullying will be more cohesive than groups with higher amounts of cyberbullying was not supported. The amount of cyberbullying has no effect on overall group cohesion. Overall group cohesion may not be affected by the presence of cyberbullying because of the type of group that is formed while playing L4D2 as well as the collaboration towards a common goal.

Geidner (2012) found that the history of a voluntary group may “moderate the relationship between perceived cohesion and willingness to impose sanctions” (p. 22), thus the voluntary, zero-history makeup of the L4D2 groups may moderate the use of cyberbullying behavior. Cyberbullying behavior in online video games serves as punishment for poor performance (Kulovitz & Mabry, 2012); however since the intention

of playing L4D2, and many online games, is for entertainment and the players are relative strangers, interactions are kept relatively neutral. Players may not initiate cyberbullying behavior since little overall investment in zero-history groups exists and the group shares a common goal.

Players in L4D2 were collaborative groups, working towards the common goal of winning against the other 4-person team, making it to the safe-room in time, or simply destroying the infected for sheer pleasure. Shared objectives and the teamwork necessary to achieve goals may foster an overall sense of belonging and togetherness. Additionally, working as a team in order to kill the “other” (e.g. the other team) may rally members of the same team to work together where cyberbullying team members becomes counterproductive.

Hypotheses 2b, which stated groups with higher amounts of cyberbullying earlier in the game will be more likely to experience higher amounts of overall group cohesion compared to groups with cyberbullying later in the game session, was not supported. In fact, the opposite was found to be true. Groups with cyberbullying occurring late in the game are more likely to experience group cohesion (belonging dimension). Additionally, prosocial behavior occurring late in the game also leads to more group cohesion (belonging).

The finding that both prosocial groups and cyberbullying groups are more cohesive later in the game seem to contradict each other; however, this may have less to do with the type of group and more to do with timing of group activity. Since FPS tend to be goal oriented, the task towards the end of the game (or in the second half of the game) may be less about orientation to the game dynamics, map, team members, etc. and more

about finishing the game and reaching the main goal. Group cohesion, or a sense of belonging, may just be a symptom of the end of the game and the drive to finish.

Towards the end of the game winning is everything. Groups with prosocial behavior occurring late in the game were also more likely to experience the group cohesion dimension belonging. Cyberbullying has been found to lower satisfaction (see Klimt, et al., 2008) and cohesive groups are more productive and satisfied (Evans & Dion, 2012), thus it makes sense then that prosocial behavior was found in cohesive groups and fostered an overall sense of belonging.

Hypothesis Three

Hypothesis three suggested that targets of cyberbullying would participate more in groups with lower cyberbullying compared to groups with higher amounts of cyberbullying. Hypothesis 3b postulated that targets would participate less when cyberbullying occurred early in the game compared to cyberbullying occurring later in the game. Overall, hypothesis three and hypothesis 3b were not confirmed; Timing within the game and amount of cyberbullying has no effect on target participation.

These findings may have to do a lot with how the targets of cyberbullying saw themselves within the game; just because the researchers, confederates, and coders identified individual players as targets of cyberbullying doesn't mean that the targets saw themselves as targets. The players could have perceived the cyberbullying as what is expected from a gaming environment such as L4D2, or were simply not affected by any position of power that the cyberbully may have been exhibiting. Samnani (2013) discovered that when targets "fail to recognize that they are experiencing bullying, they

are less likely to retaliate” (p. 300), thus targets may be less likely to react to cyberbullying behavior in general and their participation in the game is unaffected.

Hypothesis Four

Hypothesis four posited that cyberbullies would be more likely to be perceived as group leaders. Hypothesis 4b suggested that cyberbullies would be more likely to be perceived as group leaders when cyberbullying occurred earlier in the game. Overall cyberbullies were perceived as group leaders; however the timing of when cyberbullying occurred had no effect on perceived leadership.

When considering that cyberbullies are often perceived as having more power (Duncan, 1999; Menesini, Melan & Pgnatti, 2000) and higher need for dominance (Bowes, Maughan, Caspi, Moffit, & Arseneault, 2010), it follows logically that they would be perceived as leaders in the game. When players in online games are higher self-efficacy, they are often perceived as leaders (Klmmitt, et al, 2008), thus the independence that caused by the power cyberbully/target power differential leads to this position of leadership within the group.

Additionally, the findings in hypothesis 4b also reflect the conclusions in hypothesis three that cyberbullies don't seem to be visibly affected by the power dynamics of the game. Even though the cyberbullies are perceived as leaders, the targets are not affected by the cyberbullying. While this seems like a contradiction, this is consistent with covert cyberbullying in which the targets are unsure what they are experiencing is cyberbullying (Samnani, 2013) and because of the uncertainty do not overtly respond or are not visibly influenced by the cyberbully.

General Discussion

The most surprising finding overall is the presence of both cyberbullying and prosocial behavior within the same game sessions. While prosocial behavior by far has a larger impact on game outcome and group cohesion, cyberbullying was still found to be present, although without a large impact. While further exploration is necessary the type of game and intention of gameplay may be an explanation for the presence of both cyberbullying and prosocial behavior.

Since video games provide a space for shared interest and enjoyment (Schott & Hodgetts, 2006) and the FPS genre is marked by relative fast-paced combat gameplay (Hitchens, 2011), players may not want to ruin the gaming experiences with aggressive behavior such as cyberbullying. Additionally, the FPS game environment becomes an extremely fast-paced and require players to react and make decisions quickly. L4D2 is no exception to this aspect of the genre, compelling players to adapt and react rapidly to opponents in the game. The pace of the environment doesn't allow for cyberbullying to be present and/or effective, leaving prosocial behavior as the easier and more efficient option to choose and respond.

Limitations

This study, exploring cyberbullying behavior within the first-person shooter *Left 4 Dead 2* has a few limitations to consider. The choice of game genre, pace of the game L4D2, small sample sizes, and inability to survey the player participants should require articulation. The investigation limitations did not have a large impact on the results and analysis of this study, but should be taken into consideration when interpreting the hypotheses.

The FPS game chosen over other game types (e.g. massively multiplayer online roleplaying games) provides the best opportunity to record the game sessions with very little ability for customization. Specifically, the L4D2 game had lower visual specifications, thus the mechanics of recording the game using FRAPS or ScreenFlow was not as taxing on the PCs or Macs used by the confederates and coders. Additionally, L4D2 was released in 2009, thus providing four-years for participants to familiarize themselves with the game and for the developers to work out any “bugs” that may affect the playability. L4D2 did not allow for customization of weapons or characters, which worked to the studies advantage by controlling player experience.

While these aspects of the L4D2 provided rich data, the fast-paced environment may not have provided optimal behavior episodes for studying cyberbullying. The speed of decision-making and action within L4D2 may have truncated conversations that contained cyberbullying. Similarly, the lack of customization, while working in favor of controlling game experiences, did not allow for variety and may have inadvertently stifled interaction that may have contained cyberbullying.

Sample sizes were relatively low when groups were sub-divided for analysis and when 18 groups were removed from the overall analysis because of the game-generated data. Additionally, the perspectives of the non-confederate players could not be obtained. Both larger sample sizes and participant perspectives would have provided more robust data; however, extensive measures were undertaken to acquire both. Players were initially approached in-game to provide their perspectives and were offered the chance to win a \$50 Visa gift card. When no players participated, they were offered \$10 just for filling out the survey, yet players still chose not to participate. There were no foreseeable

alternatives or venues to get player perspective, thus confederates and coders were used to obtain selected in-game data necessary to analyze the hypotheses.

There was some question as to whether or not the confederates (also referred to as participant observers), would have an effect on the overall gameplay. All confederates had previously played L4D2, were familiar with the game environment, and rated themselves as average skill level players. Additionally, the perceptions and observations of the participant observers (i.e. the cohesion rating scale and leadership assessment) was also rated by the coders after they viewed the recorded game sessions, which is consistent with reliability checks for group observation (see Wirth, Feldberg, Schouten, van den Hoof, & Williams, 2012).

Future Research

There are several areas of research leading from this study that should be explored. Future research should address the limitations and obtain participant perspectives in addition to their behavior for comparison. The data collected in this study should also be looked at for patterns with a focus on sequencing the behavior in relation how the game shapes behavior in addition to investigating the qualitative transcripts.

One way to obtain participant perspectives would be to create a lab study instead of relying on anonymous participants within the game. The same study composition could be used (i.e. a confederate recording the game, coders to code the data); however, all participants would be known to the researchers and physically present while playing the game. Precautions need to be taken to ensure that participants do not know each other and are in separate rooms while playing the game nonetheless this ensures that participant perspectives and in-game behavior can be obtained.

Concluding Remarks

Social behavior in online video games and the issue of cyberbullying seems to indicate that prosocial behavior is far more effective at motivating players to perform well within the game in addition to fostering group cohesion. Nonetheless, cyberbullying behavior was present alongside prosocial behavior, which warrants future investigation to analyze impact and function. One benefit of conducting this study was acquiring in-game group behavioral data in addition to better understanding the appeal of playing online games.

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Appendix A

Participant Observer (Confederate) and Coder Survey

University of Wisconsin – Milwaukee

Consent to Participate in Online Research

Person Responsible for Research: Kimberly L. Kulovitz

Study Description: The purpose of this research study is to examine the role of cyberbullying in video games and the perceptions that accompany this behavior. Approximately 200 subjects will participate in the overall study (40 groups). Thank you for agreeing to be a participant observer (confederate) or coder. The following survey will ask you to record and rate your observations and will take approximately 10-minutes to complete.

Risks / Benefits: Risks to participants are considered minimal. There will be no costs for participating, nor will you benefit from participating other than to further research.

Confidentiality: Your responses to the survey are completely confidential. No identifiable information will be attached to your recorded game data and pseudonyms will replace screen names, avatar handles, etc. Data from this study will be saved on a password protected computer for approximately 1-year. Only Kimberly L. Kulovitz and Dr. Edward Mabry will have access to the information.

Voluntary Participation: Your participation in this study is voluntary. You may choose to not answer any of the questions or withdraw from this study at any time without penalty. You can also choose NOT to have your recorded gameplay used or published for research purposes if you choose without penalty. Your decision will not change any present or future relationship with the University of Wisconsin Milwaukee.

Who do I contact for questions about the study: For more information about the study or study procedures, contact Kimberly L. Kulovitz, Kulovitz@uwm.edu.

Who do I contact for questions about my rights or complaints towards my treatment as a research subject? Contact the UWM IRB at 414-229-3173 or irbinfo@uwm.edu

Research Subject's Consent to Participate in Research:

By completing and submitting the attached survey, you are voluntarily agreeing to take part in this study. Completing the survey indicates that you have read this consent form and have had all of your questions answered, and that you are 18 years of age or older.

Thank you!

IRB exemption date: 1/23/2013

IRB number: 13.247

NOTE: By clicking the “next” button, you have read and understand the consent form above, and agree to participate in this study. Remember, you can stop participating at any time.

Thank you!

Instructions: Thank you again for agreeing to play and record *Left 4 Dead 2* or for agreeing to code the recorded behavior. We would like to get your reactions and observations regarding your experiences after each recorded game.

1. What is the name of the file that you are answering this survey about? (i.e your name and the date of the recording – Ben 2-9)
2. How often did you feel OVERT cyberbullying took place in L4D2?
Overt Cyberbullying – Open, obvious and directly observable cyberbullying behavior (e.g. namecalling, 76arassment, etc.)
3. How often did you feel COVERT cyberbullying took place in L4D2?
Covert Cyberbullying – Cyberbullying that is secret or hidden. Less obvious behaviors that are difficult to ascribe to anyone in particular (e.g. ignoring, exclusion, etc.)
4. Who were the bullies? Include as much information as you can.
5. Who were the targets of bullying? Include as much information as you can
6. If playing the game....Overall do you think you were the target of bullying? Were you the instigator of bullying?
7. Did you feel/observe a sense of belonging in this group?
8. Did you feel that you were (that all players) a member(s) of the group?
9. Did you see yourself (observe all players) were part of the group?
10. Were you/did you observe enthusiasm about the group?
11. Were you/did you observe happiness in the group?
12. Did you feel/observe that this group was the best of its type?
13. How cohesive do you think the group was? Please include as much detail as possible.
Cohesive – How well the group works together as a unit

14. In this particular game of L4D2, did you perceive a player to be group leader? If so, please indicate the screen name of the leader below. Please include as much additional information as you can about the person you perceived as group leader.
NOTE: It is possible to identify more than one person as group leader.
15. How much influence did the group leader have within the group (compared to the other players)? If you identified more than one player in the question above please rate the person who was the leader the most below.
16. Are there any other observations, comments, questions that you would like to add that you think may be helpful?
17. What is your gender?
18. What is your age?
19. What is your name?

Appendix B

Cyberbullying Message Codes

These codes are based on the content of scale items from the cyberbullying scale (Mabry & Kulovitz 2011). Codes assume behavior flows from bully to target unless otherwise defined. All bullying codes must be unambiguously ascribed to a player. Content codes do not have to reference a player.

Overt Bullying

1. **Harassment** – Persistent or continuous, aggressive criticism of and/or demands for acting in a particular manner.
 - a. A series of behaviors (at least three) that criticizes or demands that a target acts in a particular manner. Includes instances where the criticism and demands are present regardless of the target’s resistance.
 - b. EXAMPLE: “Heal me now!” “Are you EVER going to heal me?!” “Helloooo I need healing!”

2. **Threatening** – Expression of intention to cause harm or pain (physical or psycho-social).
 - a. EXAMPLE: “I’ll make certain nobody in this game wants to play with you again.”
 - b. EXAMPLE: “I’ll come over to your house and beat you myself!”

3. **Insults** – Offend or demean someone’s activities, skills, or self-system(s), personality, attitudes, beliefs, or habits.
 - a. **NOTE**: name-calling is considered an insult (the use of offensive names)
 - b. EXAMPLE: “You asshole, I haven’t seen anyone shoot so bad before!”
 - c. EXAMPLE: “Way to go man, now your solo.”

4. **Initiating conflict (fight)** – Signaling that a conflict exists, or instigating a conflict, with one/more other players. Conflict is when one person’s goals or actions interfere or impede someone else’s goals or actions.
 - a. EXAMPLE: Intentionally shooting teammates to start a fight
 - b. EXAMPLE: Player A wants to get the gas cans (part of a quest) but player B wants to find more weapons. An argument then begins.

5. **Disrupting play** – Actively interfering with another’s discretionary actions during a game/cycle. Specifically focuses on the play of the game rather than interfering with the goals and actions of an individual (as in #4).
 - a. Actor engages in activity that obstructs target’s access to resources or continuation of team collaboration.
 - b. EXAMPLE: Player A intentionally refuses to join other teammates in a safe room

Covert Bullying

6. **Silence (ignore)** – Refusal to notice or pay attention to someone. Ignoring the actions or situations of other players.
7. **Extortion** – Acquisition (or attempted acquisition) of something through force or threat. Tied to the instigation/withholding of behavior unless target complies with request.
 - a. EXAMPLE: “I won’t revive you until you listen to what I have to say.”
8. **Teasing** – Deliberately annoying or irritating another player.
 - a. May *attempt to be humorous* to others; however, there is no regard for how the comments/behaviors may be interpreted.
 - b. EXAMPLE: “Only newbies make dumb mistakes like that”
 - c. EXAMPLE: “My grandma can do better than that”
9. **Slander** – Objectively verifiable false comments that are defaming/insulting about another game-player. Damaging to reputation.
 - a. Comments like providing inaccurate results of a person’s play, saying a player had been kicked out of another group when they have not, or falsely accusing a player of poor play.
10. **Exclusion** – Purposefully leaving someone out or neglecting their needs.
 - a. EXAMPLE: Intentionally leaving a teammate behind and refusing to help them figure out the map.

Contextualizing Categories

11. **Apologies** – Expressing remorse, a request for forgiveness, or face-saving action(s) when confronted about one’s behavior (game moves, strategy preferences) or beliefs/opinions.
 - a. EXAMPLE: “Sorry! I didn’t mean to shoot you.”

12. **Resistance to Bullying.**

- a. **Self-Defense** – Expressing opposition to, or the refusal to accept, bullying from others; may include denial, counter-arguments, invectives, threats, and altering game play.
- b. **Other-Defense** – Expressing opposition to, or the refusal to accept, bullying directed towards others; may include denial, counter-arguments, invectives, threats, and altering game play.

13. **Positive Task Reactions** – Complimentary behavior/messages that are supportive of the game and its play. Specifically focuses on the GAME.

- EXAMPLE: “That map you created is really challenging.”

14. **Positive Social-Emotional Reactions** – Complimentary behavior/messages that express positive regard for a member of the game. Specifically focuses on the PERSON.

- a. **NOTE**: Encouragement would fall under this category (support, inspiration, praise of an individual).
- b. EXAMPLE: “Wooooow you’re good at this game!”

Contextualizing Categories – L4D2 Specific

15. **Helping Behavior** – Making it easier or possible for a player to do something that could not be done alone or without assistance.

- a. **NOTE**: In L4D2 this is typically going to be behavior/action rather than a verbal statement or message.
- b. Examples include giving items (adrenaline, med packs, etc.), helping people up, etc.
- c. EXAMPLE: “____ saved you” or “Reviving teammate”

16. **Game Statistics** – At the end of each game, statistics are displayed for each player. Record as much of this data as possible for each player.

- a. **NOTE**: This will not be a stand-alone code category, but rather supplemental information on the codesheet as it appears in the game.
- b. EXAMPLE: “general defense,” “total number of kills,” “tank slayer” etc.

17. **Task Completion** – General recording of the game outcome. For example, if it is a campaign how well was the campaign completed? Did the confederates team win the versus game? Use the rating scale below.

- a. NOTE: This will not be a stand-alone code category, but rather a column/supplemental information on the codesheet
- b. 1 = fail – all players died or quite the game
- c. 2 = partial fail – only 1 out of 4 players completed the game
- d. 3 = partial success – only 2 out of 4 players completed the game
- e. 4 = success – all players completed the game
- f. NOTE: does not include the participant observer (confederate) recording the game (the first-person perspective)

18. **Uncodable.** Messages that do not fit into categories 1-13

Appendix C

Participant Observer (Confederate) Instructions

Thank you very much for agreeing to help with our research project!! You will need to attend a brief training session (dates and times are flexible depending on your schedule) and will be provided with the following software:

1. FRAPS – a real-time video capturing software (or ScreenFlow for Mac)
2. *Left 4 Dead 2* – Cooperative first-person shooter game for PC
3. External hard drive (1 terabyte)

As a thank you for your participation, you will be allowed to keep the FRAPS software (or ScreenFlow software) and the *Left 4 Dead 2* game, but will be asked to return the external hard drive. Since all gameplay and data capturing will be taking place on a PC (or Mac), you must have the following minimum system requirements:

1. Windows 7/Vista/XP operating system (Mac equivalent)
2. 4.3GHz CPU; 2GB RAM
3. ATiX800/nVidia 6600 graphics card
4. DirectX9c sound card

You will be asked to play several *Left 4 Dead 2* games and record yourself playing the game sessions. You should play the game as you normally would, with as little modification to your game strategy, skill level, etc. as possible. After recording each game session you will be asked to fill out a short survey about your observations and experiences during the gameplay. Feel free to include any additional information that you wish to share at the end of each survey that you complete.

Appendix D

Coding Instructions

Note: These instructions do not appear as presented to the coders during training. Due to the formatting requirements of this dissertation the images that accompanied the instructions were removed. A description of the images appear in brackets where they would have appeared in the original document.

Game Description and Definitions

Left 4 Dead 2 is a first-person shooter co-op (cooperative-based game) released in November of 2009 by Valve Corporation. Players form 4-person teams and play as one of four characters (Nick, Ellis, Coach, or Rochelle) tasked with surviving a post-apocalyptic pandemic. Players are provided with non-upgradable firearms and blunt weapons, which they must pick up throughout gameplay and must rely on team members to heal, complete tasks, and finish predetermined campaigns.

[picture of the four characters appears about here]

Nick – rude cynical gambler and con artist

Rochelle – production assistant at a local TV station

Coach – Portly high school football coach with a bad knee

Ellis – friendly, talkative mechanic

The Codebook (Word File)

You will be using a numbered codebook to analyze the recorded L4D2 video files. The codebook is a document that contains 18 behavior codes that act as a set of information. You will label the text/behavior that you view in the video files based on the 18 codes listed in the codebook. The codes capture cyberbullying behavior (overt and covert), video game contextualizing categories, and L4D2 specific behavior. The most important codes are the cyberbullying behavior codes.

The codes will be recorded into an excel spreadsheet as you see them occur in the video files. The excel spreadsheet is already formatted as a template with the information (in addition to the code categories) that should be recorded. You will then be noting whether the coded behavior is an individual player response (I) or a group action (G). The more information you record and code out of the video files the better the analysis will be as an end result.

The Codesheet (Excel File)

In addition to the codes, information such as player name, time stamp, etc. should be recorded in the spreadsheet. The codebook is the visual information from the video file that you are recording and the codesheet is the additional information that is needed for later analysis. Descriptions of the codesheet categories are below:

1. **Case #:** The case number is the sequential order of your records.
2. **Text:** This is where you will record the text, which may be spoken (e.g. over headset), written (typed into the game screen), or behavioral (mostly nonverbal such as blocking entry to certain locations, etc.). This is what you will be applying the code from the codebook to.
3. **Code:** Refer to the codebook for the code categories. Remember some codes are defined textually (e.g. written or spoken) and some are based on your interpretation of nonverbal behaviors.
4. **Player Names:** List the player that is speaking, typing, or that the behavior is connected to and all other players involved
5. **Group or Individual:** List whether the code is an individual player response, or a group behavior.
6. **Time Stamp:** Note the beginning and ending time of the message or behavior. The time stamp will be in “seconds” based on the beginning time and ending time of the message or behavior. (e.g. start :17 end 2:16) in the bottom right hand corner of VLC media player just below the volume controls (see screenshot below).

[screenshot of the time stamp appears about here]

[graphic of the time stamp recorded in the excel file appears about here]

7. **Video File Name:** Note the video file name that the text was generated from. The video files are labeled with the confederate name and the date the video was recorded (e.g. Ben 2-14).
8. **Type of Game:** Note the type of game that the confederate is playing (there are different classifications, names, and difficulty levels). This can be found at the beginning of the video file (recording) as the confederate is selecting the game type.

[screenshot of the beginning of a game illustrating the type of game appears about here]
 [graphic of the type of game recorded in the excel file appears about here]

9. **Coder Name:** Your name

10. **Task Completion Rating Code:** This is based on the rating scale in code 17 from the codebook.
 - a. 1 = fail – all players died or quite the game
 - b. 2 = partial fail – only 1 out of 4 players completed the game
 - c. 3 = partial success – only 2 out of 4 players completed the game
 - d. 4 = success – all players completed the game
 - e. NOTE: does not include the confederate recording

11. **Memo:** Try to record as much additional relevant information here as possible. You can record things such as if you think the speaker is clearly male or female, was there any contextualizing information that may help better understand the written, spoken or behavioral text? Was there anything about the immediate game environment (weapons, map glitches, server lags, etc.) that may have affected the codes or texts? Who was speaking to who?

L4D2 Glossary

1. **Game Modes:** There are four game modes in L4D2, but the confederates are only playing and recording two of them (campaign and versus).
 - a. Campaign – up to four human players fight against the infected (non-player characters) through stages. Can also be played single-player
 - b. Versus – up to four human players fight against up to four other human players (infected versus survivors)
 - c. Survival – A timed challenge where survivors must last as long as possible.
 - d. Scavenge – A new 4-on-4 mode that requires the Survivor players to collect and use as many fuel cans scattered about a level to fill up a power generator, while the infected players attempt to stop them.

2. **Infected Characters**
 - a. Boomer – A bloated infected whose bile blinds any survivors hit with it and attracts a horde (group of common infected).
 - b. Hunter – Agile male infected that can pounce on survivors from great distances and tear at them until the survivor dies or another survivor helps.

- c. Smoker – A male infected that can ensnare survivors with its long tongue from a distance and upon death releases a cloud of smoke that obscures survivors' vision
- d. Tank – A gigantic, muscular infected male that can punch survivors several feet and toss cars and concrete slabs.
- e. Witch – A crying infected woman who, when provoked by loud sounds, light, or proximity of survivors will attack her provoker
- f. Charger – A male infected with an enormous right arm who charges at the survivor and pummels them into the ground
- g. Spitter – a female infected that spits balls of acid that splatters across an area quickly eroding survivor health.
- h. Jockey – A male infected that jumps onto a survivor's back and steers them towards other infected or environmental hazards.

NOTE: Please also refer to the video file provided to you for the clips used in training for additional examples.

[picture of the infected characters appears about here]

Appendix E

Coding Spreadsheet Example

Page 1

Case #	Text (spoken, written, or behavior description)	Code	Player names (all involved)	Group or Individual
1	Thanks, you owned that tank!	14	Owens214; tisk234	Individual
2				

Page 2

Time Stamp	Video File Name	Type of Game	Code r Name	Task Completion Rating (Code 17)	MEMO
:17 – 2:16	Ben 2-14	Campaign – Death Toll – Normal	Ryan	4 – Success	owens2145 “saved” tisk2

Appendix F

Completed File Tracking Sheet Example

Task Completion:

- 1 = fail (none finished)
- 2 = (1 of 4 finished)
- 3 = (2 of 4 finished)
- 4 = (3 of 4 finished)
- 5 = success (all finished)

Confederate Finish:

- 1 = yes
- 2 = no

File	Coder	Player	Task	Conf. Finish	Notes	Time Total	Time Break
Ben 2-14	Courtney	Ben	3	1		1:03:58	30:02
Ben 2-17	Olivera	Ben	1	2		17:12	8:56
Ben 2-26	Kate	Ben	1	2		45:29	22:50

Appendix G

Waiver to Obtain Informed Consent

B1. The research involves no more than minimal risk to the subjects;

Explain: There is no more than minimal risk to the participants. The participants will be observed and recorded in a natural gameplay setting which can be accessed by anyone with a PC capable of handling the minimum system requirements of “Left 4 Dead 2”. This is pure observation and the mechanics of the gameplay will not be altered in any way.

B2. The waiver or alteration will not adversely affect the rights and welfare of the subjects;

Explain: The participants having their gameplay recorded in “Left 4 Dead 2” will already be playing the game (i.e. they were not requested by the researchers play and were not preselected in any way) and will be observed in a natural gameplay setting (the gameplay is open to natural observation and the groups are self-selected by the game players themselves). The confederates recording the gameplay will be participants themselves and will not in any way be able to adversely affect the other players.

B3. The research could not practicably be carried out without the waiver or alteration; and

Explain: Due to the mechanics of the gameplay (players are put into four-person groups and immediately begin gameplay) there is no logical point of access to inform the players of our (the researchers) intent to observe their behavior. It is also imperative that the natural setting of the gameplay is preserved, which would be disrupted if consent were to be obtained prior to recording and observation.

B4. Whenever appropriate, the subjects will be provided with additional pertinent information after participation.

Explain: Depending on how long the participants stay on after the completion of the gameplay (some players may stay on to chat with other players or may log out during gameplay or immediately after) they will be informed of the confederates presence and the intent of the researchers (see attachment with confederate debriefing script).

Appendix H

IRB Approval Letter

New Study - Notice of IRB Exempt Status

Date: January 24, 2013

To: Edward Mabry, PhD Dept: Communication

Cc: Kimberly Kulovitz

IRB#: 13.247 Title: Cyberbullying in "Left 4 Dead 2": An Experiment in Collaborative Play

After review of your research protocol by the University of Wisconsin – Milwaukee Institutional Review Board, your protocol has been granted Exempt Status under Category 2 as governed by 45 CFR 46.101(b).

Unless specifically where the change is necessary to eliminate apparent immediate hazards to the subjects, any proposed changes to the protocol must be reviewed by the IRB before implementation. It is the principal investigator's responsibility to adhere to the policies and guidelines set forth by the UWM IRB and maintain proper documentation of its records and promptly report to the IRB any adverse events which require reporting.

It is the principal investigator's responsibility to adhere to UWM and UW System Policies, and any applicable state and federal laws governing activities the principal investigator may seek to employ (e.g., FERPA , Radiation Safety , UWM Data Security , UW System policy on Prizes, Awards and Gifts , state gambling laws, etc.) which are independent of IRB review/approval.

Contact the IRB office if you have any further questions. Thank you for your cooperation and best wishes for a successful project

Respectfully,

Melissa C. Spadanuda IRB Manager

KIMBERLY L. KULOVITZ**University Address:**

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 University of Wisconsin-Milwaukee
 Johnston Hall Room 210
 P.O. Box 413
 Milwaukee, WI 53201
Kulovitz@uwm.edu

EDUCATION

- University of Wisconsin-Milwaukee, Milwaukee, WI
Ph.D. in Communication **Dec. 2013**
 Dissertation: "Cyberbullying in 'Left 4 Dead 2': A Study in Collaborative Play"
- University of Wisconsin-Milwaukee, Milwaukee, WI
M.A. in Communication **May 2009**
 Thesis: "Self Disclosure and the Sibling Relationship"
- University of Wisconsin-Parkside, Kenosha, WI
B.A in Communication & English **May 2004**
 Areas of Concentration: English literature, public relations/marketing
 Double major in English and Communication
 English Thesis: "He, She, It: Science Fiction and the Social Construction of Gender in *The Left Hand of Darkness* and *Dawn*"

AWARDS

- ThinkSwiss Research Scholarship Travel Grant **June 2012**
- Communication Department ICA Teaching Award **May 2012**
- Ph.D. Mel Miller Award for teaching **May 2012**
- M.A. Mel Miller Award for teaching **May 2009**
- Department of Communication GPA award **May 2009**
- Undergraduate Research Initiative Grant
 under the direction of Dr. Hayeon Song **April 2009 – July 2009**

TEACHING EXPERIENCE

University of Wisconsin-Milwaukee, Milwaukee, WI

Associate Lecturer

Interviewers and Interviewing (COMM 300)

August 2013 – present

- Challenging face-to-face class focusing on the techniques of attending and conducting interviews of various types
- Design of the 15-week course based on Stewart & Cash 13th edition
- Class tailored at the beginning of the semester to what the students want to learn and is relevant to their experiences
- Utilize Desire-to-Learn, asynchronous online learning technology to supplement in-class material, accept assignment submissions, and post grades.

University of Wisconsin-Milwaukee, Milwaukee, WI

Teaching Assistant – Associate Lecturer (Fall 2013)

Interpersonal Communication Processes (COMM 301)

Sept. 2010 – present

- Design of the 15-week course based on Guerrero, Anderson, & Afifi 4th edition.
- Responsible for planning the overall course structure, syllabus, assignments and activities.
- Utilize classroom technology for paperless and interactive lessons/lecture.
- Utilize Desire-to-Learn, asynchronous online learning technology to supplement in-class material, accept assignment submissions, and post grades.

University of Wisconsin-Milwaukee, Milwaukee, WI

Teaching Assistant – Associate Lecturer (Fall 2013)

Human Communication and Technology (COMM 313)

Sept. 2011 – present

- Class taught entirely online using Desire-to-Learn (D2L) asynchronous online learning platform.
- Continuous collaboration with course director and other 313 course instructors to create interactive PowerPoint lectures and course material.

University of Wisconsin-Milwaukee, Milwaukee, WI

Teaching Assistant

Introduction to Interpersonal Communication (COMM 101)

Sept. 2007 – July 2011

- Collaborated with the development of the overall course structure, exams and course policies.
- Administered all grades and responsible for lesson planning for 15-week course.
- Utilized smart classroom technology for paperless and interactive lessons/lecture.

-Utilized Desire-to-Learn, asynchronous online learning technology to supplement in-class material, accept assignment submissions, and post grades.

PROFESSIONAL DEVELOPMENT

RCMCL Summer School – University of Basel – Switzerland **June 2012**

-Research on computer-mediated communication in linguistics
-Topics included CMC and linguistic methodologies
-Focused on prepping and analyzing CMC data

Faculty Development Conference – University of Wisconsin-Green Bay **Jan. 2010**

-Keynote address by Deanna Sellnow centered on problem based learning

SERVICE/COMMUNITY

Institutional Review Board (IRB)

Board Member

Fall 2009 – Present

-Confidentially review studies from all UWM departments to ensure the protection of human subject participants prior to the collection of data
- Meet with the full board once per month to discuss policies, procedures, and studies that require more invasive human subject participation

Pringle Nature Center

Volunteer

-Grant writing for nonprofit nature center
-Assist the naturalist with school programs at the center
-Help with marketing/PR

present

Journal of Social and Personal Relationships

Manuscript Reviewer

Nov 2012 – Present

-Confidentially review manuscripts submitted to the journal

Journal of Communication Studies

Manuscript Reviewer

Nov 2011 – July 2012

-Confidentially review manuscripts submitted to the journal

Central States Communication Association

Reviewer for “Great Ideas for Teaching” (G.I.F.T) submissions

Nov. 2010

National Communication Association, Chicago, IL

Volunteer

Nov. 2009

-Volunteered with registration, ensuring that conference attendees acquired necessary material and information

Wisconsin Early Autism Project, Kenosha, WI

Line Therapist

Oct. 2007 – June 2008

-Provided in-home therapy for autistic children in the Kenosha area.

- Responsible for monitoring, recording, and modifying behavior in addition to providing individualized attention to each family.

PUBLICATIONS

Allen, M., Dilbeck, K., England, N., Herrman, A., Kartch, F.F., Kim, Jihyun, Kulovitz, K.L., Lau, A.,

Maier, M., May, A., McNallie, J., Omori, K. (in production). Test of a causal model for sexual harassment. In N. Burrell, M. Allen, B. Gayle, & R.W. Preiss (Eds.), *Managing Interpersonal Conflict: Advances Through Meta-Analysis* (pp.). New York: Routledge.

Kulovitz, K.L. (2013). Assimilate This! Computer-mediated communication and star trek fan culture. Drushel, B.E. (Ed.), *Star Trek Fan Culture* (pp. 52-61).Bristol, UK: Intellect Books.

Kulovitz, K.L. (2012). The games we play: Review of Tom Bissel's Extra Lives. *The Journal of Popular Culture*, 45, 233-234.

Kulovitz, K.L. & Mabry, E.A. (2012). Cyberbullying: Perceptions of bullies and victims. In C. Wankel & L. Wankel (Eds.), *Misbehavior Online in Higher Education* (pp. 105-126). Bingley, UK: Emerald Publishing Group.

CONFERENCE PRESENTATIONS

'Escorts are Not Welcome': A Content Analysis of Online Bidding for First Dates

**International Assoc. of Relationship Researchers,
Louisville, KY**

Oct., 2013

Massively Multiplayer Online Games and Affective Communication

National Communication Association, Orlando, FL

Nov. 2012

Cyberbullying in massively multiplayer online collaborative play: Perceptions of bullies and victims

National Communication Association, New Orleans, LA

Nov. 2011

- Cyberbullying in massively multiplayer online collaborative play: communication of bullies and victims*
National Communication Association, New Orleans, LA **Nov. 2011**
- Bad Romance and the Power of Voice: A Content Analysis of Unilateral and Bilateral Relational Repair Strategies in Romantic Relationships*
National Communication Association, New Orleans, LA **Nov. 2011**
- Test of a causal model for sexual harassment using data from a meta-analysis*
National Communication Association, New Orleans, LA **Nov. 2011**
- Father-daughter conflict: Avoidance and verbal aggression in Flash Forward*
Midwest American Culture Association, Milwaukee, WI **Oct. 2011**
- Emotional Intelligence In-Class Activity*
Central States Communication Association, Milwaukee, WI
 Great Ideas for Teaching (G.I.F.T) **April 2011**
- Communication and the Sibling Relationship*
National Communication Association, San Francisco, CA 2010 **November**
- Representations of Women in Popular Culture*
National Communication Association, San Francisco, CA 2010 **November**
- Romancing the Alien: Intimate Betrayal in Neill Blomkamp's District 9*
Midwest American Culture Association, Minneapolis, MN **Oct. 2010**
- Incorporating Relevant Media and Encouraging Civic Engagement in the Interpersonal Classroom*
Central States Communication Association, Cincinnati, OH,
 Interpersonal and Small Group Communication Panel Presentation **April 2010**
- A Method of Evaluating the Impact of Scholars*
International Communication Association in Chicago, IL **May 2009**

UNPUBLISHED PAPERS/CURRENT PROJECTS

Attachment Styles and Maintenance Strategies: A Meta-Analysis

Unpublished paper

Dec. 2010

The Real Housewives of New York: An Examination of the Discourse of Bullying

Unpublished paper

May 2010

MMORPG's, Online Gaming and Relationship Development

Unpublished paper

Jan. 2010

MEMBERSHIPS

National Communication Association

Central States Communication Association

International Communication Association

RELATED EXPERIENCE

Hewitt Associates, Lincolnshire, IL

Recruiting Coordinator

July 2004 – Oct. 2007

Provided support to recruiters which included scheduling applicant interviews and travel