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An Analysis of Socioemotional and Task Communication in Online Multiplayer Video Games

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Communication within recreational computer-mediated settings has received less attention than interaction in instrumental and organizational contexts. The present study compared the socioemotional and task-oriented content of 5,826 text messages produced by participants of an online video game. The results suggest that participants produced significantly more socioemotional than task content. Consistent with predictions flowing from Social Information Processing Theory, the vast majority of messages were socioemotional and positively valenced, despite the ostensible game objective of fighting other participants. Experience level played an important role in message production. More experienced participants produced both more positive and fewer negative socioemotional messages than the less experienced and used more specialized language conventions (e.g., emoticons, scripted emotes, and abbreviations). The results are discussed in the context of previous research examining the effect of communication medium and interaction purpose on socioemotional and task message production.

Keywords: *computer-mediated communication; video games; interaction process analysis; social information processing; socioemotional and task communication; computer experience*

The Internet supports a wide range of social interaction among individuals, groups, and organizations, which provides a new medium for human expression, collaboration, and exchange (Kiesler, 1997; Walther & Burgoon, 1992). The shared use of Internet-supported technologies for social interaction is referred to as computer-mediated communication (CMC). The instrumental and social uses of Internet technologies have received much attention from CMC researchers, especially in organizational and work contexts (e.g., Hinds & Kiesler, 2002). For instance, researchers have examined differences between CMC and face-to-face interactions in relation to work quality, productivity, and task satisfaction (e.g., Straus & McGrath, 1994), social and task communication in various organizations (e.g., Rice & Love, 1987; Sproull & Kiesler, 1986; Steinfield, 1986), and communication effects of group decision-making sup-

port software (e.g., McGrath & Hollingshead, 1994; McLeod, Baron, Marti, & Yoon, 1997).

To date, research has begun to reveal of how communication processes are affected by CMC in instrumental tasks in which the objective of the communication is to accomplish some specific goal (e.g., solve a puzzle, make the best decision, etc.). For example, the text-based nature of CMC often leads to a number of coordination issues that must be resolved. Research has shown, for instance, that people tend to develop strategies to manage turn-taking coordination when collaboratively solving puzzles (Hancock & Dunham, 2001) as well as that CMC speakers use threading techniques to coordinate the simultaneous discussion of multiple topics (Black, Levin, Mehan, & Quinn, 1983; McDaniel, Olson, & Magee, 1996). Tasks that require longer periods of time to complete also raise unique communication issues in CMC. For example, because relaying social information takes longer in text-based interactions (e.g., personality, intent, etc.), participants may develop probing strategies to learn about their partners as they complete their official tasks (Walther, 1992; 1993). Research has also shown that, similar to instrumental face-to-face communication, instrumental CMC fosters higher levels of task as opposed to socioemotional communication (Hiltz, Johnson, & Agle, 1978; Rice & Love, 1987; Vallee, Johansen, Lipinski, Spangler, Wilson, & Hardy, 1975).

Although our understanding of mediated communication processes in instrumental and organizational contexts is substantial, we know much less about these processes in social and recreational contexts. Although the Internet was originally designed to support collaboration among academics and members of the military, it has long supported recreational and playful activities (see Rheingold, 1993) and is increasingly used for recreational entertainment purposes, such as playing video games. A number of research communities have highlighted the need for more research examining communication in recreational and playful contexts (Blythe, Monk, Overbeeke, & Wright, 2003).

Some research has begun to examine recreational social interaction on the Internet (e.g., Danet, Ruedenberg-Wright, & Rosenbaum-Tamari, 1997; Moore, Mazvancheryl, & Rego, 1996; Parks & Floyd, 1996; Parks & Roberts, 1998; Pew Internet & American Life Project, 2003; Wright, Breidenbach, & Boria, 2002; Yee, 2001). For example, in one study of Internet video game players, Yee (2001) reported that approximately half of the players rate their online gaming friendships as comparable to their offline friendships. Some players indicated that some of their online gaming friendships are actually better than their offline counterparts. Other studies have examined how people form online identities (e.g., Turkle, 1997) and constitute social structures in recreational CMC (e.g., Curtis, 1997).

Although these studies have begun the investigation of recreational CMC contexts, they have not yet addressed the nature of the communication processes that take place in these settings. In the present study, we use Bales's Interaction Process Analysis (IPA; Bales, 1950; Rice & Love, 1987) to examine communication between participants engaged in a recreational form of CMC. IPA categorizes communication according to its purported goal, such as expressing social information and emotions

(i.e., socioemotional communication) or instrumental inquiries about a task or procedure at hand (i.e., task communication). Although IPA has been used extensively to examine communication in more instrumental CMC (e.g., Hiltz et al., 1978; Maloney-Krichmar & Preece, in press; Rice & Love, 1987; Vallee et al., 1975), it has not been applied to recreational CMC. In particular, the setting examined in the present study was an online multiplayer video game, a rapidly growing component of recreational Internet use (e.g., "EverQuest", "The Sims"), in which users connect to synchronous graphical virtual spaces and interact with one another via text-based messaging and avatars.[2]

Why has research to date failed to examine communication processes in recreational CMC? One possible reason, as Keyton (2000) has argued, is that traditional group research has considered relational (socioemotional) issues as secondary or supplementary to group task concerns because of theoretical, ideological, and measurement issues. This approach may have hindered the study of friendships, playgroups, and other mediated recreational groups in favor of the study of more instrumental CMC uses, as in decision-making or problem-solving contexts.

A second possible reason may flow from the fact that video games, an important arena of recreational CMC, have been examined primarily from a media effects perspective that does not address possible communication processes among distributed video game users. The ostensible effects of video games have been studied at multiple levels, including cognitive effects because of exposure (see Green & Bavelier, 2003; Loftus & Loftus, 1983), violent video games as a cause of aggression (Anderson & Bushman, 2001; Anderson & Dill, 2000; Sherry, 2001; Williams & Skoric, 2003), the uses and gratifications of video games (Sherry & Lucas, 2003; Wigand, Borstelmann, & Boster, 1986), and the properties of video game narratives (Schneider, Lang, Shin, & Bradley, 2004; Shapiro, Peña, & Hancock, in press). Indeed, these questions and issues are important, but they do not attempt to explain how communication occurs in recreational CMC.

One way to begin the study of communication processes in recreational CMC is to employ the same methods applied to instrumental CMC. Bales's IPA is an influential method for the study of human interaction (Hirokawa, 1988; McGrath, 1984) that has been widely used in CMC research (Walther, 1992). IPA consists of 12 content categories for communication, including 6 for socioemotional messages, with three positive and three negative types of expressions of sociability and affect. Positive socioemotional communication includes messages that show (a) *solidarity or friendliness* (see Bales, 1970; e.g., "Thanks so much for the help"); (b) *tension relief, jokes, laughs, or dramatization* (e.g., "Wow, that was funny"; see Bales, 1970); and (c) *agreement and understanding* (e.g., "Yeah, I agree with you"). Negative socioemotional communication includes messages that express (d) *disagreement and passive rejection* (e.g., "I told you that's not allowed in here"), (e) *tension* (e.g., "I am not happy right now"), and (f) *antagonism* (e.g., "Why don't you just shut up"). Task communication is comprised of questions and answers aimed at completing a procedure and are assumed to have a neutral affective valence. Task communication falls into six categories: (a) *asking for an opinion* (e.g., "What do you think of this move?"), (b) *asking for a sugges-*

tion (e.g., "How can I improve my sword slashing?"), (c) *asking for task information or orientation* (e.g., "How can I open this door?"), (d) *giving an opinion* (e.g., "I believe we can do better than that"), (e) *giving a suggestion or command* (e.g., "Just practice some more"), and (f) *giving task information or orientation* (e.g., "Doors open by pressing the red button").

During the years, IPA has been criticized on a number of issues (for review, see McGrath, 1984). These criticisms generally question IPA's assumptions, such as the socioemotional and task dichotomy and the potential glossing over of multidimensional aspects of communication (Hirokawa, 1988). IPA perhaps oversimplifies human communication when compared to other available perspectives that emphasize the multiple levels and the strategic, goal-oriented aspects of communication (e.g., Clark, 1996; Dillard, 1997; Watzlawick, Beavin, & Jackson, 1967).

We acknowledge these criticisms; however, we believe there are several reasons why IPA represents a useful method for the initial study of communication in recreational CMC. First, IPA lends itself to the study of individuals engaged in both instrumental and recreational group interaction. In particular, Bales (1950) introduced IPA as a method amenable for the study of interaction in groups, such as "policy forming committees, boards and panels, diagnostic councils in clinical work, problem-solving groups . . . [and] children's play groups, adolescent gangs, adult cliques, social and recreational clubs for interaction . . ." (p. i). Second, IPA has outperformed other interaction analysis methods in representational validity as it presumably better reflects the meaning of communication for actors in context (Poole & Folger, 1981). Using IPA for an analysis of recreational CMC may enable us to tap into social interaction as participants themselves experience and understand it. Finally, as noted above, CMC researchers have successfully applied IPA in a variety of instrumental CMC contexts (Hiltz et al., 1978; Maloney-Krichmar & Preece, in press; Rice & Love, 1987; Vallee et al., 1975). As such, using IPA to examine communication in recreational CMC allowed us to draw comparisons with previous research examining more instrumental CMC.

Socioemotional and Task Communication in Online Video Games

How might socioemotional and task communication occur among participants of online video games? A review of the CMC literature suggests several theoretical approaches to this question. The first is the cues-filtered out approach (CFO; Culnan & Markus, 1987), which refers to theories that focus on the effects of diminished nonverbal and social cues in computer-mediated social interaction, such as social presence theory (Short, Williams, & Christie, 1976) and the reduced-context cues perspective (Kiesler, Siegel, & McGuire, 1984).

Social presence theory posits that the salience of participants interacting through mediated communication has an effect on consequent 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 communica-

tive interactions. This theory notes that media differ in their bandwidth—or capacity to transmit information about social expressions, direction of looking, posture, dress, nonverbal and vocal cues—and, in turn, diminished bandwidth predicts a reduction in social presence (Short et al., 1976). As mediated interaction provides less bandwidth than face-to-face communication, the medium is assumed to diminish social presence, which renders communicators less salient to each other. An important implication of social presence theory in the context of socioemotional and task communication in recreational CMC is that participants' communication should focus on the task (i.e., playing the video game) rather than on other people (see Culnan & Markus, 1987; Rice & Love, 1987; Short et al., 1976).

The reduced context cues perspective (Kiesler et al., 1984; Sproull & Kiesler, 1986) similarly assumes that CMC filters out elements that regulate interaction and impression formation between communicators. This perspective posits that the lack of social cues and anonymity of CMC interactions foster states of self-absorption and depersonalization among participants, leading to uninhibited, impulsive negative communication. In the context of socioemotional and task communication in recreational CMC, the reduced context cues perspective predicts more negative socioemotional communication (i.e., flaming) than positive messaging and also predicts increased levels of task communication (see Kiesler et al., 1984; Siegel, Dubrovsky, Kiesler, & McGuire, 1986; Sproull & Kiesler, 1986).

Although online video games allow users to represent themselves graphically with avatars, the level of social presence and social cues certainly remains below that of face-to-face interaction. As such, the CFO perspective predicts that online video game participants will focus on playing the video game rather than displaying a social orientation when communicating. Thus, participants should produce more task (e.g., "How can I perform a special move?") than socioemotional communication (e.g., "Hey, good to see you captain"). The CFO approach also predicts that when online video game participants do engage in socioemotional communication, it will be primarily negative (e.g., "You are a loser") rather than positive socioemotional communication (e.g., "That was a great fight").

A second theoretical approach for conceptualizing communication in recreational CMC is social information processing theory (SIP; Walther, 1992, 1996; Walther & Burgoon, 1992). SIP states that participants reduce the uncertainty associated with meeting people online by developing and testing impressions. This process may result, given time, in more refined interpersonal knowledge that foster changes from impersonal to more interpersonal communication (see Walther, 1992). Over time, users may also acquire the necessary experience to encode relational (socioemotional) communication using text (Utz, 2000; Walther, 1992). 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). As such, SIP predicts that, all things being equal and given sufficient time, CMC participants should express socioemotional and task communication at approximately the same levels as they would in comparable face-to-face

settings (Walther, 1992, 1996). Given that recreational face-to-face interaction results in more socioemotional than task communication (see Bales, 1950), SIP would predict that people engaged in recreational CMC should produce more socioemotional than task communication.

Regarding the valence of socioemotional communication during interaction, previous IPA research in face-to-face settings shows that positive socioemotional communication typically outweighs negative socioemotional interaction (Bales, 1953). Bales hypothesized that the former serves as positive reinforcement for individual actions and performance. The opposite presumably would be true for negative socioemotional communication, as Bales's equilibrium theory would regard negative socioemotional communication as disruptive to the interaction process (see Bales, 1953). As such, SIP would predict that people engaged in recreational CMC should produce more positive than negative socioemotional communication.

The preceding discussion shows how the CFO approach and SIP theory make contrasting predictions concerning how communication may occur in recreational CMC. Whereas the CFO approach leads one to predict more task than socioemotional communication, SIP theory suggests the opposite. Hypotheses 1A and 1B, respectively, reflect these predictions in the context of online video games.

H1A: Online video game participants will produce more task than socioemotional communication.

H1B: Online video game participants will produce more socioemotional than task communication.

The CFO approach and SIP theory also make contrasting predictions about the valence of socioemotional communication in recreational CMC. In particular, the CFO approach leads one to expect that socioemotional communication in online video games will be more negative than positive, whereas SIP theory suggests more positive than negative socioemotional communication. Hypotheses 2A and 2B, respectively, reflect these predictions in the context of online video games.

H2A: Online video game participants will produce more negative socioemotional than positive socioemotional communication.

H2B: Online video game participants will produce more positive socioemotional than negative socioemotional communication.

The experiential nature of SIP theory leads to two additional hypotheses not implicit in the CFO approach. In particular, SIP suggests that over time, CMC participants become more adept at encoding relational communication with a partner (Walther, 1992). In support of this, Walther, Anderson, and Park (1994) detected more socially oriented communication in unrestricted (time-unlimited) than in restricted (time-limited) CMC interaction. Although original investigations of SIP focused on the temporal aspects of a particular interaction (e.g., how long participants were allowed to interact with one another), more recent studies have operationalized experi-

ence within a SIP context as the aggregate amount of time a participant has interacted within a given communication space. For example, drawing on SIP theory, Utz (2000) predicted and uncovered support for overall experience with the online medium as a predictor of greater facility with relational expression and that increased facility would lead to more friendships (see also Parks & Floyd, 1996; Parks & Roberts, 1998). As such, if experience is operationalized as the aggregate time a participant has interacted in online video games, more experienced participants should be more skilled at expressing socioemotional communication in recreational CMC than less experienced participants. Hence

H3: More experienced online video game participants will express more socioemotional communication than less experienced participants.

CMC participants tend to express themselves employing collective conventions, such as a shared jargon and argot (McGrath & Hollingshead, 1994). Some well-known CMC conventions are emoticons, which are symbols formed with keyboard characters resembling facial expressions (:–), –_0) (Hancock, 2004a; Walther & D'Addario, 2001). Emotes are another type of convention consisting of preprogrammed computer scripts used to express actions and personal states (e.g., *walks away slowly with a confident smile on his face*) (Parks & Roberts, 1998; Utz, 2000). Online video game participants also make use of abbreviations, such as AFK for "away from keyboard" (Wright et al., 2002). CMC conventions can be considered as surrogates for nonverbal communication and can be employed to express emotions, moods, humor, sarcasm, and irony (for review, see Hancock, 2004a, 2004b). Previous work examining SIP provides some evidence that the use of these conventions increases with experience (Utz, 2000). Accordingly, Hypothesis 4 predicts that because participants become more skilled over time at encoding social information in text, more experienced online video game participants will use more CMC conventions (i.e., emoticons, emotes, and abbreviations) in their text messages than less experienced participants. Specifically,

H4: More experienced online video game participants will use CMC conventions more frequently than less experienced participants.

Method

Data

We collected 5,826 text messages produced by 65 participants while interacting in "Jedi Knight II: Jedi Outcast," a video game published by LucasArts Company in March 2002. We recorded six 1-hour segments randomly sampled from the same server (i.e., same IP address) at random times of the day across a 2-week period. The server was selected on the basis of the highest number of connected users, which turned out to be a *clan*[3] server, a common type of user-managed virtual setting. The participants were not aware of the recording process and agreed to take part in the

study only after contacted. The video game software allowed for the download of all public communication among participants into text transcripts. Transcripts also included system messages that announced events in the game (e.g., a user joining the game, a user death, etc.). Of the 5,826 recorded text messages, the participants produced 4,402; the remaining 1,424 were system messages. All messages produced by participants included a header that identified the sender by his or her logon name and also displayed information about clan membership.

Content Analysis

Communicating in most online video games requires a user to type a message into a private composition window and then post it to the shared virtual space by hitting the enter key. Therefore, the unit of analysis was each individual text message posted a participant. Each message posted during recreational interaction was placed into one of six mutually exclusive content categories. Three of these were the original IPA categories described above (Bales, 1950, 1970), including task-oriented messages (i.e., messages giving or asking for information, opinions, or commands), positive socioemotional messages (i.e., showing solidarity, tension release, and agreement) and negative socioemotional messages (i.e., showing antagonism, tension, or disagreement). Following Rice and Love (1987), we added two additional types of messages to the positive socioemotional category to distinguish between *giving and asking for task-oriented information* from *giving and asking for personal information* (e.g., "Where do you live?," "I live in Florida").

We also added three message categories to capture message production that was unique to online video games and other synchronous CMC technologies. These included a category for *messages designed to repair errors in previous messages* (e.g., the message "Oops, that was supposed to be *great*" after "That place is *gerat*") (see Clark, 1996), a category for *summons, greetings and partings* (see Clark, 1996), and a category for *unclassifiable messages* as IPA has no such a category (see McGrath, 1984). Messages expressing technological difficulties, such as lags or slow connections (Lebie, Rhoades, & McGrath, 1996), and system messages automatically generated by the game software to inform users of game outcomes and events (e.g., "UserName has just connected") were not included in the analysis.

Two trained coders analyzed the transcripts in terms of the IPA-based coding scheme (Bales, 1950). The overall interrater reliability between the coders, based on a randomly chosen 21% of the total number of messages (i.e., 1,236), and at the most detailed level of the coding scheme (i.e., the message categories) was acceptable for purposes of the study (*kappa* = .82). Table 1 provides the *kappa* values and the average number of messages per participant for each of the main content categories.

Operationalization of Experience

We derived participants' experience level as an index based on membership and status in Internet playgroups or clans. The clan was established 10 months before we

Table 1
Interrater Reliability, Means, and Standard Deviations of Average Number of Messages per Content Category (N = 59)

	Interrater Reliability	Average # of Messages per Participant	
	Kappa	*M*	*SD*
Task	.68	15.95	29.59
Positive socioemotional	.86	37.24	57.34
Negative socioemotional	.80	14.32	24.88
Summons, greetings, and partings	.73	3.56	6.39
Repairs	.76	1.00	2.53

Note: Proportions are based on the number of messages produced in a category divided by the total number of messages.

collected our data, and its roster, norms, and hierarchies were described on their Web site. Membership and hierarchies in gaming clans typically depend on substantial proficiency and in-game interaction time (Wright et al., 2002). As such, participants who were members of online clans were more experienced than participants who were not members. Furthermore, within clans, two types of members were distinguishable: regular clan members and higher ranking, more experienced clan council members. Given their higher place in hierarchy within a clan, council members presumably were the most experienced of the online gamers. Thus, this study operationalized council members as highly experienced participants, regular clan members as medium experience participants, and finally, non-clan members were categorized as low-experience participants.

Results

Sixty five participants were identified during the 2-week recording period. Six produced fewer than three messages and were, therefore, not included in the analysis. Of the 59 remaining participants, 6 were highly experienced, 25 were moderately experienced, and 28 were relatively low experience players. We calculated the proportion of each message category for each participant by dividing the number of messages in a given category by the total number of messages that user produced. As such, comparisons across IPA categories were within-subjects. Following previous research (e.g., Hiltz et al., 1978), nonparametric statistics were employed for all analyses involving the IPA coding, which produces a categorical dependent variable.

The first hypothesis concerned the relative prevalence of task (e.g., "How can I do a double special combo?") versus socioemotional communication (e.g., "good fight") produced by online video game participants. Hypothesis 1A, derived from the CFO perspective, predicted more task than socioemotional communication; Hypothesis 1B, derived from SIP theory, predicted the opposite. A related-samples Wilcoxon test

Table 2
Mean and Standard Deviations of Proportions of Messages by Task, Socioemotional, and Positive and Negative Socioemotional Communication (N = 59)

Task		SE		Positive SE		Negative SE	
M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
0.23	0.18	0.77	0.18	0.74	0.19	0.26	0.19

SE = Socioemotional

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

revealed that participants produced significantly more socioemotional than task communication, $z = –6.31$, $p < .001$, which supported Hypothesis 1B and the SIP theory prediction (see Table 2).

The second hypothesis related to whether online video game participants would express more negative or positive socioemotional communication. Hypothesis 2A, derived from the CFO perspective, predicted more negative socioemotional communication, and Hypothesis 2B, derived from SIP theory, predicted the opposite. A related-samples Wilcoxon test comparing the proportions of both types of socioemotional communication revealed that participants produced a significantly larger proportion of positive socioemotional than negative socioemotional communication, $z = –6.01$, $p < .001$, in line with Hypothesis 2B and again providing support for SIP theory (see Table 2).

Hypotheses 3 and 4 stemmed from SIP's experiential principles that CMC participants' ability to express social information improves with experience with the medium. Hypothesis 3 predicted that more experienced online video game participants should exhibit more socioemotional communication than the less-experienced ones. A median test comparing the overall production of socioemotional communication (both positive and negative) across the three levels of experience (high, medium, and low) was not significant: $\chi^2(2) = .92$. This suggests that, contrary to Hypothesis 3, in general, the more experienced participants did not engage in more socioemotional communication than the less experienced. However, separate analyses of positive and negative types of socioemotional communication revealed important differences across levels of experience. In particular, the most experienced participants produced significantly more positive socioemotional messages than did those classified as medium- or low-level experience participants: $\chi^2(2) = 8.19$, $p < .05$ (see Table 3). Experience level was also a reliable factor in the production of negative socioemotional communication: $\chi^2(2) = 6.05$, $p < .05$. Highly experienced participants had significantly fewer negative socioemotional messages than less experienced participants (see Table 3). There were no significant differences in the incidence of socio-

Table 3
Means and Standard Deviations of the Proportion of Task, Socioemotional Communication, and Convention Use by Level of Experience

	Low (N = 28)		Medium (N = 25)		High (N = 6)	
	M	*SD*	*M*	*SD*	*M*	*SD*
Task	.23	.17	.24	.20	.13	.09
Socioemotional	.77	.17	.76	.20	.87	.09
Positive socioemotional	.71	.18	.74	.21	.84	.09
Negative socioemotional	.29	.18	.26	.21	.16	.09
Conventions	.23	.16	.26	.19	.49	.31

emotional communication types between the remaining experience levels. Taken together, these data suggest that participants produced approximately the same overall levels of socioemotional communication regardless of experience but that the most experienced participants created more positive and fewer negative socioemotional messages.

Finally, Hypothesis 4, derived from SIP theory, predicted that highly experienced online video game participants would use more specialized conventions (i.e., emoticons, emotes, and abbreviations) in their messages than would their less-experienced counterparts. Note that because the dependent variable (i.e., *frequency of convention production*) in this analysis was not categorical, parametric statistics served as the test. A linear contrast analysis, using harmonic n for unequal sample sizes (Rosenthal & Rosnow, 1985), revealed a significant effect—$t(58) = 3.33$, $p < .001$—which indicated that the production of specialized conventions increased linearly with experience level[4] and, hence, was in line with the expectations embodied in Hypothesis 4 (see Table 3).

Discussion

The purpose of the present study was to expand our understanding of communication in recreational CMC by analyzing the socioemotional and task-oriented content of messages produced in the course of social interactions in an online video game. Two general approaches to communication in computer-mediated settings were compared. First, the CFO approach, which includes social presence theory (Short et al., 1976) and the reduced context cues perspective (Kiesler et al., 1984), suggested that because mediated communication settings decreases social presence and social context cues, the majority of messages in recreational CMC settings, such as online games, should be task-oriented.

In contrast, SIP theory (Walther, 1992, 1996) assumes that given sufficient experience with a CMC setting, users will express relational communication approximating that of similar face-to-face settings. As such, SIP gives rise to the prediction that com-

munication in recreational CMC, such as online games, will be similar to interaction observed in recreational face-to-face contexts. In view of previous IPA research examining interaction in face-to-face play (Bales, 1950), we expected a larger proportion of socioemotional communication. A comparison of the proportions of task-oriented and socioemotional communication revealed that in contrast to the CFO predictions but in support of SIP theory, participants generated a significantly higher rate of socioemotional than task messages (see Table 2).

A closer look at the transcripts suggests that when participants did produce task-oriented messages, they frequently involved giving a suggestion or command but also included asking and giving task information. In general, these findings are consistent with Bales's (1950) observation that task communication in face-to-face recreational situations resembles a running report about the individual's current activities, with little requests for more elaborated opinions and suggestions. These results also suggest that participants in online video games employ commands and simple questions and answers to coordinate joint activities (e.g., strategies, role-playing).

The second question of interest was whether participants in recreational CMC settings would overall express more positive or negative types of socioemotional communication. As noted above, the CFO approach assumes that the reduced cues in mediated settings minimizes social presence and fosters states of depersonalization, which would lead to more negative than positive socioemotional communication in online video games. Instead, SIP theory, in line with previous face-to-face research (see Bales, 1953), predicts that participants are apt to create more positive socioemotional messages. Again, the data appear to support SIP: Participants produced almost three times as many positive socioemotional messages as they did negative socioemotional messages (see Table 2).

An examination of the transcripts suggests that positive socioemotional communication typically involved expressions of tension release (e.g., jokes, LOL, and other typed representations of laughter) and, to a lesser degree, the expression of solidarity (e.g., writing "good fight" to another player after engaging in a duel), rather than providing explicit agreement with others. When the participants expressed the less prevalent negative socioemotional messages, they tended to be expressions of disagreement and antagonism, and less frequently, expressions of tension. Disagreement occurred primarily when participants behaved impolitely or broke a social rule (e.g., "Do not attack unarmed players"). Antagonistic remarks often involved the use of profane language and blunt expressions and seemed to follow previous expressions of disagreement and antagonism. Finally, tension-expressing messages tended to be in evidence when outcomes failed to match the participants' expectations (e.g., losing in the game, difficulties in navigating the virtual space). Activity in the socioemotional categories observed in the present study is consistent with Bales's (1950) observations of face-to-face recreational communication. In turn, these observations reinforce SIP theory's basic assumption that mediated communication processes will, with time, approximate face-to-face communication processes (Walther, 1992).

Although these data are consistent with Bales's (1950, 1953) observations, how do they compare with previous studies examining socioemotional and task communica-

Table 4
Task and Socioemotional Communication in Face-to-Face and Mediated, Recreational, and Instrumental Contexts

	Purpose of interaction	Medium	Task	Socioemotional
Bales (1950)	Instrumental	Face-to-face	.78	.22
Vallee, Johansen, Lipinski, Spangler, Wilson, and Hardy (1975)	Instrumental	Mediated	.89	.7
Hiltz, Johnson, and Agle (1978)	Instrumental	Mediated	.87	.14
Rice and Love (1987) [a]	Instrumental	Mediated	.71	.28
Maloney-Krichmar and Preece (in press)	Instrumental	Mediated	.66	.34
Bales (1950)	Recreational	Face-to-face	.39	.61
Present study [a]	Recreational	Mediated	.23	.77

a. Two socioemotional positive categories were added to IPA.
Note: Task and socioemotional proportions are based on the total number of IPA-based coded messages, summing to 1.

tion in CMC? As noted earlier, previous applications of IPA in CMC have focused exclusively on instrumental contexts. For example, Vallee et al. (1975) examined task and socioemotional messages in a negotiation game, Hiltz et al. (1978) examined communication in relation to a problem-solving task, Rice and Love (1987) studied messages in a medical information network, and Maloney-Krichmar and Preece (in press) applied IPA to an online information and support community. Table 4 lists these studies as well as ones involving the use of IPA in face-to-face contexts and indicates for each whether the interaction was recreational or instrumental in nature. As Table 4 shows, when the purpose of the interaction is instrumental, regardless of the medium, communication consists of a higher volume of task-oriented than socioemotional messages (see Bales, 1950; Hiltz et al., 1978; Maloney-Krichmar & Preece, in press; Rice & Love, 1987; Vallee et al., 1975). In contrast, when the purpose of the interaction is recreational, communication consists of more socioemotional messages than task-oriented messages (Bales, 1950). In combination, these studies suggest that the ratio of task versus socioemotional communication is determined primarily by the purpose of the interaction (i.e., recreational vs. instrumental), not by medium. This observation is consistent with McGrath's (1984) review of IPA studies and highlights some of the unique properties of recreational interaction also present in computer-mediated play: exacerbated, often positive, socioemotional exchanges.

The past two hypotheses concerned the role of participant experience in shaping message content. As described above, SIP theory assumes that more experienced CMC users should be more adept at expressing themselves interpersonally (Utz, 2000). The comparison across low, medium, and high levels of experience, as operationalized by membership in online clans, revealed that although more experienced participants tended to engage in more socioemotional communication than less experienced participants, the difference was not statistically significant, which is inconsis-

tent with Rice and Love's (1987) observation that more active users produce more socioemotional messages.

Although experience did not predict overall levels of socioemotional communication, level of experience did affect the valence of socioemotional messages. The most experienced participants exchanged significantly more positive and significantly fewer negative socioemotional messages than their less-experienced counterparts. Clan membership and anticipated future interaction may account for these differences. First, highly experienced participants—who were especially dedicated members of their virtual group or clan (i.e., clan council members)—may have had a greater interest in ensuring that their communicative behavior was positive to maintain cohesion and satisfaction within the virtual group. Second, because of their high level of involvement in the game and their virtual group, highly experienced participants may have anticipated future interactions with other participants to a greater degree than did the less experienced ones. When individuals expect future interaction they tend to engage in more positive forms of relational communication (Walther, 1996). As Walther and D'Addario (2001) note, 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" (p. 325). Although additional research would be desirable, the present data suggest that the effects of anticipated future interaction may also hold in online gaming settings in which the ostensible purpose of interaction is to fight one another.

Finally, Hypothesis 4 predicted that more experienced participants would use more specialized conventions (e.g., emoticons, emotes, and abbreviations) in their messages than less experienced participants. A linear contrast across the three levels of experience supported this prediction. Indeed, approximately one half of the messages of highly experienced participants included a convention (see Table 3). From a SIP standpoint, this suggests that the acquisition of experience in CMC plays a significant role in message encoding (Utz, 2000; Walther, 1992). 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**"). This is consistent with previous CMC research documenting code change dynamics in text-based CMC (see Parks & Floyd, 1996; Parks & Roberts, 1998; Utz, 2000). Code change (see Bell & Healey, 1992) refers to a relational process in which people develop specialized ways of communicating to express themselves more efficiently and to strengthen a mutual identity, as in friendships.

Considered together, the present data provide substantial support for predictions derived from SIP theory. As predicted by this model, online gamers tended to produce more socioemotional than task-oriented text messages. Second, there were more positive than negative socioemotional messages. Third, although more experienced participants did not construct significantly more socioemotional messages than less experienced ones, highly experienced participants did exchange more positive and less negative socioemotional messages than the their less-experienced counterparts. Finally, the most experienced participants tended to use specialized conventions to express themselves more frequently than less-experienced participants, which indi-

cates that experience in online video games plays an important role in the expression of interpersonal communication. Overall, these findings suggest that recreational CMC settings, such as online video games, are capable of supporting some relational dynamics predicted by SIP. Despite its limitations, the present study also extends the empirical investigation of SIP theory to graphically based recreational online settings, suggesting that this model has considerable generalizability across different forms of mediated communication.

These data also have important implications for understanding behavior within video games. In particular, the fact that players produced many more positive than negative messages is at odds with predictions flowing from theories of video game provoked aggression and with the general emphasis in video game research on violence (see Anderson & Bushman, 2001; Anderson & Dill, 2000; Sherry, 2001). Instead, our data suggest that online video games, even ones with ostensibly violent objectives (e.g., to duel or kill one another for points), may involve substantial amounts of positive socioemotional communication. As Williams and Skoric (2003) note, however, collapsing all video games' context and content into a single homogenous category is akin to assuming that all television, motion picture, and radio use is the same. Additional research is required to determine whether the high levels of positive social messages observed in online multiplayer video games is also observed in other types of video games (e.g., first-person shooters, role-playing games, etc). The present study, however, suggests that some aspects of video games can be understood from a CMC perspective, and we believe this broadens the available set of theoretical frameworks for examining video game effects.

Finally, human communication is far more complex than the two main interaction goals identified by IPA. During the years, theorists have noted that messages may fulfill multiple goals (e.g., Dillard, 1997) well beyond Bales's socioemotional and task dichotomy. For example, communication has relational functions far beyond content exclusively (e.g., Watzlawick et al., 1967), and communicative behavior moves through multiple levels before speakers and addressees reach understanding (e.g., Clark, 1996; Hancock & Dunham, 2001). Future research in recreational CMC must consider the diverse goals and levels of communication that may underlie recreational interaction. Nonetheless, the present study adds to a growing body of research that suggests that the purpose of an interaction, rather than the medium in which it takes place, is more important in determining how people relate to one another.

Notes

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2. An *avatar* can be defined as a virtual representation that is controlled at least partially by a human being (Bailenson, Blascovich, Beall, & Loomis, 2001).

3. A *clan* is a virtual group of online gamers who perceive themselves as collectively engaged in playing an Internet game while sharing a set of values, procedures, and norms (McKenna & Green, 2002).

4. Because the data involve messages spontaneously produced in a public communication space, the independence of observations cannot be assumed—that is, although a given participant may have produced a message without reference to any other participants in the communication space, it is also possible, and likely, that the participant was interacting with another participant or with several other participants. To protect against statistical dependencies that may influence *p* values, the linear contrast examining the effect of experience on convention production was repeated with the degrees of freedom reduced by half. The analysis remained significant at the $p < .001$ level. Indeed, even when the degrees of freedom are reduced by a quarter, the analysis remains significant at the $p < .005$ level, suggesting that the finding appears to be robust.

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