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Why Do Women Feel Ignored? Gender Differences in Computer-Mediated Classroom Interactions

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Recent research on gender and computer-mediated communication (CMC) indicates that, despite claims to the contrary, electronic communication does not automatically equalize the proportion of discourse spoken by men and women. This study investigates the relationship between the quality of cross-gendered interactions online and the often-expressed complaint that women are ignored in these environments. The computer-mediated interactions of students in one undergraduate classroom consisting of equal numbers of male and female students are analyzed to determine the effects different kinds of conversational work have on the discourse of men and women. The results find the women in this study initiating more agreements and open-ended questions, but equivalent numbers of disagreements as their male classmates. However, even though female students are willing to challenge their classmates' comments, when they are confronted, they fail to speak in their own defense, thus suggesting a relationship between adversarial discourse and the low proportion of female discourse online.

adversarial discourse computer-assisted instruction computer-mediated communication discourse analysis gender synchronous electronic communication

A member of the women@waytoofast discussion group shares the following observation about online discourse with her female colleagues: "I think women get less airtime. Specifically, our comments are picked up less often and thought through less by the group" (Hawisher & Sullivan, 1998). This sense of exclusion is shared by female participants discussing gender and status on a discussion list for composition teachers (names are replaced with dashes):

> [Female 1:] One complaint I will raise related to the MBU [Megabyte University] discourse community has to do with feeling ignored. . . . On several occasions points have been raised by people who were not "heavies" at MBU and I notice that these points didn't get chosen as topics worthy of much discussion or follow up. Strikes me that this is business as usual folks.
> [Female 2:] ------, as I recall, seemed to think that some voices carried more weight than others not by virtue of what they said but by virtue of who was saying it. And ------ has already admitted that the gender of an author colors and disturbs his reading. . . These seem to me to be the real issues. (Selfe & Meyer, 1991, p. 177)

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Melissa, a graduate student, is even more explicit about who speaks and who is ignored:

> Subject: men and INTERCHANGE
>
> Men seemed to respond very little (if at all) to the questions/issues posed by women even if those questions were specifically addressed to men.
>
> Men seemed more concerned with each others' comments—disregarding, for the most part, women's comments addressed to them (unless it was some kind of slam). . . . All of this is to say that despite the supposed breaking down of the power walls, there seemed to be a lot of "typically male" domination and control going throughout and pervading the "discussion." (Gruber, 1995, p. 69)

Such complaints are by now commonplace in studies of gender and online discourse. They are striking both for their bitterness as well as their accusations. Not only do these testimonies counter the myth that online discourse is the great equalizer among men and women, but the consensus (whether implied or explicit) is clear: Men retain power by ignoring the contributions of women.

As compelling as this explanation for how power is exerted and maintained online may be, it is flatly contradicted by empirical evidence. Cynthia Selfe and Paul Meyer (1991) and Gail Hawisher and Cynthia Selfe (1992) found that women on electronic discussion lists are referred to more often by other participants than are men; Data from Wayne Butler (1992) and Joan Tornow (1993) showed that more electronic classroom interactions are directed toward female students than their male peers; Butler (1992), David Graddol and Joan Swann (1989), and Lee Sproull and Sara Kiesler (1991) found that topics posed by women were taken up for discussion as often as those by men. In fact, the only study that found that women received fewer responses than men chose to analyze particularly adversarial segments of discourse, not those segments representative of the conversation as a whole (Herring, 1993). Overall, it appears that, rather than shutting women out, men are actively encouraging their participation. Yet, the perception that men fail to do their share of work is widespread.

What accounts for this discrepancy between empirical and subjective data? Are women so accustomed to blaming men that they fall (too) easily into the same old routine of accusations and finger-pointing when the cause should be located elsewhere? Before my female readers become too introspective, however, I should point out that although the specific mechanism given to explain how power is exerted on the electronic networks has been misidentified, the underlying assumption—that there is a relationship between gender and power online—is warranted. Nearly every study measuring the quantity of male-to-female participation in electronic discussions concluded that, across an entire conversation, men average both more messages and more words than women, even in conversations specifically intended to focus on women-centered issues (Ebben & Kramarae, 1992; Herring, 1993; Kramarae & Taylor, 1993; Selfe & Meyer, 1991). This inequity in the distribution of conversation is disturbing; when it is combined with the general sense of dissatisfaction revealed in the anecdotal comments presented earlier, we are left with the clear impression that *something* is preventing women from speaking in the online discussions. But if it is not that women are ignored, then what is it?

Pamela Fishman (1983) first popularized the notion that men are able to control conversations by ignoring the contributions of women. Her work on communication between heterosexual couples has since become one of the most frequently cited studies in gender and discourse. However, Fishman's findings—that men fail to do conversational

work—do not translate very well to the group setting of online discourse where responding to other speakers is necessary to maintain a sense of group unity and, in many cases, may even be a prerequisite for speaking. An even more troublesome problem with Fishman's analysis is that it fails to distinguish amongst different types of conversational work: All responses are treated as selfless interactions, the interest of which is to promote the discourse of another speaker. However, online interactions are frequently adversarial, often becoming verbal sparring matches that contain little in common with Fishman's model of altruistic conversational work. In fact, Melissa's clear distaste for the competitive "slams" of her male classmates mentioned earlier indicates that not all conversational work is equally valued. In the world of online discourse, some interactions work to promote a sense of group unity and common goals, although other interactions are clearly self-promotional. It may be that women feel ignored online, not because their contributions go unacknowledged, but because they do not receive the type of conversational feedback that they value.

I propose then that we replace Fishman's model of conversational work with a more robust model, taking into account different types of interactions that have different effects upon the members of the group. In particular, this new model should attempt to analyze not only who produces and receives interactions, but also who benefits from these interactions. Are particular interactions altruistic or self-promotional? Do they promote a sense of group solidarity or individual competition? This study attempts to utilize such a model to analyze the online interactions of students in one undergraduate class. As we shall see soon, different types of interactions have markedly different effects upon the discourse of male and female students.

Although a few researchers have begun to analyze the types of interactions men and women initiate online, there has as of yet been no attempt to take the analysis to a deeper level by analyzing the effects of individual interactions. Selfe and Meyer (1991) looked at the types of interactions (agreements, disagreements, questions, apologies) participants produce, but do not examine who receives these interactions. Although Patricia Wojahn (1994) represented a step in the right direction by analyzing the number of disagreements men and women both produce and receive, she not only fails to extend this analysis to other types of interactions but also neglects to examine how men and women react to disagreements. In both this study and an earlier study,[1] I extend the efforts of these researchers by identifying seven types of interaction—open and direct questions, answers, oppositions, long and short agreements, and tangents—and examining not only who produces and receives each type of interaction but also who follows up on certain types of interactions. In other words, is a participant vocal or silent when her idea is challenged? How likely is she to answer a question, asking her to clarify her ideas? How does she respond when a peer agrees with her contribution? Only when we take our interactional analysis to a second level and analyze the effects of interactions will we begin to develop a meaningful picture of how men and women interact online.

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[1] I conducted this pilot study in the 1996 Spring semester. The study included two female students (including the researcher) and six male students. The findings of the pilot study were consistent with this study, with the exception that the men in the pilot group were slightly more likely to agree with another participant than the women, and both men and women produced equal numers of tangential comments.

Previous research on gender and discourse can provide us with some working hypotheses for these questions. Several researchers have proposed that women develop a collaborative style of communication while men view conversation as a verbal sport in which speakers competitively battle out conflicting points of view (Coates, 1988; Kramarae & Treichler, 1990; Tannen, 1994). Similarly, Hawisher and Sullivan (1998) claimed that women value supportive gestures online and are committed to recognizing participants' contributions to the discussion. If this is the case, then we might expect to see women producing more agreements and fewer disagreements than men. We might also expect to see women responding positively when they are the recipients of a long agreement or tangent (both remarks that build upon another speaker's contribution) or failing to respond when they are the recipients of a disagreement or challenge. Fishman's (1983) finding that women ask nearly twice as many questions as men further leads us to expect that we will find a similar relationship between gender and questions online. Moreover, because Fishman proposed that question-posing is a strategy women adopt to improve the chances their topics will be discussed, we might theorize that the complaint that topics introduced by women are ignored is somehow related to the way questions are handled in the online conversations. Therefore, we may want to test the hypothesis that questions posed by women receive fewer responses than those posed by men.

It may be that students in the undergraduate classroom do not behave as we expect. Too much research on gender and discourse has focused on the conversations of faculty or graduate students. While this research has been useful in generating data about how professionals interact in online discussion groups, it does not directly address the question we most want to ask: How can we use our knowledge of electronic communication to improve what goes on in undergraduate classrooms? The current study introduces a much-needed return to the observation of the undergraduate writing classroom.

With this in mind, I examine the computer-mediated interactions in one undergraduate class selected because of its equal distribution of male and female class members and its frequent use of electronic communication. These interactions are analyzed for quantity, type and effect upon further discursive behavior in the hopes that this study will provide us with information to answer the two-part question: (1) Are the patterns of interaction observed at the professional level true for female students in the undergraduate classroom; and (2) if, so, why do women feel ignored in an environment that, at least on the surface, seems to welcome their participation?

METHOD

The Class

The Cultures of Cyberspace was an undergraduate, lower-level writing course taught during the 1997 Spring semester in the Computers Writing and Research Lab at the University of Texas. The instructor was a white male in his early thirties. Eleven female and ten male students were enrolled; of these, there was one African-American, two Asian Americans, five Hispanics and twelve white students. All students were between eighteen and twenty-four years of age and had varying degrees of experience with technology.

The Discussions

All discussions analyzed were conducted in INTERCHANGE, a synchronous conferencing environment frequently used at the University of Texas. INTERCHANGE differs from asynchronous forms of computer-mediated communication (CMC) such as e-mail because conversations take place in a real-time, interactive environment where students "chat" with one another during class. This class held seven INTERCHANGE discussions over the course of the semester. Of these seven conversations, three (the third, fifth, and sixth) were analyzed for this study.

All electronic discussions focused on class readings. In the first conversation analyzed, students discussed Julian Dibbel's *A Rape in Cyberspace*, focusing on the question of whether a rape could occur in a virtual setting. The students were later asked to write a definitional argument on this topic. In the second conversation, students responded to Neil Postman's "Informing Ourselves to Death." For the final conversation analyzed, students were given a series of prompts for discussion of Gary Wolf's article "The Curse of Xanadu" and were encouraged to draw connections between Wolf and Postman. During all discussions, students appeared engaged in the topic and the conversations were both focused and friendly.

All INTERCHANGE discussions for this class took place in "conference" or "group" mode in which the class was divided into small groups of five or six students, each group with its own conference. This setting allowed each student to participate to an unusually high degree and has the effect of making the instructor, who must try to keep up with three or four conferences simultaneously, a minor participant in the discussions. During the three sessions analyzed, students produced a total of 857 messages.[2] Of these messages, 494 were relevant, discussion-oriented, student-to-student interactions that related to the group discourse either by referring to another person by name or obviously referring to a point raised by another participant. The remaining messages were either student-to-teacher interactions, comments without content, such as "hello" or "bye," or contributions that did not appear to be directly related to the group discussion. Because the focus of this study is on interactions among groups of peers rather than on instructors and students, only student-to-student interactions are analyzed; contributions addressed to or by the instructor are eliminated from the analysis. Although it is recognized that the instructor plays a vital role in determining who speaks and who is heard in the discussion, an analysis of this role is beyond the current scope of this study.

In addition to analyzing the INTERCHANGE discussions, I also had the opportunity to observe two traditional face-to-face discussions for this class. Additionally, I met with the class at the end of the semester so students could complete a survey soliciting their reactions to the INTERCHANGE discussions. In this last class session, I shared the preliminary results of my study with the students and solicited their reactions to my findings.

Data Analysis

[2]Student names have been replaced with pseudonyms, and spelling and punctuation has been corrected.

The INTERCHANGE transcript data is analyzed in five different ways. The first analysis, Quantity Spoken, examines the overall quantity of discourse to determine if there is a difference in the number of turns or words that men and women produce. The next analysis, Overview of Response Patterns, attempts to determine if gender influences who initiates or receives an interaction. In other words, do students seem to be ignoring or to be ignored by others? Questions and Answers looks at how different types of inquiries and their responses are distributed among students. Oppositions and Agreements examines if gender is a factor in who produces and receives adversarial or supportive discourse. Finally, the Effects of Interactions section takes the analysis to a deeper level by analyzing how students respond to different types of interactions. Included in this analysis is the number of times students responded to interactions directed to them (did a student respond when she received a disagreement, when she received an agreement, etc.). The seven types of interaction identified are defined in Appendix A.

In addition to analyzing the INTERCHANGE transcripts, I also analyzed the results of an informal survey distributed to students in the last week of class. The survey included both multiple choice questions collecting demographic information and open-ended questions soliciting students' reactions to the INTERCHANGE environment. A copy of the survey appears in the Appendix B.

FINDINGS

Quantity Spoken

Table 1 shows the average number of turns and words and average turn length that each individual produced per session. As shown in Table 1, women and men take approximately the same number of turns, but men produce more words per turn. Average words ($Z = 1.75$, $p < .10$) and average turn length ($Z = 1.77$, $p < .10$) were marginally greater for men than for women.

Overview of Response Patterns

There was no significant difference in the number of interactions initiated by male or female students, although both genders seemed more interested in cross-gender than in single-gender interactions: Women initiated 132 interactions with men and 97 interactions with other women, while men initiated 131 interactions with women and 88 interactions with other men.

TABLE 1
Average Turns, Words and Turn Length per Student per Session

	Avg. Turns	Avg. Words	Avg. Turn Length
Female (n = 11)	13.3 (SD = 4.0)	328.9† (SD = 146.2)	25.2† (SD = 9.6)
Male (n = 10)	14.4 (SD = 8.5)	397.1 (SD = 209.5)	28.9 (SD = 10.3)

Note: †$p < .10$

There was also no difference in the total number of interactions received by male and female students, with both women and men receiving .5 responses for each comment made. Therefore, when measured by quantity, the distribution of conversation seems equal, supporting the hypothesis that gender is not a factor in the number of interactions a participant will produce or receive.

Questions and Answers

The initial hypothesis that women will produce more questions than men received mixed support. Table 2 demonstrates that the interactions for women differed for the two types of questions: open and directed. These results provide support for the hypothesis that women are asking more questions than men, but only questions of a certain type. The women in this study asked many more open questions (e.g., "What do ya'll think that Neil Postman would say about Xanadu and Nelson?") than did their male classmates ($Z = 2.86$, $p < .01$). Although women addressed more questions to the group as a whole, men and women were equally likely ask a question directed to a particular individual (e.g., "Ok Susan, what would you propose that she do in that situation?").

Men and women received about the same number of answers. Therefore, the hypothesis that female students will receive fewer answers than male students is not supported. It is interesting to note that open questions, which women seem particularly prone to produce, generally yield multiple answers. For instance, the open question "I agree that a big part of rape is emotional but I still don't think the term rape is a correct one. What do you guys think?" yielded two responses, expressing the agreement that *rape* is not the correct term for a cyberspace rape. The high response rate to open questions suggests CMC is a profitable mode of interaction.

Men received significantly more directed questions than women ($Z = 1.96$, $p < .05$). It should be noted that directed questions often receive answers from students other than the individual to whom the question was directed. For instance, the directed question "Tom, what exactly is e-cash?" received two responses—one from Tom, the addressee, and one

TABLE 2
Total Number of Questions Asked and Answers Received

	Questions Asked	Answers Received	Answers per Question	Questions Received
Open Questions				
Female	33**	45	1.36	N/A
Male	13	15	1.15	N/A
Directed Questions				
Female	56	50	0.89	42*
Male	44	40	0.90	58

Note: *$p < .05$ **$p < .01$

TABLE 3
Total Number of Oppositions, Agreements, and Tangents Produced and Received

Gender	Oppositions	Short Agree	Long Agree	Tangents
Produced				
Female	36	10*	35†	10*
Male	38	2	21	23
Received				
Female	40	16	21*	21
Male	34	18	35	12

Note: †$p < .10$ *$p < .05$

from another student. (Of course, no students received open questions always directed to the group rather than to an individual). A separate analysis of answers determined that gender does not play a role in who answers questions.

Oppositions and Agreements

The initial hypothesis that men would produce more oppositions than women did not receive support, although the hypothesis that women would produce more agreements than men was upheld. Table 3 reports the number of oppositions (clear disagreements with all or part of a contribution), short agreements (agreeing and restating), long agreements (agreeing and adding information or insight) and tangents (comments used as a launching point for the speaker's own opinion) produced and received.

Table 3 shows that the female students in this class (in concord with the initial hypothesis that women would agree more frequently than men) produced significantly more both short ($Z = 2.24$, $p < .05$) and long ($Z = 1.74$, $p < .10$) agreements than men. The following exchanges represent typical agreements:

> Short Agreement:
>
> [Julie]: I don't know if I would necessarily call it "rape." I agree that it was a crime against the mind and that a big part of rape is emotional but I still don't think the term rape is the correct one.
> [Dorothy]: I agree with Julie—it was a crime but I wouldn't call it rape.
>
> Long Agreement:
>
> [Richard]: I don't believe that the ultimate goal of Xanadu [a hypertext project] will ever be realized, if for no other reason than the massive amount of people on the web.
> [Alma]: I agree Chris. I don't think that Xanadu ever stood a chance at least with today's technology. It was too big of an idea and project to complete. I don't think they knew what they were getting into when they started.

While women explicitly endorsed the contributions of their classmates, men were more likely to respond with tangential comments ($Z = 2.45$, $p < .05$), which addressed a minor premise in a speaker's argument without explicitly indicating support:

> [Julie]: If everyone is able to comment on it [a hypothetical document on nuclear reactors] I think the average Joe's comments as opposed to someone educated about it would just get in the way.

> [Chris]: And Julie, in this look at me I'm so special world of ours, every lame-o with a computer would be linking to every document that they could get their hands on just to say they did it.

This difference in communication styles suggests that women and men have different ways of signaling coherence in a conversation.

The hypothesis that men are more likely to oppose other students than women failed to receive support. The following exchange demonstrates a typical opposition:

> [Sue]: Cyberrape can be avoided most likely. The power button is only a few inches away. But out in the "real" world, it is not so easy.
> [Jeff]: Sue: yes the power button is only an inch away, but even if legba [the victim of the cyberspace rape] had turned off the computer, the mental damage would have already been done.

Table 3 also demonstrates discrepancies in the types of interactions received with men receiving significantly more long agreements ($Z = 2.13$, $p < .05$) than women.

Effects of Interactions

The hypothesis that men and women will respond differently to different types of interactions was supported. Table 4 indicates the number of times students replied to messages clearly directed to them.

Women are less likely than men to reply to oppositions ($Z = 2.16$, $p < .05$), responding to fewer than half the oppositions directed to them. This analysis supports the hypothesis that men are more prone to respond to oppositions.

Women are also less likely than men to respond to agreements, particularly short agreements ($Z = 2.01$, $p < .05$). This finding fails to support the hypothesis that women follow up on collaborative interactions.

TABLE 4
How Participants Respond to Interactions

	Directed Questions	Oppositions	Short Agree	Long Agree	Tangents
Received					
Female	42	40	16	21*	21
Male	58	34	18	35	12
Replied					
Female	31	17*	0*	1	10
Male	44	23	4	3	6
Percent Replied					
Female	73%	43%	0%	5%	48%
Male	75%	68%	22%	9%	50%

Note: *$p < .05$

Gender does not appear to be a factor in whether or not a participant replies to a direct question, nor does it appear to be a factor in whether a participant responds to a tangential comment based on her original observation.

Responses to the Survey

In response to the question "Did you ever feel ignored in either INTERCHANGE or in face-to-face discussions?" four of the ten women present the day of the survey (40%) and two of the nine men present (22%) reported occasionally feeling ignored in the INTERCHANGE environment. Moreover, both men and one woman indicated that they were not upset by being ignored; they simply considered it one of the effects of the medium and quickly moved on to another topic. However, the remaining three women seemed to be bothered by what they perceived as a breakdown in communication.

In response to the question "Overall, which environment do you prefer for classroom discussion: INTERCHANGE or face-to-face?" five women preferred face-to-face interaction (50%), four preferred INTERCHANGE (40%) and one stated no preference for either environment (10%). In response to the same question, three men preferred face-to-face discussions (33%), none preferred INTERCHANGE (0%) and the remaining six stated no preference for either environment (67%). It should be noted that most students enjoyed both environments with many reporting that a mix of the two environments was ideal.

The survey results suggest that, although several of the women in this study reported occasionally feeling ignored in the INTERCHANGE environment, there was no large pattern of dissatisfaction with the computer-mediated discussions. In fact, the women seemed to be divided over which environment they preferred, with a substantial number actively preferring the electronic discussions. By contrast, the majority of the male students in this class reported no preference for either environment. This finding strongly suggests that participation in class discussion, regardless of the setting, is much more of an issue for women than it is for men.

DISCUSSION

In many ways, this class presented an ideal environment: Students were evenly distributed, students were of equal status, students knew one another and interacted in person at least twice a week, and, because class participation formed part of the grade for this class, there was incentive to participate. The discussions in this class were all consistently polite, and although students frequently raised objections to one another's contributions, there were no instances of what is widely known as *flaming*. It may be that this relatively friendly setting allowed these women to speak with relative freedom and helped them to contribute nearly as much to the conversation as their male peers.

Although the students in the study did not experience the same level of dissatisfaction as expressed by the female academics in the introduction, it is easy to imagine how they might have felt cheated of conversational support. Women agreed with other students at unusually high rates, suggesting that they value this type of support work; yet, for all their efforts, they received less of the same conversational support (i.e., agreements) than their male peers. If the distribution of genders had been less balanced and women had been outnumbered by men, it is easy to see how they might have begun to feel bitter about this division of support work. Yet, as much as women seem to value conversational support,

they failed to respond to agreements that were addressed to them. I suspect that modesty may be playing a role here. When male students responded to agreements, they tended to express self-satisfaction through comments such as "That was my point exactly" and "Thank you, I'm the greatest!!!" By contrast, the one time a woman responded to agreement was to *agree back* with an additional point made by her interlocutor. The tone of the comments strongly suggests that women view agreements as necessary group work and men are more inclined to view them as bolstering an individual's status.

However, although women had difficulty replying to agreements, they betrayed no hesitancy in responding to tangents. Tangential comments, which use another speaker's contribution as a launching point for one's own ideas, have the advantage of implying support for another speaker's comment while also moving the conversation on to a different topic. Although men produced more tangents than women (possibly producing tangents where women might have indicated more explicit agreement with the speaker), there was no discrepancy in the number of tangents men and women received. Moreover, both genders responded to nearly half the tangents they received; by contrast, fewer than 10% of all agreements received a reply. Thus, unlike agreements, tangents continue to move the conversation along. These results suggest that responding to a tangent may be perceived as less self-interested than responding to an agreement.

Just as the men and women in this study seemed to betray different attitudes towards supportive comments, they also demonstrated different responses to adversarial comments. While women initiated as many challenges as men (a finding duplicated in Wojahn, 1994), they appeared to be unprepared to defend themselves as recipients of a challenge. A high number of adversarial INTERCHANGE thus ended with female silence. This finding is particularly interesting in the light of pedagogical theories that encourage the use of conflict in the classroom as a way of promoting sociocognitive development in students. Marilyn Cooper and Cynthia Selfe (1990) advocated the use of CMC in the classroom precisely because of its well documented tendency to foster disagreement and conflict among students. However, the findings of the current study suggest that such pedagogical models may initially place women at a disadvantage.

What led these women to enter the verbal battlefield with swords drawn, yet fail to defend themselves when attacked? Although the data from this study does not allow us to conclude exact reasons for women's behavior in the electronic environment, I would like to speculate for a moment to forestall any easy relationships that some readers might be tempted to draw between women's failure to respond and a lack of self-confidence. While an opposition may be perceived in many cases as a collaborative interaction meant to encourage the speaker to refine her ideas, a defense cannot help but be perceived as self-interested. It may be that female students do not like to perceive themselves as correcting or one-upping their classmates. If this reluctance (if it does, in fact, exist) is due to a lack of self-confidence, then we are speaking of self-confidence over style rather than content. We should not overlook the possibility that women fail to respond to oppositions, not because they are unsure of their position, but because they are too sure.

What are the implications for teaching? First, instructors may want to note on adversarial interactions in their classrooms, keeping a careful eye not just on who is participating, but who has stopped participating. Secondly, we may want to encourage students to make more frequent use of tangential comments that use another speaker's contribution as a launching point for one's own ideas. We have already seen that women respond well

to tangents which, unlike agreements, continue to move the conversation along, allowing students to build a sense of coherence and group unity. Moreover, a separate pilot study of a graduate class also using INTERCHANGE to discuss classroom readings found graduate students using nearly twice as many tangential comments as the undergraduates in this class, indicating that the ability to connect one's own comments to another speaker's observation may be a feature of more mature discourse. Finally, we might discuss these response patterns in our classes to see if intervention has an effect upon how students perceive and behave in electronic conferences. Can women learn to respond to oppositions? Can men learn to agree more often and less egotistically? Perhaps, with enough effort, we can develop strategies for interacting online which leave no one feeling ignored.

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APPENDIX A

Coding Scheme for Types of Interactions

Question	
Open	Questions addressed to the group as a whole and designating no particular recipient. These questions generally contain openings such as "What do you think about . . . ?"
Directed	A question that includes a name or refers specifically to a point an individual raised. Directed questions may include requests for speakers to expand or clarify a point, queries for additional information on a topic raised, or mitigated challenges to a position.
Answer	An interaction that is clearly in response to a question.
Opposition	A statement that clearly disagrees with all or part of a comment contributed by another participant and generally containing one of the following discursive markers: "I disagree . . .," ". . . but . . .," "actually . . . "
Agreements	
Short	A statement that briefly indicates support for another speaker's position (usually by restating the original speaker's point) and frequently containing discursive signals such as "I agree," "Good point," or "That's right."
Long	A statement explicitly indicating support for another speaker's contribution that goes on to append additional evidence, commentary, or reflection to the original contribution.
Tangents	Statements that neither agree nor disagree with another participant's contribution but nevertheless uses that comment as a launching point for the speaker's own opinions. Although it is not explicit, a tangent generally indicates support for a previous speaker's contribution.

APPENDIX B

Questionnaire

1) Name: _____ 2) Gender: Male __ Female __
3) Age: __ < 20 __ 20–24 __ 25–29 __ 30–39 __ > 40
4) Ethnicity: _____
5) Typing Speed (in WPM): __ < 40 (slow) __ 40–60 (avg) __ 60–80 (fast) __ 80+ (light speed)
6) Do you feel that you contribute more to the class in INTERCHANGE or face-to-face conversations? What reasons can you attribute to why you are more vocal in one environment as opposed to the other?
7) Do you feel more "included" by other members of the class in INTERCHANGE or face-to-face conversations? Do you feel that the environment makes a difference in how other members listen and respond to your comments?
8) Did you ever feel ignored in either INTERCHANGE or in face-to-face discussions? If yes, what (if anything) did you do about it?
9) Overall, which environment do you prefer for classroom discussion: INTERCHANGE or face-to-face? What do you see as the advantages or disadvantages of each?