# AN INTERACTION PROCESS ANALYSIS OF TEXT-BASED COMMUNICATION IN AN ONLINE MULTIPLAYER VIDEOGAME

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ABSTRACT

The present study examines the socioemotional and task-oriented content of text messages produced by players of an online multiplayer videogame. From a computer-mediated communication perspective, over five thousand messages produced by 65 players during a 2-week period were examined using Bales' interaction process analysis. The results suggest that players produced significantly more messages expressing socioemotional than task-oriented content. Of the socioemotional content that was produced, the vast majority of it was positive in nature, despite the primary game objective of fighting one another. Players' experience level also played an important role in content production. More experienced players produced significantly higher levels of positive socioemotional content than less experienced players, and they were more likely to use specialized conventions (e.g., emoticons, abbreviations, and scripted emotes). These results provide support for the social information processing theory of interpersonal computer-mediated communication in the context of graphical online multiplayer videogames. The use and modification of interaction process analysis for studying computer-mediated communication in graphical virtual spaces is discussed.

BIOGRAPHICAL SKETCH

Jorge Peña-Herborn (B. A., Social and Organizational Psychology, Universidad de Santiago de Chile, 2001). His research interests are interpersonal communication, social interaction, and small group communication and performance in computer-mediated settings, especially in videogames and virtual reality systems. Some particular interests are how actors use language to express social, emotional, and instrumental information, thus enabling social influence, impression and relationship formation, and the coordination of joint actions in virtual settings. Some guiding research questions are how actors assert dominance and submissiveness, associate and create roles and norms, and how politeness, *face*, and outcomes are accomplished in virtual spaces. His hobbies include music, reading, outdoors biking, video games, and traveling.

This thesis is dedicated to my family and girlfriend. Special thanks to my mother Heidi Herborn, who always supported my intellectual development, including some of my craziest ideas, such as me doing graduate studies so far away from Chile. Also, special thanks to my father and my grandmother, Marcel Jofré and Lucila Videla, for their constant support, excellent sense of opportunity, and humor. Their joy for life and cunning were always a principal motivation and example for me. Special thanks to my brother, Sebastian Jofré, as it is our common curiosity for people and technology (especially videogames) what planted the seeds of this study. Without the long hours we spent playing, this project would have never come to being in the first place. Special thanks to my girlfriend, Veronica Saúd, as she supported me even in the hardest times while doing this task with her constant love, sense of humor, and wisdom, even if (ironically) it was mostly by means of computer-mediated communication. Finally, special thanks to my father, grandfathers, and grandmother, Alfonso Peña, Rodolfo Herborn, Jorge Peña Toro, and Estela Casaux, for the wonderful but short years we spent together. I hope they are proud of me when they look at me from heaven.

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TABLE OF CONTENTS

LISTS OF FIGURES

LIST OF TABLES

# INTRODUCTION

The Internet is a popular and widely used resource for information seeking and interpersonal connection. Its networks provide around the clock support for interactions between individual users, groups and organizations, and it provides a new medium for human expression, collaboration, and exchange (Kiesler, 1997; Walther & Burgoon, 1992). The shared use of Internet-supported systems for interpersonal interaction is referred to as computer-mediated communication (CMC). At present, CMC consists of synchronous and asynchronous text-message exchanges from a sender's to an addressee's terminal (Walther & Parks, 2002). CMC technologies can take the form of electronic mail, electronic bulletin boards, instant messaging, group decision-making support software, newsgroups, and web pages. Individual users may have access to several of these communication technologies, and the Internet allows them to use these technologies to search and exchange information, buy and sell goods, communicate, associate, and even to play (Kiesler, 1997).

In fact, play has become an important part of the Internet's use (see Danet, Ruedenberg-Wright, & Rosenbaum-Tamari, 1997; Pew Internet & American Life Project, 2003; Rheingold, 1993; Wright, Breidenbach, & Boria, 2002; Yee, 2001). Perhaps the fastest growing component of Internet play is online multiplayer videogames, such as "EverQuest ™" and "The Sims ™", which are both highly popular and commercially successful videogames in the United States. Indeed, the U.S. videogame industry as a whole amounted to sales of US$ 6.9 billion in 2002 (Interactive Digital Software Association, 2002), and the industry has shown a steady increase in sales that exceeded that of the movie industry in 2003 (NBC5i, 2004). Videogames appear to be enjoying an ever-widening audience, as new generations of players join older generations (Howard, 2002). Not surprisingly, approximately sixty percent of all Americans age six and older, or about 145 million people, report playing computer and videogames (Interactive Digital Software Association, 2002). Indeed, playing videogames among U. S. college students is part of a larger multitasking setting in which students play games, listen to music and interact with others in the room. (Pew Internet & American Life Project, 2003). According to the same study, videogames are integrated into college students' daily activities, as they play between classes, play while visiting friends or instant messaging, or play as a brief distraction from writing papers or doing other work.

Of course, the growing use of videogames is not restricted to the United States. For instance, playing online videogames seems to be a well-established pastime in countries with sufficiently powerful computers and cheap Internet bandwidth connections. According to Herz (2002), "Starcraft ™" (a graphical multiplayer videogame) is more of a national sport than a simple videogame in South Korea, as five million people (comparable to 30 million in the U.S.) play this game, and three cable TV stations broadcast players competing on this game full-time to an audience.

Among videogames, Online Multiplayer Videogames (OMVs) allow Internet users to connect to graphical virtual spaces where they can interact synchronously with each other individuals. Typically, OMV users are represented by *avatars*, or virtual characters that have a limited range of movements (e.g., running, jumping, fighting, waving), and abilities (e.g., superpowers, exchanging goods and money). In general, OMV users can interact with each other, and with the characters and objects of the virtual space in order to accomplish game-specific tasks (e.g., fighting, trading, exploring) and socializing (see Figure 1). Most OMVs also include text-messaging capabilities that permit users to send text messages to one another. According to Walther and Parks (2002, p. 530) "Instant messaging and "chat boxes" that stand alone or accompany on-line games…illustrate the continuing expansion of text-based interaction on the Internet." This fact poses interesting questions on how people communicate interpersonally in this sophisticated and unique virtual setting. In particular, the present study will apply a CMC perspective to the analysis of interpersonal communication as it occurs in the graphical play setting provided by OMVs by deriving hypotheses from established CMC theories.

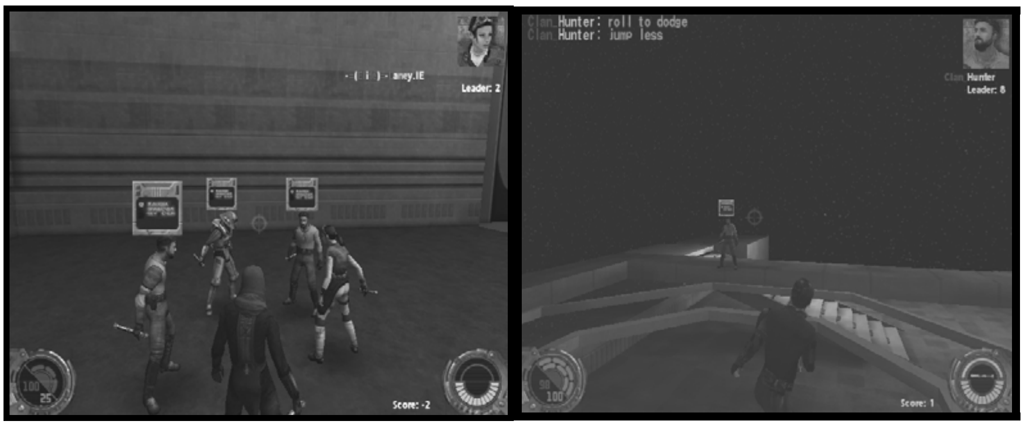


*Figure 1.* Players interacting in an online multiplayer videogame.

*Videogame research: Media effects, interpersonal communication in text-based online play, and emerging interpersonal research in graphical OMVs.*

So far, the majority of mainstream research concerned with videogames has studied this technology from a media effects perspective rather than focusing on interpersonal communication as it occurs in videogames. The effects of videogames have been studied at multiple levels, including cognitive effects of videogame exposure (e.g., Green & Bavelier, 2003; Loftus & Loftus, 1983), the role of violent videogames in aggressive behavior (e.g., Anderson & Dill, 2000; Anderson & Bushman, 2001; Sherry, 2001; Williams & Skoric, 2003), and uses and gratifications of videogames (e.g., Sherry & Lucas, 2003; Sherry, Lucas, Rechtsteiner, Brooks, & Wilson, 2001; Wigand, Borstelmann, & Boster, 1986).

The results of these research perspectives portray a multifaceted picture of the effects of videogame technology, in terms of both positive and negative outcomes. For instance, Green and Bavelier (2003) found that playing an action videogame alters human visual skills, as videogame players showed greater attentional capacity than non-players, and players' visual attention resources tend to deplete more slowly than non-videogame players in visual attention tasks. The authors concluded that "although video-game playing may seem to be rather mindless, it is capable of radically altering visual attentional processing." (Green & Bavelier, 2003, p. 536)

Researchers interested in effects of violent videogames in aggressive behavior paint perhaps a more somber portrait of the effects of videogame technology. For example, Anderson and Dill (2000) report that violent videogames appear to have both short and long term aggressive heightening effects by priming aggressive thoughts. Long-term aggressive heightening effects may reflect the learning and practice of aggression-related scripts while playing, and in time these scripts are predicted to become more readily accessible (Anderson & Dill, 2000). As these authors note, the creation and increasing accessibility of aggressive knowledge structures may ultimately alter the personality and everyday social interactions of individuals exposed to violent games, increasing aggressive affect. In the context of their study, Anderson and Dill (2000, pp.788-789) concluded that "the active nature of the learning environment of the video game suggests that this medium is potentially more dangerous than the more heavily investigated TV and movie media." Nonetheless, meta-analyses studying aggression-heightening effects of violent videogames (see Anderson & Bushman, 2001; Sherry, 2001) have not produced consistent effect sizes suggesting that violent videogames have negative outcomes. Finally, and in relation to online videogames and aggression, a recent study failed to support predictions of heightened aggression in an OMV context (see Williams & Skoric, 2003).

Researchers following the uses and gratification perspective (Sherry & Lucas, 2003; Sherry, Lucas, Rechtsteiner, Brooks, & Wilson, 2001) found that social interaction and diversion gratifications were the strongest predictors of videogame playing time, concluding that the diversion from life provided by videogames is not necessarily diversion from other people. Playing videogames appears to be a type of diversion that involves others in social interaction. Sherry and Lucas (2003) assert that this contradicts the stereotype of the solitary videogame player isolated from social contact. In fact, frequent game play appears to be a highly social activity that can be described as very similar to a group of guys shooting baskets at the park, implying that the play ritual is the same, and only the location has changed.

Indeed, there might be a social component to playing videogames that so far has not been fully investigated. However, research that has examined social and interpersonal dynamics in online play settings has not necessarily focused on videogames, but rather in Multi-User Dungeons or MUDs Object Oriented (MUDs and MOOs, respectively). MUDs and MOOs are text-based online play settings where multiple Internet users connect simultaneously (see Curtis, 1997; Turkle, 1997). MUDs and MOOs are similar technologies, yet they differ in their main purpose: MOOs are primarily social in nature, as people use them to communicate, socialize, and build houses, whereas MUDs are adventure-style role-playing games, in which people solve quests, kill monsters, and get experience points for their characters (Parks & Roberts, 1998; Utz, 2000).

There is some survey evidence that both MOOs and MUDs can support interpersonal communication. For example, Parks and Roberts (1998) found that 93.6% of MOO players had formed personal relationships, most notably friendships and romantic relationships with other players. Relationships formed in MOOs reached moderate to high levels of relational development. Presumably, users perceive MOOs as safe communicative environments to engage in social interaction and to explore interpersonal relationships (Parks & Roberts, 1998). In addition, Utz (2000) observed that MUD players tend to express more specialized conventions (e.g., smiley faces) as they become more experienced with the medium, and that the more conventions players used, the more friendships they formed.

Research on interpersonal communication in OMVs has begun to emerge, and accounts of social interaction and community materialization between users of early graphical multiplayer videogames are available (see Morningstar & Farmer, 1991). For example Yee (2001), among other results, reports that approximately half of surveyed "EverQuest ™" players of both genders feel that some of their online gaming friendships are comparable to their real life friendships. A small percentage of both males and females expressed that some of their online gaming friendships are actually better than their real life relationships (13.4% and 23.4%, respectively), although in contrast 40.6% of males and 25.0% of females expressed that their online gaming friendships do not come close to their real-life relationships.

Focusing on larger social aggregates such as communities, Moore, Mazvancheryl, and Rego (1996) found that OMV players tend to form communities with clear boundaries and distinctions between "insiders" and "outsiders", and that status differences between players in these larger social aggregates often reflect gaming skills. Similarly, Wright, Breidenbach, and Boria (2002) observed that player hierarchies in an OMV were established according to player proficiency and experience in the game, and that user experience plays a role in the use of conventional, or "insider" language (e.g., *AFK* for *away from keyboard*).

The objective of the present study is to extend this emerging literature on OMVs by deriving hypotheses from current CMC perspectives to analyze patterns of interpersonal communication. This study will test these hypotheses by content analyzing text messages produced by OMV players while interacting in this graphical virtual space. The content analysis scheme was based on IPA (Bales, 1950a, 1950b, 1953; Rice & Love, 1987), which categorizes communication according to its purported interpersonal goal, such as expressing social information and emotions, or inquiring about the task or procedure at hand.

*Socioemotional vs. task-oriented communication*

Some social psychologists believe that, at the most basic level, it is social and task needs that drive social interaction between individuals (Bales, 1950a; McKenna & Green, 2002). IPA is an influential method for the study of *socioemotional* and *task-oriented* communication between individuals (Hirokawa, 1988; McGrath, 1984). IPA consists of 12 content categories for communication, including six categories for socioemotional messages, with three positive and three negative types of expressions of sociability and affect. Positive socioemotional content includes messages that: (1) show solidarity or “friendliness” (see Bales, 1970) (e.g., “Thanks so much for the help”), (2) show tension relief, jokes, laughs, or “dramatizing” (Bales, 1970) (e.g., “Wow, that was funny”), or (3) agreement and understanding (e.g., “Yeah, I agree with you”). Negative socioemotional content includes messages that express (10) disagreement and passive rejection (e.g., “I told you that’s not allowed in here”), (11) tension (e.g., “I am not happy right now”), and (12) antagonism (e.g., “Why don’t you just shut up”). IPA considers task-oriented communication as questions and answers aimed at completing a task, and this type of instrumental communication is assumed to have a neutral affective valence. The original six types of task-oriented messages are: (4) asking for an opinion (e.g., “What do you think of this move?”), (5) asking for a suggestion (e.g., “How can I improve my sword slashing?”), (6) asking for task information or orientation (e.g., “How can I open this door?”), (7) giving an opinion (e.g., “I believe we can do better than that”), (8) giving a suggestion or command (e.g., "Just practice some more"), and (9) giving task information or orientation (e.g., "Doors open by pressing the red button"). The original IPA categories are depicted in Table 1.

Table 1.

*Bales's interaction process analysis (IPA) content categories.*

| Content categories |
|---|
| 1. Shows solidarity, raises other's status, gives help, and rewards. |
| 2. Shows tension release, jokes, laughs, shows satisfaction. |
| 3. Agrees, shows passive acceptance, understands, concurs, and complies. |
| 4. Gives opinion, evaluation, analysis, expresses feeling, wish. |
| 5. Gives suggestion, direction, implying autonomy for other. |
| 6. Gives task orientation, information, repeats, clarifies, and confirms. |
| 7. Asks for orientation, information, repetition, or confirmation. |
| 8. Asks for opinion, evaluation, analysis, expression of feeling. |
| 9. Asks for suggestion, direction, possible ways of action. |
| 10. Disagrees, shows passive rejection, formality, withholds help. |
| 11. Shows tension, asks for help, withdraws out of field. |
| 12. Shows antagonism, deflates other's status, defends or asserts self. |

Previous CMC research has successfully analyzed socioemotional and task-oriented communication using IPA (e.g., Hiltz, Johnson, & Agle, 1978; Hiltz & Turoff, 1993; Maloney-Krichmar & Preece, 2003; Rice & Love, 1987). For instance, Rice and Love (1987) observed that active users of an electronic bulletin board in a professional context tended to express more socioemotional content than less active users, suggesting that experience with a medium may increase expressions of affect. Also, CMC group members and network participants tended to exchange more socioemotional content than non-participants (Rice & Love, 1987). Overall, one-third of the messages reported in this study were socioemotional, and positive socioemotional content was substantially higher than negative socioemotional content (28% and .4%, respectively). The primary positive socioemotional content observed was expressing solidarity, and the most frequent (although still rare) negative socioemotional content was expressing antagonism. The most expressed task-oriented content observed in the Rice and Love (1987) study was giving task information, followed by asking for task information (57% and 6.1%, respectively).

*Socioemotional and task-oriented content in online multiplayer videogames*

How might OMVs, in which users communicate via text-messages while playing in a graphical setting, affect the socioemotional and task-oriented expressions of users' messages? A review of the CMC literature suggests two contrasting approaches on how communication is likely to be manifested in mediated settings. The first is dubbed the cues-filtered out approach (CFO) (Culnan & Markus, 1987), which includes theories that share a focus on the effects of reduced nonverbal and social cues in computer-mediated settings on interpersonal dynamics, such as social presence theory (Short, Williams, & Christie, 1976), and the reduced-context cues perspective (Kiesler, Siegel, & McGuire, 1984).

Social presence theory proposes that the salience of individuals interacting in a mediated communication setting has an effect on the consequent salience of interpersonal relationships (Short et al., 1976). The theory conceives social presence as a perceived or attitudinal disposition toward a medium's capacity to support joint involvement in communicative interactions, and proposes that media differ in their bandwidth or capacity to transmit information about social expressions, direction of looking, posture, dress, nonverbal and vocal cues, to the extent that less available bandwidth reduces social presence (Short et al., 1976). Because mediated communication has less bandwidth than face-to-face settings, the diminished social presence is assumed to render communicators less salient to each other. An important implication of the theory in the context of socioemotional and task content in OMV is that mediated communication should focus individuals' on the task, not on other people (Culnan & Markus, 1987; Rice & Love, 1987; Short et al., 1976).

The reduced context cues perspective (Kiesler, Siegel, & McGuire, 1984; Sproull & Kiesler, 1986) similarly assumes that CMC filters-out elements that regulate interaction and impression formation in communicative interactions. The lack of social cues and anonymity of CMC interactions will foster states of depersonalization and self-absorption among users, and this will lead to uninhibited, impulsive, and blunt expressions not bounded to social norms and status (e.g., *flaming*). In the present context and based on previous results under this CMC perspective, it is predicted that OMVs should foster a more hostile interpersonal atmosphere and increased task-oriented communication (Kiesler, Siegel, & McGuire, 1984; Siegel, Dubrovsky, Kiesler, & McGuire, 1986; Sproull & Kiesler, 1986).

It is perhaps important to note that, although OMVs include graphic representations of the player in the form of an avatar, the level of social presence and social cues remains below the level of face-to-face settings. As such, predictions from the CFO approach should hold in OMV settings. Following the distinction between socioemotional and task-oriented communication, the CFO assumptions that mediated communication users are less socially present, self-absorbed, and anonymous predicts that OMV players will focus on the task at hand rather than being socially oriented toward other players. As such, players should produce more task-oriented messages (e.g., “How can I perform a special move?”) than socioemotional messages (e.g., “Hey, good to see you captain”).

However, when players do engage in socioemotional expressions, the CFO approach would predict that anonymity, and states of depersonalization and self-absorption will result in flaming, hostile messages. Given that players are ostensibly dueling and attempting to defeat one another, these types of negative messages might not be unexpected. As such, the CFO approach predicts that players that do produce socioemotional messages should express more negative than positive socioemotional messages.

The second approach to conceptualizing mediated communication in OMVs is social information processing theory (SIP), which seeks to explain how interpersonal communication emerges in CMC settings (Walther, 1992, 1996; Walther & Burgoon, 1992). SIP makes four primary assumptions. First, as in other human communicational settings, CMC users are driven by relational motivators (e.g., affinity and reward seeking, dominance and submissiveness, impression management, and others) to form social relationships (Walther, 1992). Second, in order to form social relationships, CMC users develop impressions about their partner’s social status (e.g., education level, attitude similarity, likeability, and others) by decoding text-based cues (Hancock & Dunham, 2001; Walther, 1992). Third, CMC users employ knowledge-generating strategies, such as interrogation and self-disclosure, to gather psychological information about other users, and this might confirm or disconfirm previous impressions. Fourth, the results of the first three processes accumulate in refined interpersonal knowledge, and over time users acquire the experience necessary to express and decode interpersonal content using text. In one test of the theory, a comparison of CMC and face-to-face zero-history groups showed that in time, both groups became more socially oriented, and in contrast to CFO predictions, CMC groups actually exhibited greater social orientation than face-to-face groups rather than less (Walther & Burgoon, 1992).

According to SIP, all things being equal and given enough time, individuals in CMC settings should express levels of socioemotional and task content at approximately the same levels as those expressed by people in face-to-face settings. Previous IPA examinations of a face-to-face play group observed higher percentages of socioemotional than task-oriented content (see Bales, 1950a, p. 22). As such, SIP predicts that participants playing in OMVs should produce more socioemotional than task-oriented messages.

With regard to the production of socioemotional content, IPA research in face-to-face groups suggests that positive socioemotional expressions typically outweigh negative socioemotional reactions (see Bales, 1953). This is a general result in groups studied under IPA, as positive reactions presumably reinforce individual performance, and contributes to both accomplishment and satisfaction. Given that individuals playing interactive games frequently join or create Internet groups (McKenna & Green, 2002), usually referred to as "clans", SIP would predict that, similar to face-to-face groups, a larger proportion of socioemotional messages will be positive than negative in nature.

As the preceding analysis indicates, the CFO approach and SIP theory make different predictions regarding interpersonal communication in online videogame settings. In particular, the CFO approach predicts that a greater proportion of messages will be task-oriented than socioemotional, while SIP predicts a greater proportion of socioemotional rather than task-oriented messages will be observed. Hypotheses 1A and 1B respectively reflect these predictions.

*H1A* *Online videogame players will express more task-oriented content than socioemotional content.*

*H1B* *Online videogame players will express more socioemotional content than task-oriented content.*

The CFO approach and SIP theory also make contrasting predictions about the valence of socioemotional content players will express in online videogame settings. In particular, the CFO approach predicts that a greater proportion of socioemotional messages will be negative than positive, while SIP theory predicts a greater proportion of positive socioemotional messages. Hypotheses 2A and 2B respectively reflect these predictions.

*H2A* *Online videogame players will express more negative socioemotional content than positive socioemotional content.*

*H2B* *Online videogame players will express more positive socioemotional content than negative socioemotional content.*

The experiential nature of SIP theory leads to two additional hypotheses that are not considered by the CFO approach. In particular, SIP predicts that over time CMC users become increasingly adept at expressing interpersonal content in text-based communicative settings (Walther, 1992, 1996; Utz, 2000). As such, more experienced players should be more capable of expressing socioemotional content in online videogames. Hence, Hypothesis 3 predicts that:

*H3* *High experience players will express more socioemotional content than low experience players.*

Finally, CMC users tend to express interpersonal communication by employing collective conventions, such as shared jargon and argot (McGrath & Hollingshead, 1994). Some well-known conventions in CMC interactions are *emoticons*, which are symbols formed with keyboard characters resembling facial expressions (Walther & D'Addario, 2001). *Emotes* are another type of convention (e.g., *walks away slowly with a confident smile on his face*), and these are preprogrammed computer scripts used to express actions and personal states (Parks & Roberts, 1998; Rheingold, 1993; Utz, 2000). CMC users, particularly online game players, also make use of *abbreviations* such as *AFK, or LOL* for "laugh out loud" (Wright, Breidenbach, & Boria, 2002). Such conventions can be considered as surrogates for nonverbal communication, and are often employed to express emotions, moods, humor, sarcasm and irony (for review, see Hancock, in press). As a corollary to Hypothesis 3, SIP theory predicts that highly experienced players will use more CMC conventions (i.e., emoticons, abbreviations, and emotes) in their text messages than less experienced players. Consequently, Hypothesis 4 predicts that:

*H4 High experience players will use more CMC conventions than low experienced players.*

The present study examines these hypotheses by analyzing the content of text messages sent by players in an OMV. Each message was categorized as socioemotional or task content based on the IPA scheme (Bales, 1950a; 1950b; 1953). For each player, the total number of messages produced in each category (i.e., task, socioemotional positive or negative) was divided by the total number of messages produced by that player, which created proportions for each content category. The proportions of each category were analyzed in order to test the hypotheses described above.

## METHOD

*Data*

The data consisted of transcripts of 5826 text messages produced by players interacting in "Jedi Knight II: Jedi Outcast ™", a videogame manufactured by LucasArts Company and released in March 2002. Messages were recorded in six 1-hour segments randomly sampled from different times of the day across a 2-week period. The videogame software allowed all publicly exchanged text-messages to be converted into transcripts. Transcripts included all public communication between players, and also system messages that announced events in the game (e.g., a player joining the game, a player death, etc.). Each message contained a header that identified players by their logon name, and also contained information about that player's membership to an online "clan" (see below for definition of a clan).

*Content analysis*

Communicating in most OMVs requires the user to type a message into a private composition window, and then post it to the shared virtual space by hitting the enter key. The unit of analysis was each individual text message posted by the players. Each message posted to the shared virtual space was coded into one of 19 mutually exclusive content categories. 12 of these categories were the original IPA categories described above (Bales, 1950a, 1950b). Half of these were task-oriented, and the other half was socioemotional. Task-oriented categories were reserved for messages either giving suggestions or commands, opinions, and information, or asking for suggestions, opinions, and information. Socioemotional categories were of two kinds: positively valenced, as in showing solidarity, providing tension relief, and expressing agreement, and negatively valenced, including showing antagonism, displaying tension, and expressing disagreement.

Following Rice and Love (1987), two categories were added to the positive socioemotional categories to distinguish between giving and asking task-oriented information from giving and asking personal or social information (e.g., "Where do you live?", "I live in Florida"). Although Rice and Love (1987) did not mention the reasons behind this modification, it is likely that IPA itself was a concern, since in effect it does not account for "socioemotional" questions and answers, and rather would systematically code most questions and answers as task-oriented. Rice and Love did not explicitly assign a valence to their two new categories, and it is only by carefully looking at their results that a reader may notice that the two new categories were considered as positive socioemotional content, as in the present study.

Five message categories were added in order to capture message production that did not initially seem to fit IPA, or was unique to OMVs. These included a category for summons, greetings and partings (e.g., "Hi Kreed"), and another category for messages designed to repair errors in previous messages (e.g., the message "Whoops, that was supposed to be *great*" after "That place is *gerat*") (see Clark, 1996). However, the summons, greetings, and partings category was later added to "shows solidarity" for the data analysis procedure, as later reviews of IPA (see Bales, 1970) provide evidence that this new category can be merged with that original IPA category. Indeed, adding a "summons" category might attune the coding scheme for it to distinguish "micro" aspects of interaction processes (see Hirokawa, 1988), such as entries and exits phases of joint actions (Clark, 1996). However, this new category fits better in Bales's later "seems friendly" rechristening of the "shows solidarity" category, which encouraged coding for "more minor signs of social feeling than…the old classification" (Bales, 1970, p. 474).

Informal observations of previous OMV interactions suggested including a category to account for technological difficulties, such as *lags* or slow connections

(Lebie, Rhoades, & McGrath, 1996). Also, a separate category for unclassifiable messages was added, as IPA has no such a category (McGrath, 1984). Finally, a system message category was included for messages automatically generated by the game software to inform players about game events (e.g., players connecting or disconnecting to the game). The videogame software systematically included system messages in the output transcripts, and these did not fit into any of the above-mentioned content categories. Table 2 shows the final IPA-based coding scheme employed.

Of the 5826 recorded text messages, human players produced 4402 messages, while the remaining 1424 were system messages. Five coders were trained for eight weeks to analyze players' text-messages using the IPA-based coding scheme (see Appendices 1 and 2). Intercoder reliability was calculated for different pairs of coders, and initial reliability was *kappa* = .54. After additional training, reliability between coders based on approximately 23% (i.e., 1355 messages) of the total number of messages at the most detailed level of the coding scheme (i.e., the 19 message categories) was satisfactory (*kappa* = .70).

Table 2.

*IPA-based coding scheme used for content analysis of OMV players' text-messages.*

| Content categories |
|---|
| 1. Shows solidarity, raises other's status, gives help, and rewards. |
| 2. Shows tension release, jokes, laughs, and shows satisfaction. |
| 3. Agrees, shows passive acceptance, understands, concurs, and complies. |
| 4. Gives *personal* orientation, information, repeats, clarifies, and confirms. |
| 5. Asks for *personal* orientation, information, repetition, or confirmation. |
| 6. Gives opinion, evaluation, analysis, expresses feeling, wish. |
| 7. Gives suggestion, direction, implying autonomy for other. |
| 8. Gives *non-personal* orientation, information, repeats, clarifies, and confirms about game performance (task). |
| 9. Asks for *non-personal* orientation, information, repetition, or confirmation about game performance (task). |
| 10. Asks for opinion, evaluation, analysis, expression of feeling. |
| 11. Asks for suggestion, direction, possible ways of action. |
| 12. Disagrees, shows passive rejection, formality, withholds help. |
| 13. Shows tension, asks for help, withdraws out of field. |
| 14. Shows antagonism, deflates other's status, defends or asserts self. |
| 15. Summons/greetings/partings. |
| 16. Talk about problems with the technology: bandwidth lags, slow connection rate, etc. |
| 17. Unclassifiable messages. |
| 18. Repairs. |
| 19. System message. |

*Operationalization of experience*

OMV players' experience level was classified according to their membership and status in Internet groups or "clans". A clan refers to a virtual group of individuals who perceive themselves as collectively engaged in the task of playing an Internet game, and share a set of values, procedures and norms (McKenna & Greene, 2002). The membership rosters, norms and hierarchies for online clans are frequently described in their websites. Membership typically implies substantial prior experience and proficiency in the game. As such, players who were members of online clans were considered to be more experienced than players who were not members. Furthermore, within clans, two types of players can be distinguished: regular clan members, and higher ranking, more experienced clan "council members". Given their higher hierarchy within the clan, council members were considered the most experienced of the game players. Thus, council members were operationalized as high experienced players, regular clan members were operationalized as medium experienced players, and finally, non-clan players were operationalized as low experienced players. Sixty-five unique players were identified by their logon name over the 2-week observation period. Of the 65 players, 6 of them produced fewer than three messages, and were therefore excluded from the analysis. Of the 59 remaining players, 6 were highly experienced players, 25 were medium experienced players, and 28 were low experienced players.

# RESULTS

For each player, the proportion of each message category produced by that player was calculated by dividing the number of messages in a given category by the total number of messages produced by the player. The proportions for each category were then averaged across players. Because the distribution of proportions tends to be skewed, all of the proportions described below were subjected to an arcsine square root transformation (Fleiss, 1981). The pattern of results based on the transformed data did not differ from those reported below.

The first question of interest was the ratio of task-oriented (e.g., "How can I do a double special combo?") to socioemotional messages (e.g., "good fight") expressed in the OMV. Based on the CFO approach, Hypothesis 1A predicted that players in online multiplayer videogames should express more task-oriented than socioemotional content, whereas Hypothesis 1B, derived from SIP theory, predicted that players would express more socioemotional content. A paired samples t-test comparing the proportion of task and socioemotional content revealed that players expressed significantly more socioemotional messages ($M = 0.78$, $SD = 0.18$) than task-oriented messages ($M = 0.22$, $SD = 0.18$), $t(58) = 12.33$, $p < .001$, confirming Hypothesis 1B and supporting the SIP prediction (see Table 3).

Table 3.

*Mean and Standard Deviations of proportions of messages by task-oriented, socioemotional content, positive and negative socioemotional content (N = 59).*

| Task | | Socioemotional | | Positive socioemotional | | Negative socioemotional | |
|---|---|---|---|---|---|---|---|
| *M* | *SD* | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| 0.22 | 0.18 | 0.78 | 0.18 | 0.75 | 0.18 | 0.25 | 0.18 |

*Note*. Proportions represent averages across players. Task and socioemotional proportions are based on the total number of messages (i.e., task and socioemotional proportions sum up to 1). Positive and negative socioemotional proportions are based on the total number of socioemotional messages (i.e., positive socioemotional and negative socioemotional sum up to 1).

The second question of interest asked whether players would primarily express either more positive or negative socioemotional content. Hypothesis 2A, based on the CFO approach, predicted that players would express higher frequencies of negative than positive socioemotional content while Hypothesis 2B, derived from SIP theory, predicted higher frequencies of positive socioemotional content. A paired samples t-test comparing the proportion of the two types of socioemotional messages revealed that a significantly larger proportion of text messages were positive socioemotional ($M = 0.75$, $SD = 0.18$) than negative socioemotional ($M = 0.25$, $SD = 0.18$), $t(58) = 10.44$, $p < .001$, confirming Hypothesis 2B and supporting the SIP prediction (see Table 3).

The proportion of each message subtype within each of the major categories (i.e., task-oriented, positive and negative socioemotional) was compared with post-hoc Tukey tests ($p < .05$). For task-oriented messages, giving a suggestion, giving an opinion, giving task information, and asking for task information were produced significantly more than messages asking for an opinion or for suggestions, indicating that players were unlikely to seek out opinions or suggestions about the gaming task. For positive socioemotional content, messages expressing tension release, such as "hahahaha" or LOL, and messages showing solidarity or "friendliness" (see Bales, 1970) were produced significantly more frequently than messages expressing personal information, and agreement, such as "ok" or "agreed". Finally, for negative socioemotional content there were no significant differences observed between disagreement, showing tension, or showing antagonism (see Table 4).

Table 4.

*Means and Standard Deviations of proportions for all coded categories (N = 59).*

| | Total | | Proportion | |
|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* |
| Task | | | | |
| Gives opinion | 2.12 | 3.93 | 0.13 | 0.19 |
| Gives suggestion | 5.93 | 12.03 | 0.37 | 0.30 |
| Gives task information | 3.78 | 8.94 | 0.22 | 0.21 |
| Asks for opinion | 0.24 | 0.54 | 0.01 | 0.04 |
| Asks for a suggestion | 0.46 | 1.07 | 0.02 | 0.04 |
| Asks for task information | 3.42 | 5.59 | 0.25 | 0.24 |
| Positive socioemotional | | | | |
| Shows solidarity | 9.32 | 13.62 | 0.30 | 0.26 |
| Tension release | 16.29 | 28.38 | 0.33 | 0.28 |
| Agrees | 4.61 | 9.30 | 0.10 | 0.10 |
| Gives personal information | 6.42 | 9.30 | 0.15 | 0.16 |
| Asks for personal information | 4.15 | 6.58 | 0.12 | 0.15 |
| Negative socioemotional | | | | |
| Disagrees | 4.95 | 7.41 | 0.37 | 0.31 |
| Shows tension | 2.98 | 5.95 | 0.23 | 0.28 |
| Shows antagonism | 6.39 | 13.44 | 0.41 | 0.33 |
| Problems with technology | 0.15 | 0.69 | 0.00 | 0.01 |
| Unclassifiable message | 2.15 | 11.86 | 0.02 | 0.11 |
| Repairs | 1.00 | 2.53 | 0.01 | 0.02 |

*Note.* Proportions are based on the number of messages for a message type divided by the total number of messages in that category. Because proportions represent averages across players, the proportions do not necessarily sum to 1.

Hypotheses 3 and 4 were derived from SIP's experiential principles stating that CMC users' ability to express interpersonal communication improves with experience with the communication medium. Hypothesis 3 predicted that highly experienced players would express higher frequencies of socioemotional content than less experienced players. Because the assumption of equal variances across the three levels of player experience was violated, non-parametric tests were used to test Hypothesis 3. A median test comparing the production of total socioemotional messages across the three levels of experience (high, medium, and low) did not achieve significance $\chi^2$ (2) = 1.5, *n. s*., suggesting that in contrast to Hypothesis 3, more experienced players did not produce more socioemotional content than less experienced players. An examination of positive and negative types of socioemotional content, however, revealed that experience level was a reliable factor in the production of positive socioemotional content, $\chi^2$ (2) = 7.3, $p < .05$. High experience players produced significantly more positive socioemotional content than low experience players, but medium experience players' socioemotional content production did not differ from either high or low experienced players. These results suggest that the most experienced players produced more positive socioemotional content than medium or low experience players. Means and standard deviations across low, medium, and high experience conditions are included in Table 5.

Experience level was also a reliable factor in the production of negative socioemotional content, $\chi^2$ (2) = 6.6, $p < .05$. High experience players produced significantly less negative socioemotional content than low experience players, but medium experience players' socioemotional content production did not differ from either high or low experienced players, suggesting that the most experienced players produced less negative socioemotional content than medium or low experience players.

Finally, Hypothesis 4 predicted that highly experienced players would use more specialized conventions (i.e., emoticons, abbreviations, and emotes) than less experienced players. A one-way ANOVA comparing the use of conventions was significant across the three levels of experience, $F(2,56) = 4.55$, $p < 0.5$, $\eta^2 = .14$. Post-hoc Tukey's tests ($p < 0.5$) revealed that the most experienced players used conventions significantly more frequently than the other two groups of less experienced players. Once again, no difference was observed between medium and low experience players (see Table 5).

Table 5.

*Means and Standard Deviations of the proportion of task, socioemotional, positive and negative socioemotional messages, and convention use by level of experience (N = 59).*

| | Low ($n = 28$) | | Medium ($n = 25$) | | High ($n = 6$) | |
|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| Task | 0.22 | 0.17 | 0.24 | 0.20 | 0.12 | 0.09 |
| Socioemotional | 0.78 | 0.17 | 0.76 | 0.20 | 0.88 | 0.09 |
| Positive socioemotional | 0.73 | 0.18 | 0.75 | 0.21 | 0.84 | 0.08 |
| Negative socioemotional | 0.27 | 0.18 | 0.25 | 0.21 | 0.16 | 0.08 |
| Conventions | 0.23 | 0.16 | 0.26 | 0.19 | 0.49 | 0.31 |

## DISCUSSION

The objective of the present research was to analyze the socioemotional and task-oriented content of text-messages produced by players while interacting in an OMV setting using Bales's IPA. Two general approaches to interpersonal communication in computer-mediated settings were compared. First, the CFO approach, which include social presence theory (Short et al., 1976) and the reduced context cues perspective (Kiesler, Siegel, & McGuire, 1984), predict that because mediated communication settings decrease feelings of social presence and social context cues, the majority of messages in online games should be task-oriented, and that most socioemotional content produced will be rather negative than positive.

In contrast, SIP theory (Walther, 1992, 1996) assumes that given sufficient experience with a CMC setting, users will express interpersonal communication approximating that of face-to-face settings. As such, SIP predicts that the content of messages in an OMV should be similar to the types of content observed in face-to-face play situations. Based on previous research examining face-to-face play (Bales, 1950a), a larger proportion of socioemotional content was expected. A comparison of the proportions of task-oriented and socioemotional content revealed that, in contrast to predictions flowing from the CFO approach but in support of SIP theory, players produced a significantly higher rate of socioemotional than task messages (see Table 3).

When participants did produce task-oriented messages, it primarily involved giving a suggestion or command ($M$ = *37%*), but also included asking for task information ($M$ = 25%) and giving task information ($M$ = 22%). The least frequently observed task categories of messages were asking for opinions ($M$ = 1%) and suggestions ($M$ = 2%), hence on average, players were more likely to give suggestions, information, and opinions than they were to solicit those types of content (see Table 4). In general, these findings are consistent with Bales's (1950a) observation that task-oriented messages in play situations may resemble a running report about the individual's current activities.

The second question of interest was whether players in OMV settings would produce more positive or negative types of socioemotional messages. As noted above, the CFO approach assumes that the reduced cues in mediated settings minimizes social presence and fosters states of depersonalization, predicting more frequent negative interpersonal communication, while SIP theory predicts that players should produce more positive messages. Again, the data appear to support SIP, as a significantly larger proportion of expressed socioemotional messages were positive. Positive socioemotional content was principally expressions of tension release (e.g., jokes, LOL, and other typed representations of laughter), giving personal information, and expressing solidarity (e.g., writing "good fight" to another player after engaging in a duel), rather than providing explicit agreement with others (see Table 4). This pattern of positive socioemotional activity is again consistent with observations in face-to-face play contexts (Bales, 1950a). In turn, these results provide some support for SIP theory's basic assumption that mediated communication processes will, with time, approximate face-to-face communication processes (Walther, 1992).

When the less frequently observed negative socioemotional content was produced, it tended to be expressions of antagonism, disagreement, and tension (e.g., "He lamed me like a noobie (i.e., novice)", "Stop doing that", "I'm stuck, help!"). Disagreement appeared to occur primarily when players behaved impolitely or broke a social rule (e.g., the "*laming*" rule that prohibits attacking unarmed avatars). Antagonistic remarks often involved the use of profane language and blunt expressions, and seemed to be prompted by previous expressions of disagreement and antagonism. Finally, tension-expressing messages tended to be observed when outcomes did not match the player's expectations (e.g., difficulties in navigating the virtual space, losing in the game). The overall pattern of types of negative socioemotional messages observed in the present study was also consistent with Bales's (1950a) observations of face-to-face play situations, which again provides support for one of the main tenets of SIP theory, namely that expression in online communication will, given sufficient time, resemble face-to-face communication.

The last two hypotheses were concerned with the role of player experience in message content. As described above, SIP theory assumes that more experienced players should be more adept at expressing interpersonal communication. The comparison across low, medium and high levels of experience, as operationalized by membership in online clans, revealed that although more experienced players tended to produce more socioemotional content, the difference did not achieve statistical significance. This result is not consistent with Rice and Love's observation that more active users tend to send more socioemotional content. Although experience did not predict overall levels of socioemotional vs. task message production, experience level did factor into the production of positively valenced messages. In particular, the most experienced players expressed significantly higher levels of positive socioemotional messages than the medium or least experienced players.

Two factors described by Walther (1996) may explain why the impact of experience on socioemotional content was limited to only the most experienced players. First, because players in the high experience group were not only experienced, but were involved in organizing the clans of which they were a member, they may have had a vested interest in ensuring that the communication was positive (i.e., to maintain cohesion and satisfaction of the virtual group). Second, because of their high level of involvement in the game and their virtual group, they may have anticipated future interactions with other players to a greater degree than players in the other two experience conditions. Anticipated future interaction has been demonstrated to have a large effect on mediated communication processes. In particular, when individuals expect future interaction they tend to engage in more positive forms of interpersonal communication (Walther, 1996). Furthermore, Walther and D'Addario (2001, p. 325) assert that SIP theory "assumes that if communicators in CMC have or expect to have the opportunity to interact over time, they will actively develop social relationships no matter what the ostensible purpose of their interaction." The present data (collected 10 months after the emergence of the clan) suggests that this is also the case in online gaming settings in which the ostensible purpose of interaction is to fight one another.

The finding that more experienced players produced more positive socio-emotional messages may be related to Sherry's (2001) previous finding that longer videogame playing times are inversely related with aggression. Sherry suggests that initial arousal may fall off significantly after extended videogame play because of boredom, catharsis, or desensitization effects, which in turn implies that aggressive reactions may also be reduced. Because experienced players have presumably spent more time playing videogames than the less experienced, this two findings might be related to each other. However, further studies are necessary to attempt to explain the psychological and communicational process underlying any possible relationship between these two findings.

Finally, Hypothesis 4 predicted that more experienced players would use more specialized conventions (e.g., emoticons, abbreviations, and emotes) in their messages than less experienced players. A comparison across the three levels of experience supported this prediction. Indeed, approximately one half of the messages produced by highly experienced players included a convention (see Table 5). This observation is consistent with both SIP theory and empirical examinations of convention use in

MUD settings (Utz, 2000). In general, the use of specialized conventions in the present study included abbreviations such as LOL (i.e., laugh out loud) and *GF* (i.e., *good fight*), emoticons (e.g., :-) ), and scripted emotes (e.g., "**Great Duel my Friend**").

Considered together, the present research provides substantial support for predictions derived from SIP theory regarding the production of messages in an OMV. First, individuals engaged in online play tended to produce more socioemotional than task-oriented text messages. Second, players also produced more positive than negative socioemotional messages in general. Third, although more experienced players did not produce significantly more socioemotional messages than less experienced players, high experienced players did produce reliably more positive socioemotional messages than the less experienced players. Finally, the most experienced players tended to use more specialized conventions to express themselves than less experienced players, showing that the acquisition of experience in CMC settings plays a significant role in the expression of interpersonal communication.

Overall, these findings suggest that mediated play settings such as OMVs, despite their competitive and sometimes violent nature, are capable of supporting positive interpersonal dynamics. Additional research will be required to determine how these observations generalize across different online videogame settings. Williams & Skoric (2003) note that to collapse all context and content presented by videogames into a homogenous category of "game play" is akin to assuming that all television, motion picture and radio use is the same. For example, how will interpersonal communication patterns change across OMVs with different levels of violence, different game tasks, and diverse interaction times?

Although additional research is required to generalize the results across different game types, the present research extends the empirical investigation of SIP theory to graphically based online play settings, suggesting that SIP has considerable generalizability across mediated communication settings, including play (see also Utz, 2000). The results of the present research may also have implications for channel expansion theory (Carlson & Zmud, 1999), which assumes that users' perceived capacity of a communication media to convey social information expands over time as a result of experience with the channel, message partner, message topic, and organizational context, enhancing message encoding and decoding (Germonprez, 2004). The theory attempts to explain how individuals and groups appropriate a mediated channel for it to suit a given individuals according to group type, history, and goals. Under this framework, it is likely that the present results reflect how the clan evolved from a couple of players into a virtual group, and how the OMV evolved from an individual online play technology into an associative experience. However, if the theory were to be used to explain these results, it would be recommendable to assess players' expressed content and perceptions of the mediated channel over time.

There are, however, several important limitations. For example, although players were interacting in a graphical space, and were represented by graphical avatars, the possible nonverbal communication that may have taken place was not examined, even though IPA is suitable to do so (Bales, 1950a). There is some evidence that nonverbal communication plays a role in graphically based interactions with avatars (Bailenson, Beall, & Blascovich, 2002; Krikorian, Lee, Chock, & Harms, 2000). For example, humans using avatars tend to maintain personal distance (Krikorian et al., 2000), and gender plays a role in interpersonal distances in virtual spaces (Bailenson, Blascovich, Beall, & Loomis, 2001). Future research examining social interaction in OMV should examine both the verbal and nonverbal components of communication. Nonetheless, the present data indicate that even when graphical information is available in the communicative environment, players tend to produce more socioemotional than task-oriented text messages, and that the majority of these messages are positively valenced.

A second limitation of the present research is the rather gross distinctions between the categories of player experience (i.e., low, medium, and high), which were based entirely on players' clan membership status. Finer-grained measures of experience may be required to assess more fully the impact of experience on message production in OMV settings.

A third limitation of the present research might be the use of IPA as a coding scheme for text-message exchanges in OMV settings. Although the method has been previously used in CMC studies, its use has also been criticized in that context (see Walther, 1992) based on previous accounts (e.g., Hirokawa, 1988; McGrath, 1984). Hirokawa (1988) notes that interaction analyses in general may simplify the multidimensional and multifunctional aspects of talk, have a glossing effect in different aspects of talk, and may not represent the reality of the functional aspects represented by a communicative act in context (e.g., communication might seem "hostile" to a coder, but might be a "joke" for communicators). In particular, McGrath (1984) observes that IPA categorizes each act as either task or socioemotional, each category is mutually exclusive, and there's no "other" category for communication difficult to place in the original 12 content categories. This implies that for IPA, "every action serves either a task instrumental or a socio-emotional function; no behavior serves any other function; and no behavior serves both of those functions." (McGrath, 1984, p. 143). Indeed, our coders did encounter some of these difficulties, and made comments about them. For instance, one coder noted: "I believe that Bales's coding scheme is an extremely good measure of different socio-emotional interactions but for some reason it just seemed difficult to put these utterances into only one category. There were so many times when an utterance could have been placed into at least three categories and I felt that each of them would work correctly." These criticisms, and previous informal observations of the OMV setting, suggested that new content categories for IPA might have been necessary for using the method in mediated rather than face-to-face interactions (see *Content analysis* section).

The fact remains that although interaction analyses have raised criticisms, appropriate uses of the method still makes it a valuable tool for analyzing the nature and structure of interaction processes (see Hirokawa, 1988). According to Walther (1992), IPA has been used in a number of studies to assess the relational dimension of CMC. It is interesting to compare the results of these studies in each particular setting and the context of communication as reflected by IPA (see Table 6).

Table 6.

*Task, socioemotional, socioemotional positive, socioemotional negative, medium, and totals across CMC studies using IPA, including Bales's face-to-face play results.*

| | Task | Socioemotional | Socioemotional positive | Socioemotional negative | Purpose of interaction | Medium | Total |
|---|---|---|---|---|---|---|---|
| Bales (1950a) | 36.9 | 60.5 | 25.5 | 35 | Free-form play | Face-to-face | 97.4 |
| Hiltz et al. (1978) | 86.66 | 13.72 | 8.43 | 5.29 | Problem solving | Computer conference | 100.38 |
| Rice & Love (1987)[1, 2] | 71 | 28.4 | 28 | .4 | Medical information exchange | Electronic bulletin board | 99.4 |
| Maloney-Krichmar & Preece (2003)[3] | 66.1 | 33.73 | 31.2 | 2.53 | Sharing health information and support | Electronic bulletin board | 99.82 |
| Present study [1,2,4] | .22 | .78 | .75 | .25 | Playing free-for-all | Online multiplayer videogame | 100 |

[1] Includes public messages only.
[2] Two socioemotional positive categories added were added to IPA.
[3] IPA calculations are based on frequencies.
[4] Socioemotional and task proportions are based on the total number of IPA-based coded messages, summing up to 1. Socioemotional positive and socioemotional negative proportions are based on total number of socioemotional messages, hence these two categories sum up to 1.

The Hiltz, Johnson, and Agle (1978), and the Rice and Love (1987) studies report the highest levels of task-oriented communication. Both studies took place in more formal group settings than the other studies. In particular, the Hiltz et al. study was a replication of Bales's problem solving task using a computer conference system, and as such, it is not surprising to see high levels of task communication in the context of that particular decision-making task. Similarly, the Rice and Love study took place in the context of a professionally oriented medical electronic bulletin board. These two studies in more formal settings show not only higher task communication, but also comparatively lower socioemotional exchanges, and less negative socioemotional than positive socioemotional communication in both studies. The Maloney-Krichmar and Preece (2003) study, which examined an online community dedicated to discussing knee injuries, also reported high levels of task communication. According to the authors, the task-oriented interactions of the online community reflect its purpose, as "the group exists to provide information and support to persons who have experienced an injury involving the anterior cruciate ligament" (Maloney-Krichmar & Preece, 2003, p. 17).

In contrast to these studies, the two studies that examined play in face-to-face and mediated settings (i.e., Bales, 1950a, and the present study) had the highest levels of socioemotional communication. These two studies of communication in play settings show other commonalities. First, positive socioemotional content is concentrated in categories such as tension release (10.5% in Bales, 1950a; .33 in the present study) and showing solidarity (8% in Bales, 1950a; .30 in the present study). Second, task content is comparatively lower than in other studies, and is concentrated in individual IPA categories such as giving suggestions and information rather than opinions, and asking for information, showing that individuals engaged in play tend to give information (in a general sense) rather than ask for it. Third, negative socioemotional activity is comparatively higher in play settings than in studies in more formal and task-oriented settings, concentrating in categories such as showing antagonism and disagreement.

Considered together, these results suggest that in play situations in general, whether mediated or not, socioemotional communication tends to be higher than task communication, while more task-oriented discussions involved more task-oriented messages. Overall, these results suggest that the medium in which communication takes place is less important in determining the ratio of task and socioemotional content in an interaction than the type of group and task (see McGrath, 1984, p.147).

In conclusion, the present study advances our understanding of communication in a novel but increasingly popular mediated communication setting. In particular, the present study extends empirical support for SIP theory of mediated interpersonal communication to graphical online videogame settings. It also helps to extend the emerging literature on interpersonal communication in text-based and graphical virtual spaces and makes several theoretical and methodological contributions. First, this study shows that research on videogame technologies can be understood using current CMC theories, which broadens the theoretical horizon that can apply to the study of videogame technologies beyond traditional media effects approaches, and in turn this process allows us to test the boundaries of current communication theories by applying these to different communication settings. Second, this study is, to the best of our knowledge, the first attempt to study interpersonal dynamics in OMV focusing on players' text-based communication in their virtual "natural setting", rather than relying solely on experimental approaches, paper-and-pencil measures, or qualitative methods. The present study also shows that proven research methods such as IPA or others can be successfully applied to the analysis of mediated interpersonal communication, including OMV interactions.

Finally, the understanding of social interaction in videogames is important to social research for two main reasons. First, increasing numbers of people around the world select videogames as their entertainment technology of choice, thus investing their time and resources in interacting with this technology and other users. Therefore, there might be an increasing need for research geared at understanding mediated social dynamics as enabled by this mainstream and sophisticated technology. Second, videogames provide a new communication setting where social scientists can test communication processes and theories. As noted above, researchers have already begun the study of various types of media effects associated to videogame exposure. However, other traditional research programs attempting to explain how people associate and create norms and hierarchies, how interpersonal skills are both learnt and develop over time, perceptions on the communication channel, and human-computer interaction and design, may also be applied to the study of OMVs. It is in this social and research context that the present research not only describes human social interaction in online videogames, but it also sheds some light on the basic social dynamics that underpin these interactions.

## APPENDIX 1 - CODER TRAINING SHEET.

Coder Sheet

I- Match each message to only one of the following categories

| Content categories |
| --- |
| 1. Shows solidarity, raises other's status, gives help, and rewards. |
| 2. Shows tension release, jokes, laughs, and shows satisfaction. |
| 3. Agrees, shows passive acceptance, understands, concurs, and complies. |
| 4. Gives opinion, evaluation, analysis, expresses feeling, wish. |
| 5. Gives suggestion, direction, implying autonomy for other. |
| 6. Gives personal orientation, information, repeats, clarifies, and confirms. |
| 7. Gives non-personal orientation, information, repeats, clarifies, and confirms about game performance (task). |
| 8. Asks for non-personal orientation, information, repetition, or confirmation about game performance (task). |
| 9. Asks for personal orientation, information, repetition, confirmation. |
| 10. Asks for opinion, evaluation, analysis, expression of feeling. |
| 11. Asks for suggestion, direction, possible ways of action. |
| 12. Disagrees, shows passive rejection, formality, withholds help. |
| 13. Shows tension, asks for help, withdraws out of field. |
| 14. Shows antagonism, deflates other's status, defends or asserts self. |
| 15. Summons/greetings/partings. |
| 16. Talk about problems with the technology: bandwidth lags, slow connection rate, etc. |
| 17. 0. Unclassifiable messages. |
| 18. r. Repairs. |
| 19. sm. System message. |

II- List of Abbreviations

- afk: away from keyboard
- brb: be right back
- cya: see you
- gd: good duel
- gf: good fight
- gtg/g2g: got to go
- i dunno: I don't know
- idk: I don't know
- k: ok
- lmao: laugh my ass off
- lol: laugh out loud
- np: no problem
- nv/nvm: nevermind
- omfg: oh my fucking god
- omg: oh my god
- rotfl: roll on the floor laughing
- rotflmao: roll on the floor laughing my ass off
- sry: sorry
- stfu: shut the fuck up
- sup: what's up
- ty: thank you
- u: you
- ur: your
- wtf: what the fuck
- y: why

III- Insider terms

- *Admin*: server administrator, usually a member of the clan, who has special powers other players lack of
- *Binding*: assigning a keyboard key to perform a prefixed command
- *Console*: an in-game window where players can input commands and read previous messages
- *CM*: Council member, a high ranking member of the clan
- *DFA*: a special move using a light saber
- *Emp/empowerment*: a special power granted to a player by an Admin
- *Lag*: slow connection rate causing the game to run slowly and with cuts
- Lamer/laming: a player who attacks another player without mutual consent, therefore it implies
- *Newbie/Noob*: word with a negative connotation referring to novice players
- *Noclip*: a command used by admins to be able to go through objects
- *Term/Terminator*: a special power granted to a player by a CM enabling the player to use fire arms instead of sabers

## APPENDIX 2 – SAMPLE TRANSCRIPT

-={Elite}=-CaptSaw,CE: how do i do thi

-={Elite}=-CaptSaw,CE: s

-={Elite}=-CaptSaw,CE: um

Dante Valmont: lol

-={Elite}=-CaptSaw,CE: nmo

Kreed: danm it

-={ElitE}=-ShadowFury: HAHAHAAH

-={Elite}=-CaptSaw,CE: lol

-={Elite}=-Capt fell to his death

-={Elite}=-Capt was sabered by Dante Valmont

Dante Valmont: hehe

-={Elite}=-CaptSaw,CE: bastard

Dante Valmont: see

Dante Valmont: invis saber

-=[TDC]Fire(L)=-: PERRRRYYYYY

-={Elite}=-CaptSaw,CE: ok watch my jump

Dante Valmont: k

-={Elite}=-CaptSaw,CE: lemme get ther

Dante Valmont: where are you

-=[TDC]Fire(L)=-: COME IN PAULS ADMINISTRATOR OFFICE

-={Elite}=-CaptSaw,CE: um

-={Elite}=-CaptSaw,CE: hard to explain

Dante Valmont: lol i cant see if i dont know where

Eddison killed himself

-={Elite}=-CaptSaw,CE: watch

Padawan connected

-={Elite}=-CaptSaw,CE: shit

-={ElitE}=-ShadowFury: kreed isnt gay

-=[TDC]Fire(L)=-: perry

-=[TDC]Fire(L)=-: omfg perry

-={ElitE}=-ShadowFury: no peyton

-={Elite}=-Capt fell to his death

-=[TDC]Fire(L)=-: come in the administrator ofice

-={ElitE}=-ShadowFury: nope

-=[TDC]Fire(L)=-: for 1 second

-={ElitE}=-ShadowFury: 1

-=[TDC]Fire(L)=-: stand here

-=[TDC]Fire(L)=-: OMFG

Dante Valmont fell to his death

-=[TDC]Fire(L)=-: please

-={ElitE}=-ShadowFury: im not stupid

-=[TDC]Fire(L)=-: for 1 second

-={Elite}=-CaptSaw,CE: shit

-=[TDC]Fire(L)=-: perry

-={ElitE}=-Shad was killed by -=[TDC]Fire(L

-={ElitE}=-ShadowFury: omg

-={Elite}=-CaptSaw,CE: almost

-=[TDC]Fire(L)=-: yay

-={Elite}=-Capt fell to his death

Eddison   <{}>:):(>:(:-/: stop

-={ElitE}=-ShadowFury: haha so close

Dante Valmont fell to his death

Kreed: haha i got him stuck

-=[TDC]Fire(L)=-: does it kill you if u stay in it?

-={Elite}=-CaptSaw,CE: damnit!!

-={Elite}=-Capt fell to his death

Dante Valmont: ?

Eddison killed himself

Dante Valmont was thrown to their doom by Kreed

Kreed: oops

Dante Valmont: im tryin to do the jump

-={Elite}=-CaptSaw,CE: darth give me a min

-={ElitE}=-Shad fell to his death

Kreed: where do u jump at

-={Elite}=-CaptSaw,CE: just watch

Dante Valmont fell to his death

-={Elite}=-CaptSaw,CE: dsamni

Dante Valmont: i was watching lol

-={ElitE}=-Shad fell to his death

-={Elite}=-Capt fell to his death

-={Elite}=-CaptSaw,CE: PISS FUCK

-={ElitE}=-ShadowFury: hahah

-={Elite}=-CaptSaw,CE: ill get it

Dante Valmont fell to his death

Kreed: omg

-={Elite}=-Echo entered the game

-={ElitE}=-Shad fell to his death

Kreed: capt is it that hard?

-={Elite}=-CaptSaw,CE: damn almost

Padawan connected

-={Elite}=-CaptSaw,CE: sorta

-={ElitE}=-Shad killed himself

Padawan connected

Kreed: jeez!

-={ElitE}=-ShadowFury entered the game

Kreed: looks easty

-={ElitE}=-ShadowFury: gay

-=[TDC]Fire(L)=-: oh no

-={ElitE}=-ShadowFury: gay -->

-=[TDC]Fire(L was thrown to their doom by Eddison

-={Elite}=-CaptSaw,CE: timin is harder than hell

Kreed was sabered by Dante Valmont

Kreed: ass

Dante Valmont: lol

Dante Valmont: do it capt

Dante Valmont: lol

-={Elite}=-CaptSaw,CE: ass

Eddison <{}>:):(>:(:-/: hahahaha

Dante Valmont fell to his death

-=[TDC]Fire(L)=-: damnit

-={ElitE}=-ShadowFury: ahha

-={Elite}=-Echo: where is every1

-=[TDC]Fire(L fell to his death

APPENDIX 3 – INITIAL INTERCODER RELIABILITY RESULTS

Coding of 19 categories

Transcript 2- Sarai and Sam

| | | Coder A | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | total |
| | 1 | 35 | 1 | 6 | 20 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 0 | 73 |
| | 2 | 0 | 82 | 1 | 24 | 0 | 2 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 118 |
| | 3 | 0 | 0 | 23 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 |
| | 4 | 1 | 1 | 1 | 19 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 |
| | 5 | 0 | 0 | 0 | 5 | 30 | 5 | 9 | 6 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 60 |
| | 6 | 0 | 0 | 3 | 7 | 1 | 35 | 10 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 61 |
| | 7 | 0 | 2 | 0 | 27 | 4 | 15 | 41 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 11 | 1 | 1 | 107 |
| Coder B | 8 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 24 | 25 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 56 |
| | 9 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 9 | 5 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 20 |
| | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 12 | 0 | 0 | 2 | 4 | 0 | 0 | 5 | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 |
| | 13 | 0 | 2 | 0 | 18 | 0 | 0 | 0 | 2 | 0 | 5 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 30 |
| | 14 | 0 | 1 | 1 | 12 | 3 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 6 | 0 | 0 | 3 | 0 | 0 | 29 |
| | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 19 |
| | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 17 | 1 | 3 | 1 | 7 | 2 | 1 | 5 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 4 | 0 | 0 | 29 |
| | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 6 |
| | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 170 | 170 |
| | total | 37 | 92 | 38 | 148 | 43 | 61 | 80 | 45 | 40 | 7 | 1 | 13 | 0 | 9 | 25 | 0 | 35 | 6 | 171 | 851 |

| | |
|---|---|
| % agreement | 0.585 |
| Chance agreement | 0.0935 |
| Kappa | 0.542 |

## APPENDIX 4 – FINAL INTERCODER RELIABILITY RESULTS

### Coding of 19 categories

Transcript 2- Sarah and Jorge

Coder A

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 26 | 1 | 0 | 2 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 5 | 0 | 0 | 0 | 0 | 41 |
| | 2 | 8 | 175 | 3 | 6 | 4 | 2 | 10 | 1 | 0 | 0 | 0 | 0 | 3 | 1 | 7 | 0 | 2 | 0 | 0 | 222 |
| | 3 | 0 | 4 | 44 | 4 | 0 | 3 | 4 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 62 |
| | 4 | 1 | 0 | 0 | 10 | 3 | 2 | 11 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 30 |
| | 5 | 0 | 1 | 0 | 0 | 87 | 4 | 32 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 130 |
| | 6 | 0 | 0 | 0 | 1 | 2 | 18 | 9 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33 |
| | 7 | 0 | 0 | 1 | 0 | 7 | 6 | 50 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 67 |
| Coder B | 8 | 0 | 1 | 0 | 0 | 3 | 0 | 3 | 39 | 7 | 8 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 62 |
| | 9 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 11 | 9 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 |
| | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| | 11 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| | 12 | 0 | 2 | 0 | 3 | 5 | 4 | 9 | 0 | 0 | 2 | 0 | 39 | 11 | 4 | 1 | 1 | 0 | 0 | 0 | 81 |
| | 13 | 0 | 0 | 0 | 4 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 3 | 23 | 1 | 1 | 0 | 0 | 0 | 0 | 36 |
| | 14 | 0 | 6 | 1 | 9 | 7 | 1 | 14 | 2 | 0 | 1 | 0 | 4 | 13 | 65 | 0 | 0 | 2 | 0 | 0 | 125 |
| | 15 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 32 | 0 | 0 | 0 | 0 | 35 |
| | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 6 |
| | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 7 |
| | 19 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 381 | 382 |
| | total | 35 | 190 | 49 | 39 | 124 | 43 | 152 | 67 | 17 | 14 | 0 | 49 | 57 | 73 | 49 | 3 | 4 | 8 | 382 | 1355 |

| | |
|---|---|
| % agreement | 0.743 |
| Chance agreement | 0.132 |
| Kappa | 0.704 |

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