

ATHABASCA UNIVERSITY

GENDERED INTERACTIONS IN COMPUTER MEDIATED  
CONFERENCING: PARTICIPATION, PURPOSES DIFFERENCES,  
AND “LIST EFFECTS”

BY

CARMEN LAWLOR

A thesis submitted to the

Athabasca University Governing Council in partial fulfillment

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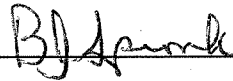
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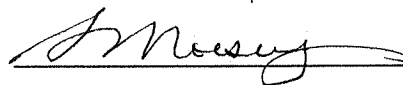
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The undersigned certify that they have read and recommend to the Athabasca University Governing Council for acceptance a thesis, GENDERED INTERACTIONS IN COMPUTER MEDIATED CONFERENCING: PARTICIPATION, PURPOSES, DIFFERENCES, AND "LIST EFFECTS" submitted by CARMEN LAWLOR in partial fulfillment of the requirements for the degree of MASTER OF DISTANCE EDUCATION.



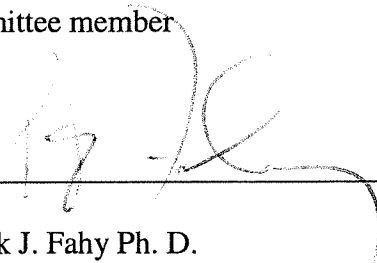
Barbara Spronk Ph. D.

Thesis Supervisor



Susan Moisey Ph. D.

Committee member



Patrick J. Fahy Ph. D.

Committee member

Date: April, 2004

## ABSTRACT

Computer mediated conferencing (CMC) has been widely viewed as a valuable forum for providing opportunities for interaction amongst learners in a distance education setting. This interaction has been identified as a critical element in achieving learning objectives; however, interaction in distance contexts is not well understood. It has been argued that social markers are cued in online communications and that gender influences interaction processes and participation. Previous research has identified two discourse types, epistolary and expository, that have been associated with gender. This study examined 64 students (37 females, 27males) involved in a graduate course that utilized computer conferencing. These students were divided into three groups, the composition of each meeting one of the following conditions, predominantly male, predominantly female, and a relatively balanced population of males and females. The Transcript Analysis Tool (TAT) was used to examine the discourse patterns and styles of men and women. Predicted patterns of discourse were found where women tended to use more epistolary or aligned type statements, and men tended to use more expository type statements. An unexpected finding occurred, however, with a greater participation rate found for males than for females. The patterns of discourse use were also utilized to determine whether evidence of a “list effect” would be found, where the discourse patterns of the majority tend to become characteristic of the group as a whole. No evidence of these effects was found in the study of interactions. At the end of this course, students were given a survey to complete that explored issues surrounding their experience with the computer conferencing. An investigation of satisfaction, commitment, and purpose for interaction was conducted, comparing these with results from the transcript analysis and survey

items. Results indicated that there was evidence of gender-related purposive differences. Satisfaction with interactions was similar, although the higher participation rates of men showed evidence of higher commitment. Questions raised by this study included issues surrounding the influence and role of moderators in conferencing activity, and the need for further research into the influence of gender and gender compositions in online interactions and experiences in CMC.

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# CHAPTER I

## INTRODUCTION

### Purpose

Computer mediated conferencing (CMC) in distance education is an increasingly popular mode of program and course delivery that offers valuable and powerful opportunities for interaction and collaborative work (Burge, 1994; McDonald & Campbell Gibson, 1998; and Fahy, 2002). Educators' understanding of this medium and how it can best be used to enhance the learning process, however, lags behind its growing utilization in higher education (Barret & Lally, 1999; Garrison, Anderson, & Archer, 2001; and Fahy, Crawford, & Ally, 2001). What happens in online interactions and what contributes to successful experiences is not well understood. Researchers such as Fahy et al. (2001), and Kanuka and Anderson (1998), argue that we, as yet, do not understand what happens in online interactions and what contributes to successful experiences. Early researchers argued that this medium provided a uniquely democratic forum for interacting (Herring, 2000; Ferris, 1996), since users can operate without physical evidence related to gender, race, and class. Although, a growing body of subsequent research indicates that gender and other structural inequalities do exist and operate within this medium. This research argues that social markers are cued, and that one's gender impacts upon access and interaction processes online (Yates, 1997; Herring, 1996; Ferris, 1996). This thesis will study the nature of interactions online as they relate to gender, and will explore the conditions, outcomes, and experiences of the learners.

## Focus

The focus of this exploration will be the interactions that happen in a moderated online environment, as they relate to the gender of the participants and the gender composition of the group. CMC offers valuable opportunities for interaction in distance education, and successful interactions can decrease “transactional distance” and isolation for learners (Moore, 1989). Failures in CMC, however, may mirror the power imbalances and inequities present in society, including gender asymmetries (Weil & Rosen, 1995; Herring, 2000; Dede, 1996). Gender appears to influence the way in which individuals interact and communicate in virtual environments (Fahy, 2001; Yates, 1996; Herring, 1996). The question is raised: Do the styles of discourse that predominate in online interactions privilege male learners and discriminate against female learners?

Research on gender patterns and interactions online have shown differences in discourse types and styles of interacting for males and females (Fahy, 2002; Herring, 1996). Significant gender differences in the orientation of messages involve women displaying supportive and aligned positions and men portraying more critical and oppositional stances. Research on conversational purpose indicates that women use dialogue to create and maintain interactions, while men use dialogue for establishing control (Ferris, 1996). Herring (2000) claims that these discourse preferences of women may inhibit their participation in online discussions.

It has also been argued that the proportion of males to females in any given group is socially significant (Kanter, 1977), and that it influences the interactions and experiences that happen (Herring, 1996). Herring’s (1996) study of the schematic structures of electronic messages in two listserv discussion groups also indicated that the

gender composition of the group influenced the nature of communications. Where women were in the majority, the overall tendency was for participants to be aligned in their opinions and contributions, whereas with men in the majority there was a tendency for opinions to be opposed. This condition Herring (1996) has defined as a “list effect.” Whether or not this phenomenon exists in contexts other than the unmoderated listserv, however, remains to be explored.

Not all communications online reflect gender-related inequities, however (Yates, 1997; Rodino, 1997). For example, studies of CMC in more regulated contexts, such as in distance education courses, have not shown the same extremes of behavior and greater participation rates for men. Fahy (2002) did not find greater participation rates for males in computer conferencing activity, and Yates (1997) suggests that CMC also offers opportunities for constructing new gendered identities and that the expression of gender does sometimes break out of expected roles.

This study explored the online interactions that happened in a moderated online environment, through a study of (1) whether or not Herring’s (1996) “list effects” operated in moderated CMC contexts, and of (2) the participation, purposes, and perceptions of the learners involved in the conferencing activities. For the purposes of this study, the interaction that happens in moderated conferences will also be viewed as “the totality of interconnected and mutually responsive messages,” (Gunawardena, Lowe, & Anderson, 1997, p. 407), what these authors call the “entire gestalt.”” The emphasis, then, is on the communicative whole that incorporates both content and structure in the interactional process, along with the purposive character of these communications. This study will take a holistic view of these online communications, and consider the

influences and extent of member participation, their discursive practices, and their commitment, satisfaction, and motivation for interacting in this forum.

### Research Question

The following research questions will be investigated:

1. Is participation associated with gender?
2. Are Herring's "list effects" apparent in a moderated environment?
3. Are commitment and satisfaction in conferencing activity associated with gender?
4. Is conversational purpose associated with gender?

### Assumptions and Definitions

Assumptions. This research assumes that our language and social context are instrumental in our construction of knowledge, and that "knowledge is grounded in the relationship between the knower and the known. Knowledge is generated through social intercourse, and through this interaction we gradually accumulate advances in our knowing" (Kanuka & Anderson, 1998, p. 60). Our understandings of the external world are individualistic and are based on our interpretations of events and experiences, although these interpretations are highly contextual and are influenced by our social and cultural context and our communications with others. The use of computer mediated communications supports this constructivist position on the construction of knowledge by providing an interactive environment where learners can create new meanings and understandings through discourse with others (Kanuka & Anderson, 1998).

Definitions. The terms discussed below are used in this study.



“Lists” is a term used to refer to computer mediated discussion groups, where members make electronic contributions to an ongoing dialogue (Herring, 1992). Herring (1996) argues that the gender composition of these “lists” influences interaction and discursive practices of participants. Herring (1996) describes a “list effect” as a condition where, “the communicative practices of the majority of active participants [to] become normative for the group as a whole” (p. 85).

“Gender” as it is defined here is characterized as a social construct that relates to the manner in which discourses and practices are created by society, based on biological differences of sex (Ferris, 1996; Yates, 1997; Rodino, 1997).

“Interactions.” Three types of interaction, as outlined by Moore (1989), define the conceptualization of “interaction” in distance education. These three types include the interaction that happens between the learner and the content or subject material, the interaction between the learner and the instructor, and the interaction that happens between learners. Interaction as it is conceived of here fits with the last type, the learner-learner interaction distinction, involving the interactions that occur amongst learners.

“Computer mediated conferencing”(CMC) refers to an arrangement which allows individuals to interact and share information with other learners and with the instructor using personal computers. The exchanges use written text and are asynchronous in nature (Heinich, Molenda, Russel, & Smaldino,1999).

### Significance

This study will make a contribution to the existing literature on online interaction by extending existing theory and research related to the nature, style and perception of

learner-learner interactions in moderated CMC. Specifically, this study will explore whether or not the “list effects” cited by Herring (1996), are evident in a moderated CMC context. This study will also add to the research that has been conducted on gender and participation rates, and attempt to gain a better understanding of the nature of exchange patterns within a computer conferencing context. A more holistic look at conversational purpose will be completed using a comparison of text analyses and survey items, to add to the research done in this area. This study will also add to the existing research through an exploration of CMC in different contexts, and with different proportional representations of men and women within groups.

### Methodology

The study utilized convenience samples of three groups of subjects enrolled in an introductory graduate course at Athabasca University. The three groups studied each met one of the following conditions: a gender-balanced population, a predominantly female population, and a predominantly male population. The study of these three groups involved the analysis of computer conferencing transcripts for the three conferences in each section, along with analysis of survey items sent to all students enrolled in these sections.

### Limitations

In this study, the use of a questionnaire presents a limitation given the likelihood of a less than optimal response rate from participants in the course studied. Measures were undertaken, however, to promote participation.

Another limitation arises from the tools used in the research: analysis of open-ended questions, which may be subject to different interpretations, and the survey items, which may address the issues at only a very superficial level. These survey items also raise issues surrounding the validity of the findings, both internal and external. Internal validity concerns surround the question of whether reality is reflected in the research findings (Merriam, 1998). To address this concern, self-reports of experiences were incorporated into the research design, and the respondents' perspectives and experiences were presented as reported without any interpretation made about meaning from the researcher. The purpose of this survey was to gain knowledge and understanding of the experiences of students in this environment. The issue of external validity relates to whether the findings in this study could be generalizable beyond this specific setting (Bogdan & Biklin, 1998). The results obtained from this survey are not representative of other populations, thus inferences or generalizations to other populations cannot be drawn. The findings of this study attempt to explain and understand the experiences of the group of subjects enrolled in a course, at one Canadian University, at a particular point in time, and to suggest directions for further research.

The survey questions also raise issues of reliability. Reliability issues address the concern about whether consistency would be found in observations of the same setting, made by independent researchers (Bogdan & Biklin, 1998). To address the issue of replicating this study, detailed information about this study, its background and processes of subject selection and instrument selection have been provided. Bogdan & Biklin (1998) argue that in qualitative research, reliability is seen as more of a fit between the

data recorded and what actually occurred than literal agreement over different observations.

The response rate for this survey was 74.6%. The non-respondents raise the potential for biased results as the characteristics and experiences of non-respondents may be qualitatively different than those who responded.

Further limitations of this study involve the small sample size, and a non-random selection. The design of this study, and the creation of three groups of subjects with defined numerical distributions based on gender, presents one further limitation given the unpredictability of student withdrawals and the resultant shifts that occur in the gender distribution of groups.

### Delimitations

This study was confined to the study of individuals in the three sections of an introductory graduate course at a Canadian university (Athabasca University) that used computer conferencing.

## CHAPTER II

### REVIEW OF RELATED LITERATURE

#### Introduction

This literature review provides background information that speaks to the importance and significance of research into gendered interactions in CMC. This review begins with an historical overview of interactions, social networks and learning, and gender as a category in distance learning to illustrate the foundations upon which current understandings are based. The review of related literature outlines more recent research into issues surrounding gender and equality in interactions, discourse styles, and conversational purpose to highlight research already done in this area and to demonstrate the import of the research questions addressed here.

#### Historical Overview of Theory and Research

Interaction Analysis. Efforts to understand human social interactions have roots in the observation and study of small face-to-face groups. Bales (1951) in his study of small groups became interested in the possibility of using these groups not only to further the body of knowledge for analyzing these small groups, but also to develop more adequate theories for the analysis of full-scale social systems. His method used twelve major categories of interaction that represented phases of the complete problem-solving process: shows solidarity, shows tension release, agrees, gives suggestion, gives opinion, gives orientation, asks for orientation, asks for opinion, asks for suggestion, disagrees,

shows tension, and shows antagonism (Bales, 1951). Bales' later work, in conjunction with Cohen, used the power of new computer technology to provide rapid feedback to researchers. The system that they developed became known as SYMLOG—the systematic, multiple level observation of groups. To gather information, rating methods and interactions scoring were used to glean preliminary information of the group, along with an “act by act” observation method (Bales, 1979). The multiple level observation of SYMLOG involved the analysis of individual behaviors, the content of their discourse and the attitudes expressed (Bales, 1979).

The social forces that shape interactions in the classroom setting attracted researchers in education to also study these interactive behaviors. Many of the systems that have been designed to analyze these interactions have focused on those interactions that happen between the student and the teacher (Amidon & Hough, 1967). Most noted, perhaps, is the system developed by Flanders (Amidon & Flanders, 1967) in the 1950s that studied verbal classroom interactions. An assumption of this system is that the verbal behavior of individuals provides sufficient information for understanding behavior. Statements are categorized into three types of “talk”: teacher talk, student talk, and “silence, confusion, or anything other than teacher talk” (Amidon & Flanders, 1967, p.7). The purpose of this system is to determine which teacher acts will increase students' freedom of action. “Teacher talk” categories are described as having two types of influence: indirect influences, involving accepting feeling, praising and encouraging, accepting ideas, and asking questions; and direct influences, involving lecturing, giving directions, and criticizing or justifying authority. The two categories for “student talk,” response and initiation, seem to overlook a good deal of information, but since the major purpose of

these observations are to analyze teacher influence, this is perhaps justified (Flanders, 1966, Flanders, 1965).

Flanders' system of interactional analysis has been developed further by Amidon and Hunter (1967) into the Verbal Interaction Category System (VICS). This system attempted to overcome some of the difficulties of the Flanders' system and other systems that preceded it. Probably the most important contribution of VICS is its modification of Flanders' direct and indirect dimensions of teacher behavior defined above. The VICS modified teacher categories into initiation and response, which addressed arguments that the dimensions of direct teacher influence and indirect teacher were value laden, and that certain teacher behaviors (direct or indirect) were more desirable than others (Amidon & Hunter, 1967).

Another system, developed by Hough (1967), is the Observational System for Instructional Analysis, which addresses certain types of analyses unattainable with the Flanders' system. The primary contribution of the Hough system involved its ability to test learning theory hypotheses concerning the effects of instructional behavior on classroom learning. The categories that were developed focused on observable behaviors regularly linked with principles of learning (Hough, 1967). These early works in social interactions and their focus on verbal face-to-face communications have laid an important foundation for later works that center on interactions in virtual environments.

Constructivist Learning Theories. Constructivist learning theories have been useful in explaining interactions and in understanding how knowledge is constructed in online learning environments. Social constructivism views social interactions as the basis for the construction of new knowledge. Most commonly associated with this social constructivist

theory is Vygotsky (1978), whose work emphasizes the influence of culture and social contexts in the learning environment (Kanuka & Anderson, 1988). This position assumes that in our social experiences “the mind is instrumental and essential in interpreting events, objects, and comprise a knowledge base that is personal and individualistic” (Jonassen, 1991, cited in Anderson & Kanuka, 1998, p. 60). The constructivist position assumes that knowledge creation is an active process that is based on what we already know (Kanuka & Anderson, 1998).

Vygotsky (1979) has based much of his work and theories of development and learning on the observation of children. In a child’s development, Vygotsky (1979) argues that social experience and knowledge are internalized in two stages, first on a social level through interactions with others, and then on a psychological level, inside the child. Vygotsky views this process as the basis for all higher thought (John-Steiner & Souberman, 1979). Learning and development are described as a process where the development follows the learning, which then leads to the concept Vygotsky terms the “Zone of Proximal Development” (Vygotsky, 1979). This Zone of Proximal Development refers to the “distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (Vygotsky, 1979, p. 86). This zone consists of those functions that have not yet been achieved developmentally, but that are in the process of maturing. The essential feature of learning for Vygotsky is the creation of this zone of proximal development. The process of learning stimulates internal development processes that can only be



accomplished through social interactions with others in the child's environment. The internalization of these processes leads to developmental growth (Vygotsky, 1979).

In terms of adult learning, research into the nature of intelligence and its measurement suggests that adult learners differ from children and teens in measures of intelligence. Cattell (1963) reports that intelligence changes over two dimensions, fluid intelligence and crystallized intelligence, during the adult years. A decline has been observed in fluid intelligence from the teenage years onward, with a concomitant increase in crystallized intelligence. "Fluid intelligence" is a dimension of intelligence that focuses on information processing capacities such as reasoning, memory, and figural relations. "Crystallized intelligence" is a measure that is directed toward abilities that can be learned and are associated with acculturation and experience, and can be measured by tests of verbal comprehension, information storage, and numerical reasoning (Tennant & Pogson, 1995). Recent conceptualizations of intelligence in adulthood recognize that cognitive development is based on the expertise gained through the accumulation of life experiences, and can only be understood through a consideration of the social and cultural contexts of the experience along with one's individual history and background (Tennant & Pogson, 1995).

Adult education specialists like Knowles and Tough also argue that the characteristics of adult learners differ from those of children. Knowles' (1975) has based his theory of adult learning on five assumptions of adults' unique characteristics. These assumptions posit that the adult learner has a capacity and need to be self-directed as he or she matures; that the experiences of learners and experts are valuable resources for learning; that learner's portray individual differences in their readiness to be self-directed; that

learners' primary orientation is problem-centered, thus learning experiences should be organized on this basis; and finally, that learners' motivations for engaging in an educational process include the need for esteem, desire to achieve and grow, satisfaction of accomplishments, curiosity and demands for learning (Knowles, 1975). Tough (1971) also advocates learner control over the learning process and supports a process-oriented approach. His vision of learner control involves learners deciding what is meaningful or useful to learn, how and when the learning will take place, and how to determine the effectiveness of the learning. He believes learners to be self-directed and capable of regulating intentions, initiative, independence, and to possess the ability to create new cognitive and affective outcomes.

This individualistic view of the learner, however, does not consider antecedents of adult learning and the relationship between the learner and the social context that influences the learning process (Merriam, 1993). More recent research on adult education considers the larger social-cultural context in which the learning events are embedded. As Jarvis (1987) argues, "learning is not just a psychological process that happens in splendid isolation from the world in which the learner lives, but is intimately related to that world and affected by it" (cited in Merriam, 1993, p. 10-11). A decontextualized perspective of learners ignores the vast influence of our social systems on our interpretation of the world (Welton, 1987; Merriam, 1993). It is essential then to consider contextual influences on the learning situation, including the virtual learning environments of CMC, where these influences and the discourse with other learners play an important role in understanding learning, meaning making, and the creation of knowledge.

From the constructivist viewpoint the social experience in an interactive context of CMC is critical to the learning that occurs. Promoting effective learner-learner interactions for achieving individual and group objectives demands that learners not only perceive these interactions to be of value, but that they also act in ways that will facilitate them (Abrami & Bures, 1996). Recurrent transactions that happen in online conferences, however, may not be positive in all cases, and may at times embody forms of addictive, hostile, abusive, or asocial behavior (Abrami & Bures, 1996; Fahy et al., 2001). Using theories developed by other disciplines for explaining the social structure of repeated interactions, greater understanding of the interaction and relations that happen online can be gained. These theories include social network theory and theories concerning the role of gender in education and in particular in distance education.

Social Networks. Ridley & Avery (1979) define a social network as the interconnection of a group of individuals who interact with one another directly, or who have the potential for interacting. An explanation of the workings of this social network involves the notion of exchange theory among transactions, such that the value to be gained through the exchange is greater than or equal to the “cost” of interacting. The transactions then are viewed as a process that involves the exchange of goods or services among individuals within the network. Over time the transactions that happen in the network tend to develop a pattern of exchange. These patterns or transactions, however, may develop into unbalanced exchanges when certain individuals exert greater influence, or they may be maintained by coercive or hostile interactions (Ridley & Avery, 1979).

Boissevain argues that “a person’s network thus forms a social environment from and through which pressure is exerted to influence his behavior; but it is also an

environment through which he recruits support to counter his rivals and mobilizes support to attain his goals” (Boissevain, 1974, cited in Ridley & Avery, 1979, p. 225). It is through the transactions in this social network then, Boissevain (1974) argues, that individual or group goals are achieved. Factors that influence the development of this network include interactional criteria, structural criteria, and network influences.

The first interactional criterion involves the diversity of linkages or role relations between members in the network. A single-stranded relationship would exist where only one role relation exists, for example the role of friend. When a relation assumes more than one role it is termed multiplex or multi-stranded. A second criterion involves exchange content, which refers to all the elements that happen within a transaction, material and nonmaterial. The final two criteria include directional flow or the directional movement of elements, and the frequency and duration of interaction (Ridley & Avery, 1979). The content of the exchange, its directional flow, whether it is symmetrical or not, and the frequency of duration of interaction are indicators of an individual’s level of investment in the social relation (Ridley & Avery, 1979).

Structural criteria involve the size and degree of the network, its density, and its intensity. The network size is equal to the number of individuals in the network. Degree refers to “the number of social relations that each person has with others in the same network” (Ridley & Avery, 1979, p. 227). Ridley & Avery (1979) define density as the extent to which links are formed outside the dyad, and offer the following formula as a way of measuring it:

$$D = 2a/n(n-1)$$

where 'a' is equal to the actual number of links not including dyad members, and 'n' is equal to the total number of individuals in the network including the dyad. Intensity is a measurement of the willingness of individuals in the dyad to answer to network expectations or other network members.

Network influences play a part in the interactions that happen and how the network is structured. These influences include biologic factors, such as age, sex, and race; the physical environment, where a person lives and works; and social influences, such as kinship relations, occupation, educational level, and geographic and social mobility (Ridley & Avery, 1979).

For the purposes of this study, a computer conference will be viewed as a specialized type of social network that is characterized and sustained by the opportunities for interaction and the exchange of ideas and information (Fahy et al., 2001). Emergent exchange patterns, discourse styles and motivations for interaction within these networks will be studied. Exchange patterns are defined as "the recurrent transactions which begin to characterize the interaction among specific members or subgroups" (Fahy et al., 2001, p. 85). Specifically, this study will address the issue of gender and its influence on participation, conversational purpose, commitment, and discursive styles and "list effects" in CMC.

Gender as a Category in Distance Learning. The focus on gender is an important consideration for distance educators if an ideal state, which affords equal opportunity for all learners, is to be realized. This means that any group heretofore ignored or silenced must be made visible (Faith, 1988). Spender (1989) argues that for women, social reality often precludes their representation and participation in the professional world, and

minimizes their “space” in conversations with men. There is a pressing need to address gender as category in open and distance learning if these issues of inequality are to be redressed. And given the paucity of research into and analysis of women’s learning in distance education, there is a need for ongoing research to develop a significant base from which feminist analysis can be constructed (Coulter, 1988). Without scholarship of women’s education and the inclusion of women’s experiences in distance education, learning environments will continue to be alienating to female learners and educators (Grace, 1991). “What we have to do now is to research the interactions that take place in the house of computing, and try to eliminate from them the often unacknowledged models of predominantly male preferences which many of them incorporate. And we need to open the front door so that it welcomes everyone who wishes to enter” (Gerver, 1986, p. 31).

More recent research on gender issues in open and distance learning continues to echo concerns that without recognition of the relevance of gender as a category for judging quality, equitable access for both men and women will not be realized. Von Prümmer and Rossie (2001) outline five gender-related issues that are cause for concern. In industrialised Western societies, women account for one half of the distance student population, although in the German Fern Universität, women represent only one-third. Despite equal representations in certain societies, however, enrolment statistics indicate that for course and program selection, women are continuing to choose traditional gender based preferences. Research also continues to reflect gender based differences in learning style and gendered learning contexts. For many women, who are responsible for taking care of family, their lives are often characterised by “chaos and constant interruptions and

are rarely self-determined” (Von Prümmer & Rossie, 2001, p. 138). Finally, the assumption that with new learning technologies in distance education, gender will no longer be a relevant category, is unfounded for gender continues to determine the extent to which individuals can gain access and utilize new computer technology. The effective use of new technology in distance learning contexts demands attention to questions such as: Who has the equipment necessary to participate? Who has the opportunity of procuring it? And, who has the skills to use it effectively? (Cavanaugh, Ellerman, Oddson, & Young, 2001).

These gender-based inequities and the lack of research on women’s learning must be addressed if equal opportunities in education are to be realized. Acceptance of gender as a category in distance learning is not universal, however. Bing and Bergvall (1996) suggest that “the very questions being asked about gender differences perpetuate, even strengthen the male-female dichotomy” (cited in Gunn, 2003, p.8).

Recent demographic changes in computer use, access, and literacy are also challenging the view that women continue to be disadvantaged when it comes to the use of computers. Gunn (2003) argues that these gender-based inequities are a disappearing problem, for the past decade has seen many changes in how women are using new computer technology. Pastore (2003) cites statistics from Jupiter Media Matrix, which indicate that in the United States, since the year 2001, the number of women engaged in online activity has surpassed that of men. The most dramatic shift in computer use was reported in the 35-54-age bracket, which showed an increase of combined home and work use for women from 19% in May 1999 to 20.1% in May 2001. For men in this same age bracket their use dropped from 20.7% to 15.6% over the same time frame. In May

2001, Nielsen/NetRatings reported data that supports the Jupiter Media Matrix findings of greater female representation online. However, according to their data, despite higher percentages of female users, men continue to spend 16% more time online per month than women.

Further research concerning women's use of the Internet, this time from America Online's Digital Marketing Services unit and comScore Networks, indicates that the number of American mothers who use the Internet is increasing. Data from these sources suggest that mothers who use the Internet spend approximately 16 hours and 52 minutes per week, which surpasses the amount of time spent online by teenagers by 4 hours and 35 minutes per week (Saunders, 2003). Sean Kaldor, vice president of eCommerce at Net Ratings reports that "the Internet glass ceiling has long ago shattered. The average man is no more likely to be online than the average women when it comes to home surfing. The number of women online statistically mirrors the gender breakdown of the current U.S. population" (cited in Pastore, 2003, p. 4).

Thus it appears that more and more women are using computers and the Internet for use at home and work. What is unclear, however, is how female users perceive their experiences and conversations online, and whether any gender-based inequities exist for men or women in computer mediated learning environments.

### Review of Related Research

Ideology of Online Equality. Initial enthusiasm for using the Internet and CMC in education led proponents to emphasize the democratizing nature of this medium. The "cues filtered out" position argues that without physical cues related to gender, race, and



social status, communications are egalitarian, lacking the power dynamics seen in face to face interactions (Berge & Collins, 1995; Chester & Gwynne, 1998). Dubrovsky (1985) argued that computer conferencing fosters rationality due to the lack of these affective aspects of communication and the resultant stress that is put on content (Walther, 1996). Some research, however, does not appear to support these claims (Herring 1992; Yates, 1997; Morahan-Martin, 1998; Herring, 2000; and Fahy, 2002). Gender, it appears, is cued in communications online (Herring, 1992; Herring, 2000; Witmer & Katzman, 1997), and patterns and styles of interaction are gendered (Matheson, 1991; Herring, 2000; Cox et al., 2001; Fahy, 2002). The communicative practices that are generated in computer mediated communications can lead to the reproduction of imbalances and prejudices in our society (Weil & Rosen, 1995), or instances of abusive or hostile behavior (Abrami & Bures, 1996; Fahy et al., 2001), thus creating both serious and practical implications for the effective use of this medium (Herring, 2000, & Yates, 1997). It has been argued that the influence of socio-cultural factors on gender and gender roles have been implicated in the nature of interactions and discursive practices of online groups (Herring, 1992; Yates, 1997; and Fahy, 2002), and in the motivations for interaction (Savicki., 1996; Gay et al., 1999; Jaffe et al., 1995).

Gender and Access in CMC. Several studies have focused on gender issues and technology as they relate to the limited access and barriers to access experienced by women (Moffatt, 1997; Yates, 1997; Spender, 1995). These gender-related differences have been most notably marked in the use of and access to the Internet and personal computers. More recent research argues against greater male representation online (Pastore, 2003; Saunders, 2002), although, Yates (1997) claims that the issues related to

access go beyond the procurement of technology, for the social interactions in online communications pose further barriers and obstacles for equal participation. Ferris (1996) concludes that online communications frequently mirror the characteristics of face to face communication, both linguistically and relationally. Herring (1992) asserts that these interactions and gender-based discourse preferences may inhibit the equal participation of women (Herring, 1992). Further arguments that relate to how technology is gendered point to additional obstacles for women (Spender, 1995; Turkle, 1997). Through the adoption of our socialized gendered identity, we are taught the types of relationships that we will have with technology. For women, technology is approached with apprehension and reticence. Turkle (1988) argues that for women this socialized relationship with technological tools can best be “summed by the admonishment, ‘Don’t touch it, you’ll get a shock.’ No wonder women are ‘reticent’ about approaching a computer terminal” (cited in Spender, 1995, p. 173). In a survey of young women performed by Turkle (1988), most of the respondents rejected as role models those individuals who were “drawn” to computers (cited in Spender, 1995). While there may still be reticence for some women, more recent research indicates that computer use by women is surpassing that of men (Pastore, 2003).

Gender and Participation in CMC. Following on from these earlier studies, more recent research on online communication patterns indicated higher participation rates for males than for females (Herring, 1994; Herring, 2000; Ferris, 1996; Savicki, 1996; and Barrett & Lally, 1999). Herring (1992) in her study of LINGUIST subscribers, a computer mediated discussion group with 1800 members, found that gender influenced participation. Of the active members in the Linguist Society of America in 1991, 46 per

cent were women, women represented only 36 per cent of the LINGUIST discussion group. Herring (1992) analyzed 71 messages from this discussion group over a period of 2.5 months. Messages were analyzed by participant gender for the number of contributions made, the average number of words per message, and the total number of words. Results indicated that contributions made by men outnumbered those made by women by a ratio of 6:1. In addition, the contributions made by men were, on average, twice as long. It is important to note, however, that 72.2% of the messages made by women, and 75% of the total words, were a result of contributions made by a single individual (Herring, 1992). Barrett & Lally's (1999) exploration of CMC with a group of post-graduate distance learners also lends support to the results reported by Herring (1992). Barrett & Lally (1999) completed an analysis of two online discussions comprised of 16 first year M. Ed. students, 11 women and 5 men. Results showed differential participation rates based on gender. On average, the men contributed 18.4 messages compared to an average of 15.9 for the women. Further support is found in a study conducted by Savicki et al. (1996) in their examination of a random selection of 27 online discussion groups, where increased participation rates for males were also reported. It is important to note that these findings are not universally supported, for studies of online moderated course-based discussions have reported relatively equal participation rates based on gender (Fahy, 2002).

Gender and Dominance in CMC Contributions. Herring (2000) argues that other forms of inequality also exist in CMC, which go beyond unbalanced participation rates. For example, there are reports that women receive fewer responses from others and do not control topics of discussion unless the clear majority in a discussion group is female.

Results of Herring's (1993) electronic survey of listserv members indicate that women are more likely than men to drop out of groups or become silent in response to aggressiveness in online interactions (cited in Herring, 2000). The work done by Ferris (1996) also supports this claim. In this study of online discussion groups, observations of one week's postings on PSYBER-L were analyzed for grammatical and conversational differences. These results were then compared to other studies of gender and online communications. Results support findings by Herring (1994) and also Collins-Jarvis (1995), and We (1993), which indicate that CMC does not mitigate gender differences in communication. Although CMC allows women to "speak", their contributions are often ignored (Herring, 1994; Ferris, 1996), and males typically control topics of discussion. In the study performed by Ferris (1996), of the four topics under discussion, men initiated three.

In contrast, studies by Fahy (2002), Cox (2001), and Rodino (1997) report results that do not indicate evidence of male dominance in computer mediated communication environments. Fahy (2002) used the Transcript Analysis Tool (TAT) to study sentence type and interactions in an online graduate course to explore whether gender patterns could be detected. Previous researchers associated epistolary and expository discourse types with female and male styles of interacting. The epistolary interaction style is defined by its interactional orientation that attempts to link with, and align with others, in an effort to sustain communications. An expository style has a declamatory orientation, with an intent to inform rather than to sustain interactions (Herring, 1996). This study corroborated previous findings of females predominantly using epistolary communications, and males using more expository types of discourse.

One important difference however, was the lack of extreme forms of expository interaction (flaming and rudeness) found in previous studies. Fahy's (2002) study reported instances of "asocial interaction" classified as mutual non-interaction or unreciprocated contact that occurred twice as often with men than with women.

Although, this difference may be explained by gender differences in language use and the more aligned stance of women in this social network. Fahy (2002) concluded that women were more attuned to the "social health" of the network. In this study participation rates for men and women were equal, and the results did not show evidence of male dominance.

A study performed by Cox et al. (2002) that explored interactions and gender differences in a new course using CMC showed that gender differences existed in messages, with women providing more "social glue" than men, and that women were also more successful and experienced greater involvement, commitment, and satisfaction with the course.

Weil and Rosen (1995) in their study of gendered interactions online, sent surveys to news groups and electronic mailing lists to explore experiences communicating electronically. For some men and women, CMC was described as a liberating experience given the physical anonymity of this medium.

Claims of disproportionate participation rates based on gender, however, are mixed and often contradictory (Fahy, 2002; Cox et al., 2001; Rodino, 1997). Reports of male predominance as participants in computer communications were not supported by Fahy's study (2002) of 13 graduate students involved in computer mediated course conferences. All participants had significant prior experiences using CMC, having completed a

minimum of 5 courses of the 14 required of program completion. Transcript analysis of these conferences indicated that males and females participated relatively equally, and there was evidence of female leadership. The women, although in the minority, authored approximately 50% of the messages posted, and contributed 53 % of the total number of words.

There is additional research indicating that the production of gender in online interactions is not necessarily a matter of gender regulation (Savicki, 1996; Rodino, 1997; Fahy 2002; Turkle, 1996). Although researchers argue that social markers are cued, and that real life gender impacts upon access and interaction processes online, CMC also offers opportunities for constructing new gendered identities (Yates, 1997). Yates (1997) has reported changes in discourse styles (from interpersonal to professional) among women as they gain experience and confidence using CMC technologies, and also a growing popularity of ‘cybergrrrlgeekness’, a discussion group for CMC-skilled women who are defining their identities through the Internet. Rodino (1997) also argues that the way in which gender is produced online may not be consistent with gender-based stereotypes and that gender can be presented in diverse ways. Turkle (1996) makes a similar claim in her argument that “the Internet has become a significant social laboratory for experimenting with the constructions and reconstructions of self that characterize post-modern life. In this virtual reality we self-fashion and self-create....What relation do these have to what we have traditionally thought of as the ‘whole person’?” (p. 180).

Conversational Purpose in CMC. Gilligan (1982) argues that males and females develop different ways of thinking, a claim that has profound implications for individual decisions made about the learning process and practical decisions for educators with

program development and delivery. These different ways of thinking may also have an impact on the manner in which communications are perceived and delivered, and may influence the underlying motivation for interaction in online learning environments (Gay, Sturgill, & Martin, 1999; Ferris, 1996). The differences described by Gilligan (1982) involve the following:

the wish [of men] to be alone at the top, and the consequent fear that others will get too close: the wish [of women] to be at the centre of connection and the consequent fear of being too far out on the edge. These disparate fears of being stranded and being caught give rise to different portrayals of achievement and affiliation, leading to different modes of action and different ways of assessing the consequences of choice (p.62).

The desire for women to connect with others in their course of pursuing distance studies has also been cited elsewhere (Faith, 1988, Kirkup & Von Prümmer, 1990). Kirkup and Von Prümmer (1990) survey of distance learners at the Open University, UK, and Fern Universität, West Germany suggest that women value the opportunities for interactions with other learners more so than men. Gay et al. (1999), in their examination of social factors influencing the learning environment, have also found that for women, the sharing of ideas and beliefs is an integral element of their learning process. Thus, they believe, women “may have more positive attitudes in general about the educational value of peer communication and cooperation, leading them to value more highly environments, electronic or otherwise, that foster interaction “ (Gay et al., 1999, p.4).

Ferris (1996) argues that conversational purpose is influenced by gender in both face to face and online communications, and is evidenced in the interactions that occur.

In the analysis of online postings in PSYBER-L, Ferris (1996) observed that the contributions demonstrated women's desire to maintain interactions and men's desire to establish control. This, Ferris argues, was evidenced in the expository discourse style adopted by men, and the conversational style used by women. Indeed, the men in this online forum did manage to control three out of four topics of discussion within the one-week period under review. Participants in this study were not interviewed or surveyed about these issues to support the claim made about learner motivations and purpose. This study, however, did cite other research to support these arguments of conversational purpose and motivation. Most notable is the FeMiNa (1996) survey that found, of the 1150 women who responded, 43% viewed community as an important objective for their online activity.

Jaffe et al. (1995) also support these claims of gendered differences in conversational purpose. In their exploration of strategies to facilitate collaborative learning, the use of pseudonymity in text-only interactions was studied in a survey of 114 students enrolled in a Midwestern University class. Of this group, 53 females and 61 males completed an entry questionnaire that explored computer knowledge and prior computer experience. Only 75 students continued their study in this course beyond the initial orientation and survey. Two conferences in this subsequent course were studied, one where participants were required to use their own name, and another where participants were required to use a pseudonym. Content analysis was completed with these remaining 75 participants. This content analysis considered the earlier interaction analysis work done by Bales (1950) and expanded Bales' categorization in order to allow for and exploration of the multidimensional relational qualities of interaction. Jaffe et al.



(1995) employed four categories: references to others' responses, references to self, the use of supporting statements, and the use of emotional statements, such as exclamations, emoticons, or emototext. Results indicated that women tended to portray greater patterns of social interdependence and were more likely than males to choose a pseudonym to mask their identity. Herring (2000) argues that the discourse styles adopted online, predominantly aligned for women and adversarial for men, suggests the transmission of socialized gender related behaviors. In the study performed by Jaffe et al. (1995), however, no link was made between the questionnaire results and the content analysis; arguments for gendered conversational purpose were made from the analysis of transcript content alone. A better understanding of the issues surrounding conversational purpose in online learning environments would be realized with a comparison of content analysis and survey questions that address this issue of purpose.

Discourse Styles and Gender. Some research studies on gender and CMC have found that males and females differ in terms of purpose and preference for the type of information exchanged. Herring (1996) found that males are concerned with information exchange, whereas females are interested in creating and maintaining interpersonal relationships. Tannen's work (1995) supports this conclusion with her finding that in face-to-face communication and CMC, men use language to "report" and women for "rapport." Herring (1996) argues that evidence to support or disprove this stereotype depends on one of two interpretations. One interpretation would argue that men and women use different functional domains in CMC, information oriented (primarily men) or personally oriented (primarily women). Herring's (1996) study offers a second interpretation that men and women operate in the same domains, although the orientation

of their communications differs. She argues that the communicative differences in interaction for men and women are one of style rather than intent, where the discourse type favoured by women is one that links with others, while the type preferred by men often opposes the views or statements of others. The intent however, for both men and women is first with the exchange of beliefs and understandings, and second with the exchange of information (Fahy, 2002).

Research into discourse styles has shed new light onto the nature of interactions online, showing stereotypical communication patterns based on gender (Herring, 2002; Fahy, 2002). A study performed by Herring (1996) on two different unmoderated listservs found the following gender based preferred styles of interaction:

- Females preferred epistolary type interaction: This is more interactionally oriented, with message content linked to previous and following postings and messages situated in the ongoing interpersonal interaction. Like a personal letter, epistolary communication invites and attempts to sustain further interaction and communication.
- Males preferred expository type interaction: This is more declamatory (one-way) than interactive. The intention is to inform, correct, debate, persuade, ostensibly concerned with conveying information. Interaction of this type often shows some or all elements of a classic scientific essay: problem identification; proposal of a solution; evidence in support of the proposed solution; evaluation criteria (Herring 1996, cited in Fahy, 2002, p. 110).

These findings have been corroborated by Fahy (2002) and Barrett and Lally (1999).

Using the Transcript Analysis Tool (TAT), Fahy (2002) performed a study of sentence

type and interactions in an online graduate course to explore whether gender patterns could be detected. This study found preferred interaction styles based on gender, although these findings lacked the extreme forms of expository interaction (flaming and rudeness) found in previous studies. Unlike Herring's study of unstructured listservs, Fahy (2002) explored an instructor moderated graduate course. This is an important distinction, for it has been noted that moderated forums tend to produce less extreme types of behavior (Savicki, Lingenfelter & Kelley, 1996), and, as Heltz, Truoff & Johnson (1989) argue, unmoderated and unstructured "lists" can be characterized as an "interaction space with all the social control of a mardi-gras" (cited in Walther, 1996, p. 29).

Herring's "List Effects" and the Social Significance of Proportions. In Herring's (1996) exploration of the schematic structures of electronic messages in two listserv discussion groups, evidence of a "list effect" was found whereby "the communicative practices of the majority of active participants become normative for the group as a whole" (p. 85). An assumption underlying Herring's (1996) study of discourse styles is that individual electronic messages are internally organized passages that can provide useful insights about the structure and function of communication. Using linguistic text analyses, the organization of texts can be evaluated to determine whether messages perform the function of exposition and reporting, or of interaction (Herring, 1996). Herring hypothesized that there would be a "Gender Effect" in the two listservs she studied, that would group listserv members according to gender. Further to this finding, she hypothesized that the male-predominant list would be more expository, while the female-predominant list would be more interactional, providing evidence of a "list effect." Results indicated there was evidence of a "list effect" in these two groups in

terms of the female participants. Interestingly however, there was less evidence of this effect for men. Although the men did adapt their discourse style in the female dominant list, they did so by using the 'attenuated' characteristics of form, modifications of style that use hedging and the posing of statements in the form of a question, rather than adopting the interactional and personal orientation women use (Herring, 1996).

Savicki et al. (1996) built on Herring's (1996) work to test further the influence of gender composition on online communications. A random sample of 30 online discussion groups was analyzed for content using the ProjectH Codebook (Rafaeli & Sudweeks, 1993). Results indicated that the gender composition of groups with higher proportions of men showed more expository oriented language patterns, although instances of argumentativeness, were not found in these groups. Caution must be exercised in the interpretation of these results, however, given the high percentage of individuals of indeterminate gender (13%), and the high percentage (38%) of groups studied that had a greater proportion of members of indeterminate gender than members that were female (Savicki et al., 1996).

Kanter (1977) also argues that social life is influenced by the proportional representation of different groups of people. For instance, she states that the numerical distributions of social type, like that of gender, will transform the social interactions and experiences that happen. To gain a better understanding of the influence of "the many" vs. "the few," Kanter identified four different proportional representations of groups: uniform, skewed, tilted, and balanced. A uniform group is homogenous with respect to salient characteristics like gender, race or ethnicity. Ratios for this group would be 100:0. A skewed group is typified by a numerically dominant type and subordinate type, and is

characterized by a ratio of at least 85:15. Kanter labels the large representation of type as “dominants” and the few as “tokens.” In small groups, only one or two individuals may represent the “tokens.” For small token populations it is extremely difficult to create alliances that could influence the group. Tilted groups characterize a less extreme distribution of type than skewed groups, and as such produce less magnified effects. An example of a tilted ratio would be 65:35, but would have a range above and below this number. Minorities in this type of group have greater potentials to form alliances and to have influence on the group. Tilted groups fall between proportions found for skewed and balanced groups. Balanced groups occur when ratios of 60:40 to 50:50 occur. In a balanced situation, the two group types may potentially form subgroups that produce type specific identifications. Specific outcomes in such a condition however are more dependent upon other structural and personal factors like individual aptitudes, group tasks and function, and the development of subgroups (Kanter, 1977).

Special circumstances and perceptions surround the existence of tokens within a group. Kanter (1977) illustrates three perceptual tendencies that are associated with this group: visibility, contrast, and assimilation. These tendencies originate from our perception of a set of objects, as indicated in the quote below.

If one sees nine X's and one O: the O will stand out. The O may also be overlooked, but if it is seen at all, it will get more notice than any X. Further, the X's may seem more alike than different because of their contrast with O. And it will be easier to assimilate the O to generalizations about all O's than to do the same with X's, which offer more examples and thus, perhaps, more variety and individuation. The same

perceptual factors operate in social situations, and they generate special pressures for tokens (Kanter, 1977, p. 210).

The visibility of a token is greater than that of an individual dominant member; as such tokens capture a greater share of awareness. Tokens get noticed. As the membership of a group type increases and moves from a skewed membership to a tilted one, the uniqueness and the share of awareness for each individual within that subgroup also decreases. Another perceptual tendency is that of contrast, which speaks to how differences are amplified when only a few members are present who bear a different set of social characteristics from the dominant population. Their presence raises the consciousness of the differences that exist between the two groups. The final tendency is that of assimilation, where common generalizations about certain social types are used to define the token members of the group. The token members, while different and highly visible, are not afforded their own unique non-stereotypical identity (Kanter, 1977).

### Summary

CMC offers powerful opportunities for interaction, for the establishment of a common forum for cooperative work, and for discussion, review of course concepts, and the creation of an environment of cooperation and trust among students. Also, the high level of interaction possible in this environment allows for the facilitation of higher order thinking skills such as evaluation, analysis, and synthesis (Berge, 1995). The interactions that happen in these online forums in higher education are not well understood, and results of research on the nature of participation rates, as they relate to gender, remain inconsistent with a lack of findings related to the roots of learner motivation, levels of

purpose, and perceptions of benefit drawn from network interaction (Fahy et al., 2001). Research on learner motivations and conversational purpose has not taken a combined look at text analysis and learner perceptions. Further research into the study of gender effects in different contexts is also needed to determine to what extent differences found are an influence of context or of gender. It is also unclear whether the “list effects” identified by Herring (1996) would be found in moderated conferencing contexts, and under what conditions conferencing would meet individual and group objectives.

## CHAPTER III

### METHODOLOGY

#### Design

This study utilized a case study design to explore and describe the influence of gender on interactions in online conferencing, and to examine Herring's "list effects" and the interactional purposes and perceptions of online discussions. Convenience samples of three groups of subjects enrolled in an introductory graduate course at Athabasca University were utilized. The three groups studied met one of the following conditions: a gender-balanced population, a predominantly female population, and a predominantly male population. The study of these three groups involved the analysis of computer conferencing transcripts and survey questions.

Transcript Analysis. Computer transcripts were analyzed for structural and interactional exchange patterns to investigate whether or not any "list effects" would be apparent. Structural elements explored included network size, density, and intensity. The interactional elements studied included content type, or preferred discourse style, and the exchange flow, which is a measure of the symmetry or equality of information exchanged (Ridley & Avery, 1979). Interactional features were measured with a tool for discourse analysis developed by Fahy et al. (2000), termed the "Transcript Analysis Tool" (TAT). A description of this tool can be found in Appendix A.

Survey. A cross-sectional survey was employed to investigate participants' motivations, purposes, and perceptions of the online discussions. The survey utilized five-point, Likert type questions in addition to one open-ended item. Survey items 12



through 18 were taken from an online survey developed by Kanuka & Anderson (1998) that addressed learner-learner interactions and learning communities. Appendix B contains a description of this survey.

### Population

A convenience sample of three groups of subjects enrolled in an introductory graduate course at a Canadian University (Athabasca University) was utilized. Participation in the three conferences for each section of this course was voluntary. One instructor for each section moderated the conferencing activity, although these postings were not analyzed. The three sections of the course analyzed were labeled 601A, 601B, and 601C. The section 601A represented a tilted group that was predominantly male, 601B was a skewed group that was mostly female for the first conference and uniformly female for conferences two and three, and 601C represented a relatively balanced ratio of males and females. By using students from three sections of the same course, the study hoped to avert the possibility in CMC research that differences in findings may reflect differences in context rather than gender (Savicki, 1996).

### Variables

The independent and dependent variables of the study were as follows:

#### Independent Variables.

- i) Biological gender of participants

- ii) Gender composition of course, based on participants' biological gender (gender-balanced populations, predominantly female populations, and predominantly male populations)

Dependent Variables.

- i) Preferred discourse styles
- ii) Exchange patterns
- iii) Conversational purpose, satisfaction, and commitment

Instrumentation

TAT. The TAT, an adaptation of an analytic model developed by Zhu (1996), was utilized to analyze the computer transcript content for the three sections studied. This tool, developed by Fahy et al. (2000), classifies sentences into five categories: questions, statements, reflections, scaffolding, and quotations, paraphrases and citations. The level and progression type for each posting were coded. Preferred discourse styles as defined by Herring (1996) were analyzed with TAT categories that Fahy (2000) has determined are representative of the epistolary and expository conventions. The TAT indicators for the epistolary type are 1A (vertical questions), 1B (horizontal questions), 2B (referential statements), 3 (reflections), and 4 (scaffolding). Indicators of the expository type include 2A (non-referential statements), 5A quotations and paraphrases, and 5B (citations) (Fahy et al. 2000). Instructor postings were not coded.

Study of interactional features using the TAT have produced results which indicate that this tool is a good discriminator of sentence types in online conferencing (Fahy et al., 2000). Inter-rater reliability for this tool has resulted in agreements ranging from 70-94% depending upon user training and experience with this instrument.

Each sentence in the transcripts studied was coded according to the categories listed above, using the software program ATLAS.ti. An intra-rater (code-recode) coding of the TAT categories was completed with a minimum 10-day interval. To test for intra-rater reliability, Cohen's kappa values were calculated. This coefficient of agreement determines the degree and significance of producing reliable classifications where the data are categorical in nature. With total agreement in the categorization of several types, the kappa value would be +1.00. A kappa value of 0.00 represents the agreement that would be obtained by chance. Values less than zero indicates less than chance agreements. This chance-corrected measure removes the element of a chance agreement in the classification of data. Where there is a determination to be made from only a few classifications, the element of chance agreement is significant, thus making the use of this type of agreement coefficient for reliability testing very important. In this study, classifications were made from 8 possible categorisations, making the possibility of a chance agreement quite small (1/64). The use of this kappa value does, however, remove this small element of chance, and provides an accurate measure of the agreement found in the coding process for the transcripts studied. A kappa value of at least 0.70 is considered significant (Cohen, 1960).

To maintain participant confidentiality, all identifying information from the course transcripts, other than participant gender, was removed by a mediator prior to the researcher's receipt of the data. The course transcripts identified each participant by a pre-assigned number that remained consistent throughout the study.

Survey. Portions of a survey created by Herring (1996) were adopted for this survey, along with other items created from information obtained from the literature

(Herring, 1992; Herring, 1996; Cox et al. 2000; Fahy et al. 2001; Gay et al., 1999; Kirkup & Von Prümmer, 1990; Kanuka & Anderson, 1998) which addressed issues of gender related to conversational purpose, reasons for participation or non-participation, persistence or non-persistence, participant motivation, and perceptions of benefit. The survey was organized around three main themes, computer technology, participation, and purposes and motivations for interaction. The first section addressed issues surrounding competence, access, and confidence using computer technology. The second section focused on levels of participation and influences on participation rates. The final section asked questions that related to individual experiences, purposes, and satisfaction with the conferencing experience. One open-ended question asked participants to rate and describe their satisfaction with the computer conferences in this course.

### Procedure

Contact with participants to distribute and receive surveys was achieved via e-mail by a mediator (other than the researcher) in order to maintain participant confidentiality. This mediator then sent the completed surveys to the investigator. A cover letter was included with the survey, explaining the purpose and importance of this study (Appendix D).

All identifying information was removed from the surveys sent to the researcher, except participant gender and course section. Student surveys were identified with the same pre-assigned numbers used in the computer transcripts. Subjects were asked to return survey questionnaires within one week. After this time period, a reminder notice

was sent via e-mail by the mediator to encourage completion of the survey questions. A more detailed description is outlined below.

- September 3, 2003: Letters of Request were sent to course instructors by the researcher for the course under investigation (Appendix C)
- September 18, 2003: Letters of Request were sent to students by the course instructors (Appendix D).
- November 27, 2003: Survey items were sent to students by course instructors (Appendix B).
- December 4, 2003: A reminder notice was sent by e-mail to those students who had not yet responded to the survey questionnaire. This notice was sent by a mediator.

### Data Analysis

Transcript Analysis. For the transcript analysis, an intra-rater (code-recode) coding of the TAT was completed with a 10-day interval. Intra-rater reliability was calculated using Cohen's kappa (Cohen, 1960). Frequencies of TAT sentence type, participation rates, and occurrences of epistolary and expository TAT categories for males and females were calculated. To test for persistence of discourse styles, proportions of total posts that contain one of the TAT categories for each communication style were measured (Fahy 2002). Calculations for each course were compared.

Other measures calculated include:

- i. Network Size: total number of students

ii. Density: a measure to determine the connectedness of the network (Fahy 2002),  
where,

Density (D) =  $2a/n(n-1)$ , where

a = the actual number of interactions observed, and n = the number of participants in the network (Berkowitz, 1985, cited in Fahy et al. 2001, p. 7).

iii. Intensity: a measure of values of persistence and depth of interaction (Fahy et al., 2001).

- Level of participation for males and females.
- S-R ratio: to assess equivalence of interactions for males and females, calculated as the proportion of messages sent divided by the number of messages received.
- Topical Persistence: levels at which topics are terminated. Calculations were also completed based on gender.

Survey. Information was reported for the percentage of surveys returned to the researcher as well as a descriptive analysis of the independent, and dependent variables. Calculations of means, standard deviations, and range of scores for these variables were presented (Creswell, 1994). This descriptive analysis also compared results based on gender. Individual results were also compared with scores obtained from the transcript analysis.

## CHAPTER IV

### RESULTS

#### Review of the Statement of Purpose

The use of electronic media in higher education provides valuable and powerful opportunities for collaboration that can support learning by providing an interactive environment where learners can create new meanings and understandings through discourse with others (Kanuka & Anderson, 1998). Electronic media, such as computer conferencing, also allow for two-way communication that can create an interactive forum not constrained by limits of time and distance. Individuals can share text-based messages that are stored sequentially within a conference (Bullen, 1993; Heinich, Molenda, Russel, & Smaldino, 1999). Computer conferencing offers valuable opportunities for interaction in distance education, however, communications may not be positive in all instances and may serve to reinforce social inequities, including those related to gender, that privilege certain members over others (Weil & Rosen, 1995; Herring, 2000; Dede, 1996). How we communicate and interact appears to be associated with gender in both face-to-face and virtual contexts (Fahy, 2001; Yates, 1996; Herring, 1996; Kanter, 1977). This study examines whether the styles of preferred discourse, based on gender, provide equitable opportunities for interaction, and asks whether gender is associated with satisfaction and commitment to online communications.

#### Review of the Research Questions

The following research questions were investigated:

1. Is participation associated with gender?
2. Are Herring's "list effects" apparent in a moderated environment?
3. Are commitment and satisfaction in conferencing activity associated with gender?
4. Is conversational purpose associated with gender?

### Research Question 1

To determine how participation was associated with gender, the patterns of interaction within the conference networks were explored. Structural features, including measures of network size, density, and intensity, of the networks from the three units of each section of MDDE 601 were studied. These features as defined by Ridley and Avery (1979) give information about the characteristics of each network, their potential for interactivity, and the actual amount of interaction demonstrated.

Network Size. This structural feature presents important information about the amount of involvement and connection possible within a given network (Ridley & Avery, 1979).

The number of potential linkages, or possible combinations of two students interacting for each group were calculated using the following formula:

$$n = \frac{n!}{2(n-2)!2!}$$

- i. 601A: This section of MDDE 601 was a "skewed" group that was predominantly male

$$n=23$$

Number of females: 4 (17%)



Number of males: 19 (83%)

Number of potential links: 253

- ii. 601B: This section of MDDE 601 was almost all female for Unit 1 and all female for Units 2-3.

Unit 1            n=23

Number of females: 22 (96%)

Number of males: 1 (4%)

Number of potential links: 253

Unit 2-3            n=22

Number of females: 22 (100%)

Number of males: 0 (0%)

Number of potential links: 231

- iii. 601C: This section of MDDE 601 was relatively balanced with a slightly higher proportion of women.

n=18

Number of females: 11 (61%)

Number of males: 7 (39%)

Number of potential links: 153

Density. Density is a measure that is used to determine the connectedness of the network (Fahy 2002), where,

$$\text{Density (D)} = \frac{2a}{n(n-1)}$$

a = the actual number of interactions observed, and n= the number of participants in the network (Berkowitz, 1985, cited in Fahy et al. 2001, p. 7). This represents a ratio

between the actual number of linkages made, and the number of linkages possible for a given network. Because there was no requirement for conference participation in the networks studied, the density for each network was most likely affected. Caution must be exercised when interpreting density results since this measurement is strongly associated with the size of the network. Hence, larger networks would yield lower values than smaller networks. It is important, then, not to examine on a comparative basis density values of networks with differing sizes in an attempt to understand their relative connectedness (Fahy et al., 2001).

Also, high-density values can also be obtained when only a few members within a network are contributing the majority of postings. Therefore, to assess how connected a network is as a group, the density value can be measured against the ratio of the average number of connections made to the total number possible. If the density value is higher, then it should be interpreted as an inflated value given the high number of postings made by only a few individuals (Fahy et al., 2001).

The density values for all the networks studied were small, with a high value of 45.7% in the smallest network (n=18), to a low of 9% in the network that was predominantly female. All of the networks had the highest density value in the first conference, with declining values for the remaining two conferences. Measurements of the average number of contacts made within the network, of the possible maximum values, were all lower than the density values shown, indicating that the interaction within these networks was a result of a relatively small number of participants accounting for a large portion of the interaction. This ratio is titled "Ratio" in Table 1 below.

Table 1. Density Values

Unit	601A n=23		601B n=23 (Unit 1) n=22 (Unit 2-3)		601C n=18	
	Density	Ratio	Density	Ratio	Density	Ratio
1	25%	12.5%	35%	17%	45.7%	23%
2	16%	7%	9%	4.5%	22%	12%
3	23%	10.5%	14.7%	7%	17.6%	8.8%

Intensity. Measures of intensity address not only the number of connections made within a group, but also the intensity and persistence of participants in their involvement with others (Fahy et al., 2001). Three measures of intensity were calculated for these networks: levels of participation, S:R ratios, and persistence.

i. Level of Participation.

As already noted, participation in these computer conferences was not a course requirement. In all three sections there was a total of 64 students in the first conference, and 63 students for conferences two and three. Twenty-seven students were male (42%) in conference one, and there were 26 males for the remainder of the course. Thirty-seven students were female (58%).

The total number of postings for females and males were quite similar, (210 and 216, respectively), although females represented 58% of the total student population.

Most of the messages made by women occurred in the section 601B, the predominantly female group. This section had 22 females or 59% of all the females in all three sections, although 66% of their postings were made in this group.

Section 601C, represented a more balanced ratio of males to females, although the representation of females was slightly higher. In this section, the males contributed 78 postings while the women contributed only 53. The numbers of postings for all groups are illustrated in Table 2 below.

Table 2. Number of Postings

Unit	601A		601B		601C	
	Female n=4	Male n=19	Female n=22	Male n=1 (Unit 1)	Female n=11	Male n=7
1	6	57	87	2	28	42
2	5	31	21	0	13	21
3	4	48	34	0	12	15
Total	15	136	142	2	53	78

Female total number of postings = 210

Male total number of postings = 216

The number of lines in each posting was used to determine the length of each message. The average length of messages posted by men was longer than that of women, with a total number of 4942 lines and an average of 23 lines per posting. For women, the total number of lines was 3378 with an average of 16 lines per posting. Results of the total number of lines are shown in Table 3 below.

Table 3. Number of Lines per Posting

Where # = the number of lines per posting, and Av.= average number of lines per posting.

	601A				601B				601C			
	Female n=4		Male n=19		Female n=22		Male n=1(Unit1)		Female n=11		Male n=7	
Unit	#	Av.	#	Av.	#	Av.	#	Av.	#	Av.	#	Av.
1	91	15	1256	22	1315	15	22	11	451	16	1041	24.8
2	78	15.6	553	17.8	339	16	0	0	246	19	631	30
3	132	33	1124	23.4	522	15	0	0	204	17	315	21

Total lines: Male = 4942

Average Lines: Male = 23

Female = 3378

Female = 16

ii. S:R Ratio

An S:R ratio is an additional measure that is used to assess the equality of the interactions in the network. This ratio represents the proportion of messages divided by the number of messages received. The S:R ratios for each section and each conference within these sections showed considerable variability. Overall, the S:R ratio was 0.87 for males and 0.78 for females. In other words, for each message sent, males received just over 1 message, while females received slightly more than males. The S:R ratios for each

conference show remarkable variability, with a high of 1.7 for males in the predominantly male group (indicating 1.7 messages were sent for each one received), to a low of 0.3 for the male in the predominantly female group. (This value shows the equivalent of three messages received for each one sent.)

Interestingly, the two lowest S:R ratios were for the “token” populations amongst the dominant groups, for the females in 601 A (S:R = 0.63), and for the male in 601B (S:R = 0.3). These values indicate that these “token” populations received more responses for each one sent than for individuals who were part of the dominant groups, and for individuals interacting in the network with the more balanced ratio. S:R ratios for each group are shown in Table 4.

Table 4. S:R Ratios

S:R is a ratio where S= the number of messages sent, and R= the number of messages received. The ratio is a measure of the number of messages sent, divided by the number of messages received.

	601A		601B		601C	
Unit	Female n=4 S:R	Male n=19 S:R	Female n=22 S:R	Male n=1 (Unit 1) S:R	Female n=11 S:R	Male n=7 S:R
Unit 1 S:R	6:7	57:52	88:121	2:6	28:38	42:66
Unit 1 Ratio	0.86	1.09	0.75	0.3	0.74	0.6
Unit 2 S:R	5:14	31:18	21:11		14:23	22:35
Unit 2 Ratio	0.36	1.7	1.9		0.61	0.63
Unit 3 S:R	4:6	48:51	34:48		12:8	15:22
Unit 3 Ratio	0.67	0.91	0.71		1.5	0.68
Average Ratio	0.63	1.24	1.12	0.3	0.95	0.64

Overall Average: Male = 0.87 Female = 0.78

iii. Level of Persistence

Persistence is another indicator of the intensity of interaction within a network. The level of persistence demonstrates the extent to which students pursued a topic (Fahy .et al., 2001). Initial postings were considered to be Level 1, with subsequent levels



indicating the progression of the discussion. On the conferencing network, the levels of postings were easily distinguishable, and appeared as follows.

Level 1 (Initial posting)

Level 2

Level 3

Level 4

Level 5

Level 5+

By replying to one another and continuing the discussion thread, participants are demonstrating persistence that indicates the level of engagement and intensity within the interactions. Persistence levels reveal that approximately 50% of all postings were made at Level 3 and beyond. Only one-third of discussion threads were terminated at Level 1 and 20% went beyond Level 5. Persistence results are shown in Table 5 below.

Table 5. Levels of Persistence

Level terminated	601A n=23		601B n=23 (Unit 1) n=22 (Unit 2-3)		601C n=18	
	#	%	#	%	#	%
1	8	26	13	35	6	21.5
2	5	16	4	11	4	14
3	3	10	7	19	6	21.5
4	3	10	3	8	4	14
5	6	19	2	5	3	11
5+	6	19	8	22	5	18
Total	31	100	37	100	28	100

Analysis of persistence in this study showed similar levels for males and females with the exception of the male in 601B. This male participant only made two postings, which could skew results. Table 6 shows the level of persistence shown by gender. The total number of responses given at each level is shown here.

Table 6a. Level of Persistence by Gender 601 A

Level terminated	Female n=4		Male n=19		Total n=23	
	#	%	#	%	#	%
1	3	20	25	18	28	19
2	3	20	41	30	44	29
3	4	27	28	21	32	21
4	2	13	20	15	22	15
5	3	20	8	6	11	7
5+	0	0	14	10	14	9
Total	15	100	136	100	151	100

Table 6b. Level of Persistence by Gender 601 B

Level terminated	Female n=22		Male n=1 (Unit 1)		Total n=23 (Unit 1) n=22 (Unit 2)	
	#	%	#	%	#	%
1	33	23	1	50	34	24
2	45	32	0	0	45	31
3	31	22	0	0	31	21.5
4	18	13	0	0	18	12.5
5	10	7	1	50	11	8
5+	5	3	0	0	5	3
Total	142	100	2	100	144	100

Table 6c. Level of Persistence by Gender 601C

Level terminated	Female n=11		Male n=7		Total n=18	
	#	%	#	%	#	%
1	9	17	17	22	26	20
2	14	26	19	24	33	25
3	12	23	16	20.5	28	21
4	8	15	11	14	19	15
5	4	8	6	8	10	8
5+	6	11	9	11.5	15	11
Total	53	100	78	100	131	100

## Research Question 2.

To determine whether or not Herring's "list effects" were apparent, each sentence within the conference transcripts was classified using the following TAT categories:

1a: Vertical Questions

1b: Horizontal Questions

2a: Expository Statements

2b: Referential Statements

3: Reflections

4: Scaffolding and Engaging Statements

5a: Quotations and Paraphrases

5b: Citations

These TAT categories were used to determine the discourse types preferred by men and women.

Herring (1996) argues that females favor an epistolary style while men favor a more expository one. TAT categories representative of an epistolary type are: 1a, 1b, 2b, 3, and 4. Expository TAT categories include: 2a, 5a, and 5b. The female type according to Herring (1996) is more aligned, and attempts to link with others, while the male type is more opposed.

Each sentence in the transcripts studied was coded according to the categories listed above, using the software program ATLAS.ti. An intra-rater (code-recode) coding of the TAT categories was completed with a minimum 10-day interval. The total number of lines in the transcript corpus that were coded was 8320. To test for intra-rater

reliability, Cohen’s kappa values were calculated. Kappa values for the conferences studied indicate that the categorisation of TAT types was very consistent between the first and second coding. Values ranged from 0.79 to 0.96. The kappa values for each conference are listed in Table 7 below.

Table 7. Kappa Values

Unit	601A	601B	601C
1	0.87	0.96	0.87
2	0.85	0.79	0.81
3	0.86	0.85	0.88

Frequency of TAT Types. The frequency of TAT types shows the relative distribution in TAT usage. These frequencies are illustrated in Table 8 below. The Differences figure reported in these tables represents the % above the male proportion that men exceeded women for each TAT type, or the Difference women exceeded men above their proportion for each TAT type.

Expository statements (2a) were made most frequently by both men and women, occurring almost 4.5 times more than citations (5b), the next most common TAT type. Scaffolding and engaging sentences (4) occurred almost as often as 5b statements. Relatively rare were occurrences of questioning (1a, and 1b), personal reflections (3), and quotations and paraphrases (5a).

Section 601A was predominantly male with a ratio of 19:4. The males displayed a higher occurrence of every TAT type, except for referential statements (2b), that exceeded their proportion of 83%. These results are shown in Table 8a below.

Table 8a. Frequency of TAT Types for 601A

Total=23 Students      Females 4 : Males 19

Proportion: 83% Males : 17% Females.

TAT Types	Women n=4		Men n=19		Total n=23		Differ- ence	Differ- ence
	#	% of total	#	% of total	#	%	% men> women	% women> men
1a	5	15	28	85	33	2	2	
1b	1	2	60	98	61	3	15	
2a	63	6	981	94	1044	59	11	
2b	12	9	115	81	127	7		2
3	2	13	14	87	16	1	4	
4	34	16	176	84	210	12	1	
5a	6	12	43	88	49	3	5	
5b	24	10	214	90	238	13	7	
Total	147		1631			100		

Type 2a statements accounted for 59% of the total number of TAT types in 601A. Similar findings occurred in sections 601B and 601C, with proportions of 55% and 52% respectively. Almost equal numbers of 5b and 3 type statements were made in 601B and 601C, the next most common TAT types. Section 601B was a predominantly female

group with only one male member in the first conference. In this conference, women possessed a higher percentage of every TAT type above their proportion of 96%, except for 1b, horizontal questions. These results are shown in the tables below.

Table 8 b. Frequency of TAT Types for 601 B Unit 1

Total=23 Students Females 22 : Males 1

Proportion: 4% Males : 96% Females.

TAT Types Unit 1	Women n=22		Men n=1		Total n=23		Differ- ence	Differ- ence
	#	% of total	#	% of total	#	%	% men> women	% women> men
1a	19	100	0	0	19	2		4
1b	15	94	1	6	16	2	2	
2a	443	98	11	2	454	56		2
2b	75	97	2	3	77	10		1
3	18	100	0	0	18	2		4
4	121	99	1	1	122	15		3
5a	16	100	0	0	16	2		6
5b	84	97	3	3	87	11		1
Total	791		18		809	100		



Table 8c. Frequency of TAT Type for 601 B Unit 2 and Unit 3

Total=22 Students Females 22 : Males 0

TAT Types	601B Unit 2-3	
	#	% of total
1a	24	4
1b	20	4
2a	302	54
2b	50	9
3	7	1
4	64	11
5a	19	3
5b	78	14
<b>Total</b>	564	100

Section 601C represented a relatively balanced ratio of males to females. The males in this section however showed significantly higher occurrences for every TAT type than women. The women had a representation of about 60% although the men higher occurrence of each TAT type, except for type 3, reflections. These results are shown below.

Table 8 d. Frequency of TAT Types for 601 C

Total=18 Students Females 11 : Males 7

Proportion: 39% Males : 61% Females.

TAT Types	Women n=11		Men n=7		Total n=18		Differ- ence	Differ- ence
	#	% of total	#	% of total	#	%	% men> women	% women> men
1a	8	40	12	60	20	1	21	
1b	12	20	49	80	61	4	41	
2a	264	30	614	70	878	52	31	
2b	69	40	105	60	174	10	21	
3	14	54	12	46	26	2	7	
4	85	37	146	63	231	14	24	
5a	9	16	47	84	56	3	45	
5b	62	27	168	73	230	14	34	
Total	523		1153		1676	100		

Occurrence of Epistolary Type. Style differences for men and women are depicted in the following tables. These tables identify the occurrence of discourse types for men and women. For each of the three sections, women had a higher percentage of epistolary sentence types than men. Women also exceeded men in all epistolary occurrences with the exception of 1b, horizontal questions. The expository conventions showed higher percentages for males overall. In section 601A, however, women had a slightly higher

percentage of type 5a and 5b sentences than men, and in 601B the one male did not make a 5a statement, thus women's usage surpassed that of men for this category.

Table 9a. Occurrence of Epistolary Type by Gender 601 A

TAT Type 601 A	Female n=4		Male n=19	
	#	%	#	%
Epistolary Type				
1a	5	3.5	28	1.5
1b	1	1	60	4
2b	12	8	115	7
3	2	1	24	1
4	34	23	176	11
Total	54	36.5	403	24.5

Expository Type	Female		Male	
	#	%	#	%
2a	63	43	981	59.5
5a	6	4	43	3
5b	24	16.5	214	13
Total	93	63.5	1238	75.5

Table 9b. Occurrence of Epistolary Type by Gender 601 B

TAT Type 601 B	Female n=22		Male n=1 (Unit 1)	
	#	%	#	%
Epistolary Type				
1a	43	3	0	0
1b	35	3	1	6
2b	125	9	2	11
3	25	2	0	0
4	185	13	1	6
Total	413	30	4	23

Expository Type	Female		Male	
	#	%	#	%
2a	745	55	11	61
5a	35	3	0	0
5b	162	12	3	16
Total	942	70	14	77

Table 9c. Occurrence of Epistolary Type by Gender 601 C

TAT Type	Female n=11		Male n=7	
	#	%	#	%
Epistolary Type				
1a	8	2	12	1
1b	15	3	49	4
2b	69	13	105	9
3	14	2	12	1
4	85	16	146	13
Total	191	36	324	28

Expository Type	Female		Male	
	#	%	#	%
2a	264	50	614	53
5a	9	2	47	4
5b	62	12	168	15
Total	335	64	829	72

Percentage of Postings with at Least One Occurrence of Type by Gender. To identify persistence in the style conventions of the men and women in these conferences, a proportion of posts with at least one occurrence of type by gender was calculated. It has been argued that persistence is a better indicator of communication style than frequency for it shows greater commitment to type (Ridley & Avery, 1979). For all three sections,

the men and women studied in this course were inclined to persist in their predicted discourse type. Evidence of a stronger reference for female epistolary style than for the expository style of men, as was found by Fahy et al. (2001), was not seen here.

Epistolary type usages were found more often in posts made by women for all three conferences, although men demonstrated a higher usage of type 1b, horizontal questions. The figure seen in section 601B for men showed significantly higher values for epistolary types 1b, 2b, and 4, although only six sentence types were made by the one male in this conference, thus any one type made had an inflated value.

Expository conventions for 601A and 601B indicated that men exceeded women in the use of type 2a sentences by 8% and 4.5%, respectively. However women showed a higher percentage for type 5a, and relatively equal values for type 5b. The males in 601C exceeded women significantly in 5a and 5b type statements, although women were slightly more likely to use type 2a statements in their messages. The following tables illustrate the results for this persistence to type.

Table 10a. Percentage of Posts with at Least One Occurrence of Type by Gender 601A

Epistolary	Female n=4		Male n=19		Difference in %	
	#	%	#	%	Male Exceed	Female Exceed
1a	5	9	19	4		5
1b	1	2	24	5	3	
2b	10	17	77	17	0	0
3	2	3	18	4	1	
4	14	24	92	20		4

Expository	Female		Male		Difference in %	
	#	%	#	%	Male Exceed	Female Exceed
2a	11	19	123	27	8	
5a	6	10	31	7		3
5b	9	16	77	16	0	0

Table 10b. Percentage of Posts with at Least One Occurrence of Type by Gender 601B

Epistolary	Female n=22		Male n=1 (Unit 1)		Difference in %	
	#	%	#	%	Male Exceed	Female Exceed
1a	24	5.5	0	0		5.5
1b	19	4	1	16.75	12.75	
2b	79	18	1	16.75		1.25
3	20	5	0	0		5
4	72	16	1	16.75	0.75	

Expository	Female		Male		Difference in %	
	#	%	#	%	Male Exceed	Female Exceed
2a	125	28.5	2	33	4.5	
5a	25	6	0	0		6
5b	76	17	1	16.75		0.25



Table 10c. Percentage of Posts with at Least One Occurrence of Type by Gender 601C

Epistolary	Female n=11		Male n=7		Difference in %	
	#	%	#	%	Male Exceed	Female Exceed
1a	3	2	8	3	1	
1b	9	5	21	7	2	
2b	43	22	53	18		4
3	11	6	10	3		3
4	44	22.5	56	19		3.5

Expository	Female		Male		Difference in %	
	#	%	#	%	Male Exceed	Female Exceed
2a	50	25.5	70	23		2
5a	6	3	26	9	6	
5b	28	14	55	18	4	

Research Question 3 and 4

How are commitment and satisfaction in conferencing activity associated with gender? Is conversational purpose associated with gender? To help answer these questions, a survey on computer conferencing activity was used. The survey was organized around three main themes, computer technology, participation, and purposes and motivations for interaction. The first section attempted to address issues surrounding competence, access, and confidence using computer technology. The second section

focused on levels of participation and influences on participation rates. The final section asked questions that related to individual experiences, purposes, and satisfaction with the conferencing experience. One open-ended question asked participants to rate and describe their satisfaction with the computer conferences in this course.

Participants completed a total of 47 surveys out of a possible 63, resulting in a return rate of 74.6%. Of this total, males completed 23 and females completed 24. .

Computer Technology. Most participants felt competent using the computer technology required to perform conferencing activities in this course. As shown in Table 11, 72% of those surveyed rated their comfort using this technology as “very much.” Two women gave a rating of only “slightly” and two men and two women stated their perceived confidence was “moderate.”

Table 11. Competence Using Computer Technology

How comfortable/competent did you feel using the computer technology required for conference participation?

Level	% Female	% Male	%Total
not at all	0	0	0
slightly	8	0	4
moderately	8	9	9
considerably	13	17	15
very much	71	74	72

As shown in Table 12, most participants rated their reliability and access to computers as very high, with 77% giving a rating of “very much.” Two females reported very low ratings of access.

Table 12. Reliability and Ease of Access to Computers

To what extent did you feel you had reliable and easy access to a computer?

Level	% Female	% Male	% Total
not at all	4	0	2
slightly	4	0	2
moderately	4	9	6
considerably	21	4	3
very much	67	87	77

The majority of participants stated that a lack of experience or confidence using computer technology was not an influence on their participation (Table 13). Seventy-five % gave a rating of “not at all”, however, a small percentage of participants, both male and female, reported that this was a determining factor in their participation. For women however, there was a larger percentage, 21%, who gave a rating of at least “moderate.” For men ratings of at least this amount accounted for only 9%.

Table 13. Influence of a Lack of Confidence Using Computer Technology on Participation

To what extent did a lack of experience or confidence with computer technology influence your participation?

Level	% Female	% Male	%Total
not at all	75	74	74
slightly	4	17	11
moderately	4	0	2
considerably	13	4.5	9
very much	4	4.5	4

Participation. Most members perceived their level of participation to be within the average range, with a few males rating participation levels at the extremes (Table 14). Most female respondents also gave ratings in the average range, although 42% stated their participation was “below average” to “very low.”

Table 14. Description of Level of Participation

How would you describe your participation in the computer conferences for this course?

Level	% Female	% Male	% Total
very low	21	4.5	13
below average	21	22	21
average	41	43	43
above average	13	26	19
very high	4	4.5	4

Participation in computer conferences was not a requirement of this course, although most participants rated the extent to which they exceeded the minimum level of participation to be within the average range. Again, a few members, male and female, rated this item at the extremes, with a higher percentage of females at the low end.

Table 15. Participation in Excess of Course Required Minimum Level

To what extent did your participation exceed the minimum level that the course required?

Level	% Female	% Male	% Total
very low	21	4.5	13
below average	21	13	17
average	37	48	43
above average	21	30	25
very high	0	4.5	2

Time constraints appeared to be a significant factor in the level of participation for students, with 68% of the respondents rating this influence as at least “considerable” (Table 16). More men (78%), rated this item as at least “considerable,” whereas only 58% of women did.

Table 16. Influence of Time Constraints on Participation

To what extent did time constraints influence your participation rate?

Level	% Female	% Male	% Total
not at all	8	0	4
slightly	17	0	9
moderately	17	22	19
considerably	21	48	34
very much	37	30	34

Cost constraints did not appear to be a significant factor in the levels of participation, with 83% reporting that this was “not at all” an influence (Table 17). A few participants gave a rating of “slightly” or “moderately,” whereas only 1 female reported that cost constraints were considerable.

Table 17. Influence of Cost Constraints on Participation

To what extent did cost constraints related to computer access influence our participation rate?

Level	% Female	% Male	% Total
not at all	79	87	83
slightly	4	9	6
moderately	13	4	9
considerably	4	0	2
very much	0	0	0



Constraints related to server difficulties did not appear to be a factor for most participants that influenced participation. As shown in Table 18, 83% of all members stated this was “not at all” an influence, however, a few female members did state that this factor was at least a “considerable” influence for them.

Table 18. Influence of Difficulties with Internet Service Provider on Participation

To what extent did constraints related to computer access as a result of difficulties with your server influence your participation rate?

Level	% Female	% Male	% Total
not at all	71	87	79
slightly	17	9	13
moderately	4	4	4
considerably	4	0	2
very much	4	0	2

For the majority of participants, access difficulties were not an influence on their rate of participation (Table 19). A few women however, did report that this was “very much” a factor.

Table 19. Influence of Other Computer Access Related Difficulties on Participation

To what extent did other access difficulties related to your computer influence your participation rate?

Level	% Female	% Male	% Total
not at all	58	78	68
slightly	13	9	11
moderately	8	9	8.5
considerably	4	4	4
very much	17	0	8.5

A lack of confidence with the subject matter did not appear to be an influence on participation for the majority of participants. As shown in Table 20, 64% rated this item as “not at all” or “slightly” an influence. For 23% of members, a “moderate” rating was given, and for 13% this was at least a “considerable” influence. More women rated this item as “not at all” an influence with 42 % giving this rating as opposed to only 26% of men.

Table 20. Influence of a Lack of Confidence with Subject Matter on Participation

To what extent did a lack of confidence with subject matter influence your participation?

Level	% Female	% Male	%Total
not at all	42	26	34
slightly	29	30.5	30
moderately	21	26	23
considerably	8	13	11
very much	0	4.5	2

Whether participation rates were influenced by a perception of certain participants dominating the discussion showed varied responses from participants. The majority however, 66%, felt that this was only “slightly” or “not at all” an issue (Table 21). For the remaining 34%, this item was at least a “moderate” influence. For men, this factor was a greater influence than for women with 64% giving a rating of at least “considerable.” For women reports of this level accounted for only 20.5% of the total.

Table 21. Influence of Others Dominating Discussion on Participation

To what extent did feelings that others were dominating the discussion influence your participation?

Level	% Female	% Male	% Total
not at all	50	39	45
slightly	12.5	30	21
moderately	17	4	11
considerably	12.5	23	17
very much	8	41	6

Purposes and Motivations for Interaction. The following seven survey items related to purposes and motivations for interaction showed responses within the average

range for both men and women. A few participants however rated these items at the extremes. These items addressed issues surrounding whether collaborations were helpful in creating new perspectives, issues surrounding membership, and acknowledgment and commitment to the group, and whether these conferences fostered in-depth discussion and opportunities to clarify ideas.

As shown in Table 22, 17% of women reported that collaborations with others resulted in new perspectives at the highest level, while none of the males gave a rating higher than “considerable.” Male ratings of at least “considerable” however were 43.5% as opposed to 38% of female ratings.

Table 22. Collaboration with Others to Create New Understandings

I collaborated with other participants in the forum that resulted in new perspectives and a better understanding.

Level	% Female	% Male	% Total
not at all	0	0	0
slightly	33	26	30
moderately	29	30.5	30
considerably	21	43.5	32
very much	17	0	8

A small percentage of males and females considered their sense of belonging to the group to be at the extremes, although within these extremes there was a higher number of females (Table 23).

Table 23. Perception of Membership in the Group

I felt I was a member of the group.

Level	% Female	% Male	%Total
not at all	8.5	4.5	6.5
slightly	21	26	23.5
moderately	33.25	30.5	32
considerably	33.25	39	36
very much	4	0	2

Fairly similar ratings were given by the males and females on their view of the acknowledgment of their contributions (Table 24). Most ratings fell within the average range, with a small number who gave ratings at the extremes. Within these extremes however, there was a larger proportion of women.

Table 24. Acknowledgment of My Contributions

The other participants acknowledged my contributions to the discussion.

Level	% Female	% Male	% Total
not at all	4	0	2
slightly	8	14	11
moderately	42	50	45
considerably	33	32	33
very much	13	4	9

More women reported high levels of commitment to other participants that led to deeper understandings, with 13% of women rating this item as “very much” a factor, while only 4% of men gave this rating (Table 25).

Table 25. Commitment with Others to work Toward a Deeper Understanding of Issues

I felt committed with other online participants to work together in order to acquire deeper understandings of the issues.

Level	% Female	% Male	% Total
not at all	8	9	8
slightly	29	22	26
moderately	29	39	34
considerably	21	26	24
very much	13	4	8



The question of whether the online forum provided an opportunity for in-depth discussion received mixed results. For women, 37% rated this opportunity as “slight” or “not at all”, and for 55% it was rated as at least “considerable.” For men 41% gave a “moderate” rating, as opposed to only 8% of women.

Table 26. Opportunity for In-depth Discussion

The online forum provided opportunity for in depth discussion.

Level	% Female	% Male	% Total
not at all	4	4.5	4
slightly	33	23	28
moderately	8	41	24
considerably	42	27	35
very much	13	4.5	9

Clarifying ideas by sharing them online also showed marked variability. The overall ratings however indicated that for men, sharing ideas was a more significant factor in clarification than for women. The majority, 54%, of women gave this a “moderate” rating, and 17 % gave a rating above this. For men, 30.5% gave a “moderate” rating and 39.5% gave a rating of at least “considerable.”

Table 27. Clarification of Ideas Through Sharing

I clarified my ideas by sharing them.

Level	% Female	% Male	% Total
not at all	4	13	9
slightly	25	17	21
moderately	54	30.5	43
considerably	13	30.5	21
very much	4	9	6

Clarifying ideas by reading comments made by other participants showed similar ratings, although for women they were slightly higher. Eighty-seven % of women gave a rating of at least “considerable,” while only 79% of men gave similar ratings.

Table 28. Clarification of Ideas Through Reading Comments by Others

I clarified my ideas by reading other participants comments.

Level	% Female	% Male	%Total
not at all	0	4	2
slightly	13	17	15
moderately	33	35	34
considerably	37	35	36
very much	17	9	13

Most participants, both male and female, gave high ratings for the educational value of the online interactions with 87% of women and 78% of men giving a rating of at least “average.” For men, a higher percentage of ratings were given above the average range than for women.

Table 29. Educational Value of Interactions

How highly would you rate the educational value of the online interactions in computer conferences?

Level	% Female	% Male	% Total
very low	0	9	4
below average	13	13	13
average	33	13	23.5
above average	25	48	36
very high	29	17	23.5

In terms of purpose, reporting information was reported as “moderate” by close to one half of female respondents, with 38% giving a higher rating. For men, reports on this item varied considerably. Forty-eight % gave a rating of at least “considerable” (10% higher than ratings of women) although a significant number, 33% reported this was only “slightly” a purpose.

Table 30. Purpose of Reporting Information

Was the reporting of information in the conferences an important purpose for you?

Level	% Female	% Male	% Total
not at all	8	9.5	9
slightly	8	33	20
moderately	46	9.5	29
considerably	21	43	31
very much	17	5	11

As a purpose, promoting and maintaining relationships was not seen as significant for 59% of men who rated this item as “not at all” or “slightly” a factor. Forty-two % of women gave similar ratings, although 25% of female respondents did consider this purpose as at least “considerable.”

Table 31. Purpose of Promoting and Maintaining Relationships with Others

Was promoting and maintaining relationships with others through conferencing activity an important purpose for you?

Level	% Female	% Male	% Total
not at all	29	32	30
slightly	13	27	20
moderately	33	23	28
considerably	21	18	20
very much	4	0	2

Most respondents reported within the average range when asked whether computer conferencing assisted with the achievement of learning objectives. At the extremes, women outranked men on the perception of “very much,” with 17% compared to the male value of 8 %. At the low end, men outnumbered women with a 13% total given for “not at all” opposed to the 8% reported by women.

Table 32. Achievement of Learning Objectives

To what extent did the computer conferencing help you to achieve your learning objectives?

Level	% Female	% Male	%Total
not at all	8	13	11
slightly	33	22	28
moderately	25	22	23
considerably	17	35	25
very much	17	8	13

Ratings of overall satisfaction with computer conferencing activity showed much variability. For women, the percentages above and below the “moderate” ranking were almost identical. For the male respondents, there was also much variability reported, although overall men gave slightly higher scores, with 74% ranking this item as at least “moderate,” while only 62.5% of women did.

Table 33. Satisfaction with Computer Conferencing

Overall, how would you rate your satisfaction with the computer conferencing for this course?

Level	% Female	% Male	% Total
not at all	21	18	19
slightly	16.5	8	13
moderately	25	39	32
considerably	21	22	21
very much	16.5	13	15

The open-ended question asked respondents to describe their satisfaction with the conferencing experience for this course. Comments and reports of satisfaction with computer conferencing in this course showed marked variability for both men and



women. A common theme that emerged for many participants, however, was that of time constraints and its influence on participation. Because participation in this course was voluntary, many chose to participate very minimally. In addition, the time required to stay abreast of discussions and to contribute thoughtfully was seen as an onerous task that became a low priority given the lack of mark value.

For women, a common theme was the lack of facilitation by the instructor. For some, this led to a perception that discussions lacked focus and depth, and as a result participation rates waned. Some female respondents reported that a lack of moderation led to discussions that strayed from the original topic, thus did not allow for full exploration. One participant in the predominantly female group identified a problem with a few class members who had established themselves as “dominant.” These behaviors were described as follows: “They were first with everything, they were aggressive with promoting ideas and at times exhibited displeasure with the ideas of some people who gave opposing ideas.” One other female member from this section also expressed frustration with other members who monopolized the discussion, which resulted in a setback in attaining personal learning objectives and led to a loss of interest in the conferencing activity. Some women, however, found the computer conferencing to be a positive learning experience that allowed for the clarification of ideas, and provided a non-threatening forum for asking questions. A few also commented that the interactions with others helped them to stay motivated, and that it decreased their sense of isolation.

For the men who responded to the survey, there was also significant variability in reported satisfaction with the conferencing activity. For some, lack of participation was influenced by the “lack of stimulating or engaging discussions.” For one individual, a

lack of practical application led to low participation rates. One common theme that emerged involved a sense of frustration with messages that were too lengthy as they inhibited the free flow of ideas. Some participants did not read these long messages, and one male respondent described the members who contributed frequently as “screen hogs.” It was suggested that the discussion in 601A, the predominantly male group, was dominated by one active individual who covered so much material in his messages that further comments were deemed unnecessary. For one individual in this section, there was a perception that the tenor of the discussions suggested that it would be impolite to disagree with others. Another theme that materialized was a sense of frustration with the organization of the discussion board, and the inability to discern which postings had already been read. One male identified a feeling of inadequacy given the obvious technical skill of others in the network as displayed by their ability to link to and create websites, and do html coding within a post. This participant stated that “I couldn’t compete, and didn’t have the time to learn, so I didn’t try.” Overall, more positive remarks were made by women. A few men, however, gave positive reports stating that the conferencing activity provided a useful foundation for examining thoughts, connecting ideas of others, and gaining new insights. Of the 47 surveys completed, 10 women gave some positive comments about the conferencing activity compared to only 5 of the men. For women, six of the positive comments came from the predominantly female group, three came from the gender balanced group, and one came from the predominantly male group. For men, two positive responses came from each of the two groups that were predominantly male and gender balanced, with one from the predominantly female group.

## CHAPTER V

### DISCUSSION

#### Introduction

Results for the TAT analysis and survey items speak to the questions of whether styles of preferred discourse, based on gender, are evident, whether they provide equitable opportunities for interaction, and whether gender is associated with satisfaction and commitment to online communications.

#### Gender and Participation

How is participation associated with gender? Research on rates and patterns of interaction in CMC as they relate to gender have yielded inconsistent results. Many studies (Herring, 1994, 2000; Ferris, 1996; Savicki et al., 1996; and Barrett & Lally, 1999) have reported higher participation rates for males. Herring's (1992) study also indicated that the contributions made by men were on average twice as long as those of women, and that men typically control topics of discussion, while contributions made by women are more likely to be ignored (Herring, 1994; Ferris, 1996). These assertions of male dominance in CMC were not supported in studies completed by Fahy (2002), where examinations of computer conferencing activity in a graduate course showed relatively equal participation rates for males and females. Although the difference in context of these studies must be considered, for Fahy's study explored a moderated CMC environment, as opposed to the unmoderated "mardi gras" of the listservs studied in

previous research by Herring, 1994, 2000; Ferris, 1996; Savicki et al., 1996; and Barrett & Lally, 1999

In this study, measurements to assess the nature of participation included network size, density, and intensity. The density values for all three groups were relatively small, although the amount of interaction was most likely influenced by the voluntary nature of conference participation. The participation rates based on gender showed higher levels of participation for males. Although the total number of postings was relatively equal (210 for women, 216 for men), the women represented 58% of the total population, therefore, there were comparatively fewer postings made by women than by men.

Interestingly, the female participation appeared to vary with the gender composition of the groups. The predominantly female group, 601B, had 59% of the total female population, however this group accounted for 66% of all the messages sent by women. The participation levels for women in the other two groups showed lower participation rates for women than the expected rate for their given proportions. In 601A (the predominantly male group), women made 15 postings, approximately 10% of the total number, although they represented 17% of the population. In 601C (the gender balanced group), women made 40% of the postings and their representation was 60% of the population.

The postings made by men on average were longer than those made by women. Males posted a total of 4942 lines while women posted a total of 3378 lines. Overall, the average number of lines per message for men was 23 lines, compared to 16 per posting for women. It should be noted, however, that the average number of lines posted in 601A Unit 3 was 33 for women. In Unit 3 of this predominantly male group, however, women

made only four postings, and one message was 55 lines in length, which contributed to 42 % of the total number of lines sent by women in this conference. Interestingly, the average number of lines per message was highest for the women in the predominantly male group.

The mean length of messages, although longer for males than females, did not approach the proportions found by Barrett & Lally (1999) and Herring (1992), who found that the messages sent by men were almost twice as long as those sent by women.

The S:R ratios showed extreme variability of both males and females in all three groups. Overall the average S:R ratio for men was 0.87 and 0.78 for women, indicating that, for each message sent, men and women both received just over one in return, with a slightly higher number received by women. Interestingly, the two lowest S:R ratios were for the “token” members amongst the dominant groups, namely for the females in 601A (S:R = 0.63) and for the male in 601B (S:R = 0.3). These values indicate that these “token” members received greater numbers of responses for each one sent than for individuals who were part of the dominant groups, and for individuals interacting in networks with more balanced ratios.

The examination of persistence levels showed relatively equal levels for males and females. These measurements reveal that approximately 50% of all postings were made at level 3 and beyond. A study completed by Fahy et al. (2001), revealed higher persistence levels in an online distance education graduate course, with 20% of postings that went beyond level 5, and only one third that were terminated at level 2. Because there is little comparable material published on persistence, Fahy contrasted his findings of persistence with the work done by Levin, Kim and Riel (1990). This work explored the

interactions in an unmoderated context on the “Intercultural Learning Network” (ILN), which is an electronic message system, or bulletin board. Results from this study showed much lower levels of persistence with 54% of topics terminated at the first level and only 4% that went to level 5 or beyond. Differences in levels of persistence in these two studies may have reflected the influence of group size, the ILN group was larger, or the influence of moderators on conferencing activity (Fahy et al., 2001). Participation in the course in Fahy’s study was worth 10% of the course mark, with full marks awarded with at least 14 postings made (two messages in each of seven units presented). The participants studied in the present research showed less persistence than students in the course studied by Fahy et al. (2001), although requirements for participation most probably influenced the extent to which topics were discussed and explored.

Not all indices of interaction and participation in this study appeared to be affected by gender. Amount of participation and average length of messages were higher for men, and the gender composition of the groups also appeared to be associated with the amount of participation for women. Participation rates for women in the predominantly female group were higher than the rates in the groups with different gender distributions. Intensity measures of persistence and S:R ratios, however, showed similar values for men and women.

### ”List Effects”

The study sought to determine if Herring’s “list effects” would be apparent in the moderated environment. Herring (1996) found evidence of a “list effect” in the study of two Internet mailing lists with academic foci, where women in a male-predominant list

assumed a more adversarial style than women in a female-predominant list, where norms of interaction were more aligned. She found however, that there was less evidence of a list effect for men. In fact, the men in the male predominant list showed evidence of more alignment features than those in the predominantly female list; however, the men in the female predominant list did adopt more of the attenuated features of women's speech as evidenced by hedging and questioning features. To adjust to the dominant list norms, Herring argues that minority members use style features of both genders.

Herring (1996) compared the schematic organization of messages sent on these two lists to evaluate different functional purposes, exposition or interaction. Coding the transcript content involved analysis of "macrosegments" which were functional parts of the text. Seventeen specific "macrosegments" within five functional categories were used in the analysis (Table 34).

Table 34. Herring's Coding Categories

Epistolary Convention:

Salutation

Introduction:

Preamble

Metacomment

Prospective introduction

Link to previous message

Body

Express views

Request information

Provide information

Express feelings

Suggest solution

Offer

Close

Apology

Appeal to others

Chastisement

Epistolary Conventions

Complimentary close

Signature

Postscript

(Herring, 1996, p. 86).



Discourse analysis involved chunking messages into macrosegments that would describe their features. This process has been criticized for its complexity and for its lack of discrete, and identifiable segments that would allow for replication (Fahyet al. 2001; Fahy 2002). Reports of reliability were not given in Herring's paper. Further criticisms of Herring's coding schema relate to the large number of possible codes, 17, and her use of only a small number of these in her study. Most messages included only two or three macrosegments, with a habitual use of a small number of categories, and the absence of others. This practice, Fahy (2002) argues, may suggest difficulties with this instrument, its coding categories, or its use.

To address these concerns, this study used an alternate discourse analysis tool, the TAT developed by Fahy et al. (2001). This tool produced inter-rater agreement of 71%, and intra-rater agreement of 86%. This tool has only five categories, allowing for less complicated coding discriminations amongst categories. Because the sentence is used as the basic unit of analysis, coding all parts of the transcript is also possible, for one message may contain more than one unit of meaning (Fahy et al., 2001).

The test for reliability in this study produced kappa values for intra-rater agreement that ranged from 0.79 to 0.96, indicating high consistency in coding decisions. Style differences supported findings by Herring (1996) and Fahy (2002), with women surpassing men in the overall use of epistolary sentence types, and men surpassing women in overall use of expository type. Exceptions in specific categories included higher use of horizontal type questions by men in all three sections, and a higher use of type 5a and 5b statements by women in section 601A. These differences, however, were

not significant. Identification of persistence in the use of these style conventions showed that, for all three sections, participants were inclined to persist in their predicted discourse type.

This study did not find evidence of Herring's "list effects." Although discourse followed predicted gender styles, there was no evidence of more expository conventions made by women in the predominantly male group. The predominantly female group had representation of only one male for the first conference; his contributions to this conference were not significantly different than the discourse styles of men in the other two conferencing groups.

### Commitment and Satisfaction

How are commitment and satisfaction associated with gender? In terms of satisfaction with computer conferencing, Cox et al. (2002) found that women experience greater success, involvement, commitment, and satisfaction than men. Recent research (Gunn, 2003; Pastore, 2003) has also challenged views of disadvantages for women in relation to computer use, access, literacy and confidence.

Bearing in mind the inherent limitations of the survey design, the results of this survey provided valuable and informative descriptions of one group's experiences with CMC. Of the 63 students still registered in this course after the final conference, 47 students (74.6%) completed the questionnaire. Five respondents, however, did not complete the open-ended question.

Constraints and influences on participation were seen as significant factors to consider in the assessment of commitment and satisfaction with the computer

conferencing in this course. Questions surrounding issues related to computer technology asked about participants' feelings of competency using the technology, how easy their access to this technology was, and to what extent a lack of confidence or experience influenced their participation in computer conferencing.

Somewhat more women than men reported a lack of confidence using computer technology; 21% of women cited this as an influence on participation, whereas only 9% of men reported this as an influence. For most participants, male and female alike, confidence and access to computers were rated high, and most respondents stated that a lack of confidence was not an influence on participation. Constraints related to server difficulties, or other computer related problems did not appear to be significant factors influencing participation, although these factors had a slightly higher influence for women. Gunn's (2003) and Pastore's (2003) findings indicating that women are no longer disadvantaged in terms of computer use, access, and confidence were echoed in this sample group, at least for the majority of women. For a slightly larger percentage of women than men, however, these disadvantages remain.

In relation to the amount of participation in the three computer conferences, most participants perceived their levels to be within the average range, although women reported lower rates overall. Results from the transcript analysis supported these perceptions with findings of greater participation rates for men. Time constraints were cited as a significant influence on the participation rates for both men and women. Interestingly, however, time constraints were cited as a greater influence for men. Another potential issue influencing participation included constraints related to cost, but for both men and women in this study costs did not appear to be a significant factor

influencing participation. A lack of confidence with the subject matter was more significant for males, with 43.5% who considered this at least a “moderate” influence. For women, this constraint was perceived as at least “moderate” for 29% of females. The majority of men and women did not report that having certain members dominating the discussion influenced their participation although, for 20.5% of women, and 27% of men this was at least a “considerable” influence. This issue of domination was also addressed by a few participants in the open-ended question that asked for a description of satisfaction with the computer conferencing in this course.

Survey item 15 addressed the issue of commitment to other participants in gaining deeper understandings of the issues presented in this course. While most responses for both men and women occurred within the average range, more women gave higher ratings at the high end, although ratings of at least “considerable” were similar.

Overall satisfaction with computer conferencing showed considerable variability. The rankings given by women were relatively balanced above and below the rating of “average.” Twenty-six % of men gave a rating of “below average” to “very low,” compared to 37.5% of women. Men also had a higher percentage of “average” scores, although scores for “above average” to “very high” were similar for both genders.

The open-ended question that asked respondents to describe their satisfaction with CMC was also mixed, ranging from reports that respondents were very satisfied to reports of little or no satisfaction. Interestingly, however, there were more positive statements given by women than men, although responses from the Likert question on this variable showed slightly higher satisfaction ratings for men. Of the 47 surveys completed, 10 women gave some positive comments about the conferencing activity

compared to only 5 of the men. These findings, however, must be viewed in light of certain limitations of this study, as five respondents did not answer this open-ended question. This may have led to a bias in the results as the characteristics and experiences of non-respondents may be qualitatively different than those of the respondents.

The more positive statements made by women may be evidence of more positive experiences with CMC, although this was not supported by their responses to the Likert type question on satisfaction. These more positive statements could potentially be associated with discourse style rather than actual experience. Responses to the questions on levels of participation revealed slightly higher rates for men than women, a finding that was supported by results from the transcript analysis. Answers to the lower participation rates for women in this study were not clear. For more women than men, issues surrounding computer use and access were a greater influence, and more women than men reported less acknowledgment of their postings. Transcript analysis, however, indicated that overall women had a slightly higher S:R ratio than men, thus overall they received more messages for each one sent. For men, issues related to a lack of confidence with subject matter, and the perception that certain individuals were dominating the discussion drew higher ratings than for women. The participation for women as evidenced by transcript analysis showed that for women, the gender composition of the group was associated with levels of participation. The lower participation rates for women in 601A and 601C indicated that they showed less involvement and commitment to the interactions in the group that was predominantly male and the group that had a more balanced gender distribution. These results do not coincide with the results reported

by Cox et al. (2001) that indicated women had greater satisfaction, commitment and involvement than that of men.

### Conversational Purpose

How is conversational purpose associated with gender? It has been suggested that conversational purpose is influenced by gender and that gendered ways of thinking impact upon the way in which communications are perceived and delivered (Ferris, 1996; Gay et al., 1999). Kirkup and Von Prümmer (1990) reported results that indicated that women value opportunities for interaction with other learners more than do men, and that sharing ideas and beliefs is integral to their learning (Gay et al., 1999). Ferris (1996) found evidence in online postings of PSYBER-L that the contributions made by women demonstrated a desire to maintain interaction, while those of men demonstrated an intent to establish control. These purposive differences were inferred from the conversational discourse style used by women and the expository style employed by men. Herring (2000) argues that these gendered discourse style in online communication are a result of the socialization of gender related behavior. To gain a better understanding of the issues surrounding conversational purpose and gender, survey items were explored along with data revealed from transcript analysis.

Results for the survey showed remarkable variability in questions related to purpose and motivation. Both men and women gave fairly similar responses about their collaborations with other participants in order to gain better understandings of the issues presented. And, as members of the group, both men and women perceived their sense of belonging and acknowledgment to be within the average range, although women gave

more ratings at the extremes. When asked if the online conference provided a forum for in-depth discussion, men gave a slightly higher rating for the significance of clarifying ideas through sharing them. This finding lends some support to Herring's (1996) notion that, in terms of purpose, males are more concerned with reporting information.

Woman gave slightly higher ratings than men when asked if reading the comments of others helped them to clarify ideas and whether or not CMC assisted them with the achievement of their learning objectives. The men, however, gave slightly higher ratings for the educational value of these online interactions; 65% of the men gave ratings of "above average" or higher compared to only 54% of the women. Overall however, results from this survey did not support findings to support arguments that women hold more positive attitudes in general about the value of peer communication (Gay et al., 1999),

Respondents were asked in item 20 whether the purpose of reporting information in online interactions was important. Most women gave a high rating on this item, with only 16% reporting a rating of "slight" to "not at all." For men, the reports did not show much consistency. A higher percentage of men than women gave high ratings of at least "considerable," although they also outnumbered women in reports of the two lowest ratings. As a purpose, promoting and maintaining relationships was perceived as more significant for women than for men.

Although, as a purpose the reporting of information for males was not seen as more significant for males than for females, the transcript analysis for these conferences did support claims of gendered communication styles. Women exceeded men in overall use of epistolary type sentences, and men exceeded women in the use of expository type

sentences. Measures of persistence in the use of these styles also showed that men and women in these conferences persisted in the use of these style conventions. These findings support Herring's (1996) argument that the orientation of communication is gendered, and Ferris' (1996) observation that female contributions stem from a desire to maintain interaction, with those of men stem from the desire to establish control. Ferris argued that this phenomenon was evidenced by the predicted epistolary and expository type conventions portrayed by men and women. For women also, the survey supported the female purpose of maintaining interaction, with higher ratings given for the significance of this purpose.




## CHAPTER VI

### CONCLUSIONS AND RECOMMENDATIONS

#### Results

Gendered style differences in communications are an important consideration in the exploration of interactions online; nonetheless, the research reported here does not indicate that one style of communication is inherently better than another. Rather, the effective use of a particular discourse style is dependent upon the context and circumstances of the interaction (Fahy 2002). In this study, the two communication styles, expository and epistolary, appeared to blend well; however, participation rates and self-reports of satisfaction with the conferencing activity were less than favorable.

Participation Rates. The participation rates appeared to be influenced by the voluntary nature of the conferencing activity, and the time constraints reported by many participants. The overall higher participation rate for males, however, was an unexpected finding that was not sufficiently explained in the survey items. Constraints that influenced participation were evident for both males and females, and reports of satisfaction were not significantly different. Also, participation for women appeared to be associated with the gender composition of the group, with participation rates for women in the predominantly female group exceeding those of women in the other two groups. Possible explanations for this finding may suggest that there was some measure of male dominance in the interactions, although this was not supported by studies completed by Fahy (2002), and Fahy et al. (2001), in similar moderated contexts. The online interactions explored by Fahy, however, did involve a course requirement for

participation that was worth 10% of the final mark, and resulted in relatively equal participation rates based on gender. Von Prümmer & Rossie (2001) argue that gender influences how students approach the computer. Their surveys reveal that women experienced greater time constraints as a result of multiple commitments, which led them to view technology as a tool, whereas men spent more time working with or playing with the computer. This finding suggests that the voluntary nature of participation in this study, along with gendered approaches to technology, may then have led to the overall lower participation rates seen here for women. Coupled  with the issues of time constraints and gendered approaches to technology, this finding may have also been influenced by the topics explored. Herring (1992) reported that participation rates for men and women varied according to topic discussions. In this study, topics explored in the predominantly male group and the gender-balanced group may not have garnered as much female interest, thus did not elicit as much female participation.

“Token Effect”. The token populations, those minority female and male participants who were part of a network with a skewed or tilted distribution of gender, appeared to attract a lot of attention. The two token groups received significantly more messages for each one sent than did members who were part of the dominant or gender balanced populations. This “token effect” was an unexpected result that supports Kanter’s (1977) argument that the numerical distributions of gender influence social interactions. This effect may have been a result of their visibility within the group, along with the desire by other network members to acknowledge and encourage the participation of minority members that perhaps stemmed from efforts to create and sustain positive social interactions within the network.

“List Effect”. There was no evidence of a “list effect” found in the interactions for this study, although purposive and style differences based on gender were identified. These results raise the need for further study of CMC in educational contexts that may help to resolve some of the apparent paradoxes found.

### Implications for Good Practice

Results of this study highlight a number of implications for good practice of CMC in educational contexts.

One implication concerns the issue of awarding marks for participation. Given the less than desirable participation rates in this study, as compared to those found by Fahy (2002), and Fahy et al.(2001) in a similar context but with the difference that marks were awarded for participation, the voluntary nature of participation should be considered. Educators should be aware that lower rates of interaction are likely given this condition. Mark value for conference participation would encourage sustained rates of interaction and would convey to participants the importance of the interaction in achieving learning goals.

A second implication concerns moderator behavior. Moderator activity and presence in the network interactions appears also to be of great consequence to the ensuing discussions. For some participants in this study, a perceived lack of moderator presence led to decreased participation rates and motivation for interaction.

A third implication concerns the networks that develop amongst participants in online conferences. For instructors who are moderating computer conferencing activities online, an understanding of social networks and the influences on their development would also

aid in the facilitation process. Network influences like density and intensity are important indicators of the connectedness of the network, which can also provide useful information to enhancing the equality of interactions and the social health of the network. For instance, measures of density which indicate the number of linkages made, of the total number possible, and intensity, which is a measure of the connectedness of the network, speak to how balanced and equitable the interactions are. Attention to these values would allow moderators to identify individuals who are participating very minimally, or whose S:R values indicate that they are sending messages but are not receiving acknowledgement or response from others. To increase the interactiveness of the network, it would be more important for instructors to respond to those individuals who are not acknowledged by others, or who are participating very minimally.

A final implication concerns the impact of gender on communication styles. This study has supported previous findings of gendered style differences in communication. Although, the communicative intent may be the same for men and women, style differences in the content of messages may influence the interactions that happen. Use of a more epistolary style, for instance, invites and attempts to sustain interactions. This suggests that using features of an epistolary style would encourage greater participation and persistence in topic development. For example, the use of type 1b, horizontal questions, where there may not be a correct answer, would be an invitation to participants to pursue possible answers. This type of question, however, would certainly create more discussion than a type 1a vertical question that is also classified as an epistolary statement, or other expository type statements. Other sentence types that would help

encourage sustained interactions and discussions include, type 2b, referential statements, and type 4, scaffolding and engaging statements.

### Suggestions for Further Research

Finally, the findings in this study raise important questions that are in need of further investigation. These include the following:

- Would the interaction patterns and satisfaction with conferencing activity differ if marks were awarded for participation?
- What effect does moderator presence have on participation and satisfaction?
- Does the amount and type of moderator activity produce different learning outcomes?
- What influence do different gender compositions within groups have on learning outcomes, satisfaction, and participation? Is this different for males and females? And beyond gender, what other factors influence communication style?
- Under what conditions would a “token effect” be apparent?
- What influence would participants’ decisions to make use of epistolary style conventions in online discussions have on the interactions that occur and on the satisfaction with the online experience?

Study of the influence of dominant behaviour in online activity, and further explorations of participant experiences in CMC also require investigation. The hope is that the issues this study has raised for consideration both for those designing and moderating online courses, and for researchers interested in the dynamics of online interactions in moderated course discussions, will support and prompt further exploration and

improvement of computer conferences as a supportive climate for learning through interaction.

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## APPENDIX A

### TAT

## The Athabasca University CDE *Text Analysis Tool (TAT)*

Patrick J. Fahy, Ph.D.  
Athabasca University  
Centre for Distance Education (CDE)

July 13, 2004

The TAT coding categories (based on Zhu, 1996\*) are as follows:

- 1 Questioning (type 1A, *vertical*; type 1B, *horizontal*)
- 2 Statements (type 2A, *non-referential*; type 2B, *referential*)
- 3 Reflections
- 4 Scaffolding/engaging
- 5 Quotations/citations (type 5A, *quotations* and *paraphrases*; type 5B, *citations*)

### 1 **Questions:**

**1A - vertical questions:** there is a “correct” answer, and the question can be answered if the person with the right answer can be found.

**1B - horizontal questions:** there may not be a correct answer or solution; thus, others are invited to help provide a plausible or alternate “answer,” or to help shed light on the question.

### 2 **Statements:**

**2A (non-referential)** - contain little self-revelation and usually do not invite response or dialogue. The main intent is to impart facts or information. The speaker may take a matter-of-fact, a didactic, or even a pedantic stance in providing information or correction to an audience which he or she appears to

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\* Zhu, E. (1996). Meaning negotiation, knowledge construction, and mentoring in a distance learning course. In *Proceedings of Selected Research and Development Presentations at the 1996 National Convention of the Association for Educational Communications and Technology* (18th, Indianapolis, IN). Available from ERIC documents: ED397849.

assume is uninformed, in error, or in need of information or correction. 2A *statements* may contain implicit values or beliefs, but usually these are inferred, and are not as explicit as they are in *reflections* (type 3, below).

**2B (referential)** - include direct or indirect answers to questions, or comments referring or alluding to preceding statements or ideas. 2B statements express awareness of others' thoughts and contributions, though not necessarily agreement, support or even respect (as *scaffolding/engaging* comments do). The emphasis in both types of statements is on analysis.

- 3 **Reflections (significant personal revelations):** opinions or information which are personal and are usually private. The speaker may also reveal (or hint at) personal values, beliefs, experiences, doubts, convictions, thoughts and ideas. The listener/reader receives information about some idea or opinion, as well as insight into the person expressing it. Listeners are assumed to be interested in the personal revelations; a sympathetic (or at least empathic) response is expected. The speaker is implicitly open to questions or comments (including personal ones), as well as self-revelations in turn, and other supportive responses.

*Reflections* contain hints about the personal meaning or significance of the information given, and may imply or provide some kind of judgment or conclusion about it. The tone or attitude of the writer is somehow apparent, not "just the facts."

- 4 **Scaffolding/engaging:** these comments tend to initiate, continue or acknowledge interpersonal interaction, to "warm" and personalize the discussion, and to invite engagement by being welcoming and accepting. Scaffolding/engaging comments connect or agree with, thank or otherwise recognize someone else, and encourage or recognize the helpfulness, ideas, capabilities and experience of others. Also included are comments without real substantive meaning ("phatic communion," "elevator/weather talk," salutations/greetings, closings/signatures, and emoticons). *Obvious* rhetorical questions may be included here (or as type 1 or 2B).

5 **Quotations/citations:**

- 5A: references to and quotations or fairly direct paraphrases of other sources.
- 5B: citations or attributions of quotations or paraphrases.

**Notes:**

1. While type 2A *statements* may contain elements of values or beliefs, these are not acknowledged as such by the speaker. The speaker appears to believe what he or she is revealing is true, correct, accurate and *factual*, even though it may be highly

subjective, value- or experience-based, etc. The distinction between a type 3 *reflection* and a 2A *statement* is in the context: what the speaker believes or recognizes he or she is doing governs the coding.

2. In *reflections* the speaker recognizes and acknowledges *somehow* that what he or she is saying is personal, based on personal values or beliefs, or is somehow coloured by personal experience or outlook. Often, uses of the first person indicate this stance: “I have found that...” “I’ve always thought...” The context is all important: the statement, “I have been a teacher for 10 years now” is a statement, *unless* it follows something else like, “and I’ve hated every minute of it.” *Something* about a *reflection* must add extra meaning to whatever facts it contains; otherwise, it is simply a *statement* (2A or 2B).
3. Code block or extended *quotations* or obvious *paraphrases* as “blocks” – that is, rather than coding each sentence of a quotation or paraphrase, code the whole block as one occurrence of 5A. That way, long quotes will not inflate the denominator, but may still be reviewed. Note that this practice will result in a count of the occurrence of quotations, but not their length (in number of sentences).
4. 5B can be applied to any citation, whether formal or not. Thus both APA-style citations and “As Bob said,...” may both be 5B.

## TAT Examples

### 1 *Questions - 1A (vertical):*

- “How long have you been a teacher?”
- “Who wrote *Teaching as a Subversive Activity*?”
- “Is the presenter involved in producing the script?”
- “What do you do with your questionnaire results at the end?”
- “Would I be correct in using ‘paradigm pioneer’ and ‘entrepreneur’ in the same way, or would there be differences between the two?”

### *Questions - 1B (horizontal):*

- “What makes a good teacher?”
- “What could make teaching more effective?”
- “What do these indicate about our cultural orientation to ‘technology’ (as a form of tool-making), and perhaps how this view may have changed over time?”
- “After all, what makes a technology advanced?”
- “Just because we put a course online does that mean that is all that learners can have access to, does that mean we have to forget about the great textbooks and other resources that are available?”

### 2 *Statements - 2A (non-referential):*

- “I’ve been a teacher for 30 years.”
- “Long-serving teachers have seen many changes in their profession over their careers.”
- “In my organization, strategic planning occurs in a focus group of individuals assigned to the organization and development of course material and yearly plan.”
- “We found that keeping content up-to-date, distribution and PC compatibility issues were causing a huge draw on Ed. Centre time.”
- “Both excellent and learning organizations have similar characteristics.”

### *Statements – 2B (referential):*

- “It’s interesting that you found teaching more demanding earlier in your career than you do now.”
- “I’d like to comment on the group’s apparent belief that teaching and training are similar.”
- “I suspect there is a lot of truth in your statement.”
- “[Name], this is not the only case, I’m afraid, of a technology being acquired in the assumption that a use would be found for it later.”
- “In fact, what you have defined nicely here is ‘the learning moment’.”

### 3 *Reflections (significant personal revelations):*

- “I have always found teaching hard work.”
- “Someday, I’d like to be able to see my own teaching from my students’ point of view.”
- “So, my view is that if a technology is actually better for some purpose than some another technology, it is genuinely ‘advanced’.”
- “I personally think a specific technology is only obsolete if it is no longer useful.”
- “I have often wondered – still do, in fact – why we were not successful.”

**4 Scaffolding/engaging:**

- “What would it be like to be a new teacher today, I wonder?”
- “I wondered what you meant when you said teaching had changed for you.”
- “I hope this gives a little more info. about our methods – let me know if it doesn’t.”
- “Just a reminder, for those of you who feel overburdened by the CMC requirement (you know who you are!): don’t feel you’re alone.”
- “Even as a parent and a teacher (with pretty good math skills!) I still learned some new things :-).”

**5 Quotations/citations - 5A (quotations, paraphrases):**

- “When I was young I read somewhere that ‘teaching is the noblest profession’.”
- “Maybe, as you say, we need to take the attitude that if we can’t beat the for-profit schools, we should join them.”
- “You asked, ‘What can you tell about a culture by its tools?’”
- “We are told that the medium is sometimes the message.”
- “Herbert Simon, Nobel Laureate economist, said, ‘What information consumes is rather obvious: it consumes the attention of its recipients.’”

**Quotations/citations – 5B (citations):**

- “This is how it’s put in our district’s mission statement.”
- “That’s from the section of our collective agreement on workload.”
- “J. Robert Oppenheimer, *Science and the Common Understanding*, 1953 (I think).”
- “Max Frisch, *Homo Faber*, 1957.”
- “Phillips, Jack. (1998). The return-on-investment (ROI) process: Issues and trends. *Educational Technology*, 38, 4, July-August, 7-14.”



## APPENDIX B:

### COMPUTER CONFERENCE SURVEY

Please select one response that best describes your experiences in the computer conferences for your course, by placing an X in the space provided. Please return your completed survey via e-mail. Thank you for your participation.

#### COMPUTER TECHNOLOGY

1. How comfortable/competent did you feel using the computer technology required for conference participation?

not at all  
 slightly  
 moderately  
 considerably  
 very much

2. To what extent did you feel you had reliable and easy access to a computer?

not at all  
 slightly  
 moderately  
 considerably  
 very much

3. To what extent did a lack of experience or confidence with computer technology influence your participation?

- \_\_\_\_\_ not at all
- \_\_\_\_\_ slightly
- \_\_\_\_\_ moderately
- \_\_\_\_\_ considerably
- \_\_\_\_\_ very much

**PARTICIPATION**

4. How would you describe your participation in the computer conferences for this course?

- \_\_\_\_\_ very low
- \_\_\_\_\_ below average
- \_\_\_\_\_ average
- \_\_\_\_\_ above average
- \_\_\_\_\_ very high

5. To what extent did your participation exceed the minimum level that the course required?

- \_\_\_\_\_very low
- \_\_\_\_\_below average
- \_\_\_\_\_average
- \_\_\_\_\_above average
- \_\_\_\_\_very high

6. To what extent did time constraints influence your participation rate?

- \_\_\_\_\_ not at all
- \_\_\_\_\_slightly
- \_\_\_\_\_moderately
- \_\_\_\_\_considerably
- \_\_\_\_\_very much

7. To what extent did cost constraints related to computer access influence your participation rate?

- \_\_\_\_\_ not at all
- \_\_\_\_\_slightly
- \_\_\_\_\_moderately
- \_\_\_\_\_considerably
- \_\_\_\_\_very much

8. To what extent did constraints related to computer access as a result of difficulties with your server influence your participation rate?

- \_\_\_\_\_ not at all
- \_\_\_\_\_ slightly
- \_\_\_\_\_ moderately
- \_\_\_\_\_ considerably
- \_\_\_\_\_ very much

9. To what extent did other access difficulties related to your computer influence your participation rate?

- \_\_\_\_\_ not at all
- \_\_\_\_\_ slightly
- \_\_\_\_\_ moderately
- \_\_\_\_\_ considerably
- \_\_\_\_\_ very much

10. To what extent did a lack of confidence with subject matter influence your participation?

- not at all
- slightly
- moderately
- considerably
- very much

11. To what extent did feelings that others were dominating the discussion influence your participation?

- not at all
- slightly
- moderately
- considerably
- very much

## PUPROSES AND MOTIVATIONS FOR INTERACTION

12. I collaborated with other participants in the forum that resulted in new perspectives and a better understanding.

- \_\_\_\_\_ not at all
- \_\_\_\_\_ slightly
- \_\_\_\_\_ moderately
- \_\_\_\_\_ considerably
- \_\_\_\_\_ very much

13. I felt I was a member of the group.

- \_\_\_\_\_ not at all
- \_\_\_\_\_ slightly
- \_\_\_\_\_ moderately
- \_\_\_\_\_ considerably
- \_\_\_\_\_ very much

14. The other participants acknowledged my contributions to the discussion.

- \_\_\_\_\_ not at all
- \_\_\_\_\_ slightly
- \_\_\_\_\_ moderately
- \_\_\_\_\_ considerably
- \_\_\_\_\_ very much

15. I felt committed with other online participants to work together in order to acquire a deeper understanding of the issues.

- \_\_\_\_\_ not at all
- \_\_\_\_\_ slightly
- \_\_\_\_\_ moderately
- \_\_\_\_\_ considerably
- \_\_\_\_\_ very much

16. The online forum provided opportunity for in depth discussion.

- \_\_\_\_\_ not at all
- \_\_\_\_\_ slightly
- \_\_\_\_\_ moderately
- \_\_\_\_\_ considerably
- \_\_\_\_\_ very much

17. I clarified my ideas by sharing them

- \_\_\_\_\_ not at all
- \_\_\_\_\_ slightly
- \_\_\_\_\_ moderately
- \_\_\_\_\_ considerably
- \_\_\_\_\_ very much

18. I clarified my ideas by reading other participants comments.

\_\_\_\_\_ not at all

\_\_\_\_\_slightly

\_\_\_\_\_moderately

\_\_\_\_\_considerably

\_\_\_\_\_very much

19. How highly would you rate the educational value of the online interactions in computer conferences?

\_\_\_\_\_very low

\_\_\_\_\_below average

\_\_\_\_\_average

\_\_\_\_\_above average

\_\_\_\_\_very high

20. Was the reporting of information in the conferences an important purpose for you?

\_\_\_\_\_ not at all

\_\_\_\_\_slightly

\_\_\_\_\_moderately

\_\_\_\_\_considerably

\_\_\_\_\_very much



20. Was promoting and maintaining relationships with others through conferencing activity an important purpose for you?

\_\_\_\_\_ not at all

\_\_\_\_\_ slightly

\_\_\_\_\_ moderately

\_\_\_\_\_ considerably

\_\_\_\_\_ very much

21. To what extent did the computer conferencing help you to achieve your learning objectives?

\_\_\_\_\_ not at all

\_\_\_\_\_ slightly

\_\_\_\_\_ moderately

\_\_\_\_\_ considerably

\_\_\_\_\_ very much

22. Overall, how would you rate your satisfaction with the computer conferencing for this course?

\_\_\_\_\_very low

\_\_\_\_\_below average

\_\_\_\_\_average

\_\_\_\_\_above average

\_\_\_\_\_very high

Please Explain

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## APPENDIX C

### LETTER OF REQUEST TO COURSE INSTRUCTORS

April 1, 2003

Dear Dr. Mugridge, Dr. Shobe, & Dr. Friesen,

My name is Carmen Lawlor, and I am a student currently enrolled in the Master of Distance Education Program at Athabasca University. For my Master's thesis I am interested in conducting research about the influence of gender on the interactions that happen in computer conferencing.

Computer mediated conferencing in distance education is becoming an increasingly popular mode of program and course delivery, however, our comprehension of the interactions in this medium, and how it can best be used to enhance the learning process, are not well understood.

For investigation of this issue, I will require access to computer transcripts from the course conferences of MDDE 601. These transcripts will be analyzed for discourse styles and interaction patterns. Students from these courses will also be asked to complete a short survey that relates to their experiences and perceptions of their conference activity in this course. These students will also be informed of my intention to examine the computer transcripts from this course, and will have the option of refusing analysis of their individual postings.

Anonymity and privacy of all participants will be maintained. All identifying information, other than participant gender, will be removed from computer transcripts and completed surveys prior to my receipt of them. Specific content from these conferences will not be reported in this study. My interest in these transcripts is in the analysis of discourse style and in the interactive behavior of the students involved. Primary data will remain confidential and will be stored for a period of 5 years, as recommended by the Research Ethics Board.

Should you require further information, please contact me at my e-mail address: [sclawlor@shaw.ca](mailto:sclawlor@shaw.ca), or you may contact my Thesis Supervisor, Dr. Barbara Spronk at [bspronk@island.net](mailto:bspronk@island.net)

Thank you for your attention.

Sincerely,

Carmen Lawlor

## APPENDIX D

### LETTER OF REQUEST TO STUDENTS

April 8, 2003

Dear Student,

My name is Carmen Lawlor, and I am a student currently enrolled in the Master of Distance Education Program at Athabasca University. For my Master's thesis I am interested in conducting research about the influence of gender on the interactions that happen in computer conferencing.

Computer mediated conferencing in distance education is becoming an increasingly popular mode of program and course delivery, however, our comprehension of the interactions in this medium, and how it can best be used to enhance the learning process, are not well understood. To gain a better understanding of how gender influences interactions in computer conferences, an exploration of those learners involved in the process is critical.

As a student involved in these computer conferences, I would like to request the opportunity to share in your perceptions and experiences with this online activity. Your participation would involve the completion of the short survey that is attached to this letter. This survey should take approximately 15 minutes to complete. In addition, the computer transcripts for the course MDDE 601 will be analyzed for discourse style and

interaction patterns. Your participation in this study is voluntary. I assure you that your privacy and the confidentiality of all information will be maintained throughout this study, and in the reporting of data. All identifying information, other than participant gender, will be removed from the computer transcripts and survey questionnaires prior to my receipt of them. Primary data will remain confidential and will be stored for a period of 5 years, as recommended by the Research Ethics Board.

Your participation is important to the success of this study, and to the production of new knowledge that would create a better understanding of the nature of the interactions in computer mediated communication as they relate to gender. Your cooperation and assistance is greatly appreciated.

Should you desire further information, or results from this completed study, please do not hesitate to ask. You may contact me at my e-mail address: [sclawlor@shaw.ca](mailto:sclawlor@shaw.ca), or you may contact my Thesis Supervisor, Dr. Barbara Spronk at [bspronk@island.net](mailto:bspronk@island.net)

Thank you for your attention.

Sincerely,

Carmen Lawlor

