THE EFFECTS OF POLITENESS IN SHAPING DISCOURSE IN ONLINE DEBATES

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ABSTRACT

Computer-supported collaborative argumentation is an online activity that can engage students in deep discussion and analysis of complex problems. Given the potentially confrontational nature of argumentation, using polite language becomes a strategic approach to prevent breakdowns in group communication and nurture productive dialogues. This study aims to understand how politeness and argumentation moves influence subsequent conversation dynamics in online debates. Student postings in threaded discussions (from 20 online debates containing 2,008 messages posted by students across five semesters of a graduate-level course on distance education) were coded and scored on politeness and impoliteness using natural language processing software. The scored postings were examined to determine how impoliteness and politeness impact students' proclivity to engage in and produce more sustained argumentative exchanges to evaluate presented claims thoroughly. The findings from this study reveal the possible effects of specific behaviors on how students engage in argumentation and provide guidance on what behavioral standards to emphasize when students participate in group debates. Moreover, the findings lay the groundwork for establishing behavioral standards with clearer definitions of specific linguistic markers. Future iterations of netiquette guidelines can draw upon the findings from this study and future studies to furnish students with concrete examples that illustrate the practical application of each behavioral norm.

KEYWORDS

Computer-Mediated Communication, Argumentation, Politeness, Critical Thinking, Interaction Analysis

1. INTRODUCTION

Online group discussion is a fundamental instructional strategy in online learning, providing opportunities for students to interact with course content, peers, and instructors and helping increase student engagement. These discussions are primarily asynchronous, allowing for virtual participation and fostering collaborative learning that adds a rich dimension to the learning experience. Online discussions promote learner interaction, supplement content delivery, offer opportunities to apply the knowledge practically and meaningfully, and provide opportunities for in-depth, thoughtful reflection and responses. Most of all, online discussions can enhance cognitive and exploratory learning, empower students, and promote active engagement with course content. Overall, online discussions can play a crucial role in facilitating a sense of community and promoting critical thinking to help increase the depth of learning and understanding in online courses. Critical thinking is a process of purposeful, self-regulatory judgment that involves interpreting, analyzing, evaluating, and reasoning about information and ideas in a reflective and systematic manner. Critical thinking is essential in online learning as it enables students to engage with course content deeply and meaningfully, leading to a more thorough understanding of the material. It also fosters the development of essential skills such as problem-solving, decision-making, and effective communication, which are highly valuable in academic and professional contexts. Moreover, critical thinking encourages students to question assumptions, consider alternative perspectives, and make well-informed judgments, ultimately leading to a more enriching and intellectually stimulating learning experience.

One type of discussion activity where students engage in critical thinking and defend their reasoning is group debates. In group debates, students engage in dialogue with others to construct, evaluate, and justify claims based on evidence and reasoning, plays a crucial role in supporting student learning in online courses (Chen, Zhai, Zhu, and Li, 2022; Rapanta & Felton, 2022). Research has shown that collaborative argumentation can foster critical thinking, creativity, communication, and problem-solving skills, which are essential for online learning environments (Asterhan & Schwarz, 2016; Baker, Andriessen, & Schwarz, 2019). However, collaborative argumentation can also pose some challenges, such as managing social conflicts (Chiu et al., 2021; Chiu & Khoo, 2003; Li et al., 2023) and other less desired social behaviors. Social conflicts in online discussions can disrupt effective communication and create socially polarized environments, impacting the quality of dialogue and collaboration (Chiu & Koo, 2003; Lu, Chiu, & Law, 2010).

To foster an environment where students feel safe to engage critically with one another, guidelines for online conduct, known as netiquette, can be invaluable (McMurdo, 1995; Scheuermann & Taylor, 1997). Netiquette sets forth accepted norms of behavior, stressing the importance of maintaining respect, courtesy, and professionalism, while discouraging personal attacks and disruptive behavior. Adhering to these standards, such as acknowledging others, speaking kindly, respecting differing opinions, refraining from personal inquiries, offering sincere apologies, and being considerate, can significantly reduce the likelihood of misunderstandings, conflicts, and disruptions during online discussions (Mistretta, 2021). However, prior research on the impact of applying netiquette in online discussion is limited by their differing definitions of netiquette (and specific behavioral standards) and methods used to measure its impact on discussions (Soler-Costa, Lafarga-Ostáriz, Mauri-Medrano, and Moreno-Guerrero, 2021). Danescu-Niculescu-Mizil et al. (2013) identified specific behaviors that are perceived to be polite (e.g., expressing gratitude, deference, greetings, apologizing) while also identifying the specific behaviors that can be perceived to be impolite (e.g., asking a direct question, stating things as a matter of fact, and directing a statement to another starting with the “you”).

Developing clearer netiquette guidelines requires a closer examination of how specific polite and impolite linguistic markers impact the emergence and management of social conflicts in online discussions (Levy et al., 2022). Politeness theory (Brown & Levinson, 1987) characterizes "face" as the positive social value individuals claim for themselves, encompassing interpersonal needs such as appreciation, belonging, and autonomy. In small group discussions, students face threats by critiquing peers' contributions, admitting their own mistakes, or suggesting specific behaviors, all considered face-threatening acts (Brummernhenrich et al., 2021). Face threats can impede productive discussions, but individuals often mitigate them using politeness strategies, such as hedging contributions, indirect speech, or solidarity markers (Brown & Levinson, 1987; Holtgraves, 1997). Prior studies that politeness strategies can facilitate smooth communication, maintain relationships, and reduce interpersonal friction in group discussions (Chiu, Oh, Kim, & Cionea, 2022; Holtgraves, 1997). Holtgraves (1997) described linguistic mechanisms people use when engaging in disagreements with one another, highlighting the use of positive politeness in conversation arguments. However, they also highlight potential drawbacks, such as inhibiting critical feedback and fostering superficial communication. In online debates, polite disagreement tactics can influence democratic discussions (Chiu, Oh, Kim, & Cionea, 2022).

Deeper investigations into the role of politeness strategies can be conducted using natural language processing (NLP) tools (Chang et al., 2020). NLP techniques can be used to analyze the types of language students produce in online debates that are perceived to be impolite, identify patterns of impolite language use, detect emotional intensity changes over a conversation, and predict conflict based on user characteristics and conversational dynamics. For example, the Convokit:politeness tool in the ConvoKit open-source toolkit was developed to enable more researchers to apply natural language processing to analyze conversations and the social interactions embedded within conversations (Chang et al., 2020). The tool has been used in research on politeness to study the use of politeness strategies in conversations, including online discussions. One of the findings from the research is that the tool can be applied to understand the use of politeness strategies in conversations that have gone awry on platforms such as Wikipedia. The tool provides a framework for characterizing utterances and terms based on their expected politeness, allowing for analyzing politeness and impoliteness in conversational data.

The purpose of this study was to use the Convokit politeness tool to identify the potential impact of contextual factors, such as the use of politeness across different types of dialog moves in online debates and how politeness and impoliteness in one dialog move influence subsequent dialog within conversational threads as students participate in argumentation. As a result, the following research questions were addressed in this study:

(1) Which polite and impolite linguistic markers are used in students' online debates? Where and when do they occur in dialog moves and discussion threads?
(2) How do polite and impolite markers in specific dialog moves impact the way the opposition responds to the dialog move?
(3) When a student's argument is challenged by the opposition, how do polite and impolite markers in the challenge impact how to what extent the student responds to the challenge in the ensuing discussion thread?

2. METHOD

2.1 Participants

A total of 87 master's students (53 females and 34 males, between the ages of 20 to 50 years) enrolled in a 15-week, fully asynchronous, online course titled "Introduction to Distance Education" in a master's program at a major university in the southeastern United States from the spring of 2005 through the fall of 2007 semesters.

2.2 Procedure

Each student participated in four team debates (each one week in duration) using asynchronous threaded discussion forums in a course management system. Each debate aimed to help students critically examine design issues, concepts, and principles regarding distance learning. For each debate, students were randomly assigned to one of two to either support or oppose the assigned claim and were required to post a minimum of four posts per debate. The instructor presented Toulmin's (1958) model of argumentation to the students before and during the debates to help them identify premises (labeled ARG) to either support or oppose the given claim (warrants), present evidence (EVID) to support a premise (facts), give explanations (EXPL, backing), or pose challenges (BUT, rebuttals). Students classified each of their postings into one of the four categories by adding the corresponding label to the subject heading of each post, restricting the content of each message to address only that one category, and identified which side they were assigned to debate by prefacing each label with "-" for the opposing team or "+" for the supporting team (e.g., +ARG, ARG). Following each message tag, students added one sentence to convey the main idea presented in the message. At the end of each debate, students completed an online poll to reveal their personal conclusions and positions on the debate proposition and submitted a written explanation for their conclusions. Participation in the debates and all other class activities contributed to 20% of a student's course grade and were conducted under netiquette guidelines presented in the course syllabus. The guidelines consisted of 10 core rules of netiquette (Shea & Shea, 1994): 1) remember the human; 2) adhere to the same standards of behavior online that you follow in real life; 3) know where you are in cyberspace; 4) respect other people's time and bandwidth; 5) make yourself look good online; 6) share expert knowledge; 7) help keep flame wars under control; 8) respect other people's privacy; 9) don't abuse your power; and 10) be forgiving of other people's mistakes.

2.3 Data Preparation

In the 2,008 total messages posted in the online debates, the students' labels they assigned to their messages were downloaded to identify each message as an argument (ARG, n = 391), challenge (BUT n = 955), explanation (EXPL, n = 368), or evidence (EVID, n = 294). One debate from each course was randomly

selected and coded to test for errors in students' message labels. Based on the codes of 157 messages consisting of 42 arguments, 17 supporting evidence, 81 critiques, and 17 explanations, overall agreement between the students and the researcher's codes was 91% with excellent inter-rater reliability (Cohen's kappa = .86). The mean number of words per posting was 80 words (*SD* = 29 words).

2.4 Coding Postings on Politeness and Impoliteness

To measure the degree of politeness and impoliteness expressed in each student's posting, the Convokit:politeness software was used to automatically create variables from each student's posting. Danescu-Niculescu-Mizil et al. (2013) created this software by annotating over 10,000 requests posted by the Wikipedia editors community and by the Stack Exchange question-and-answer community. Crowdsourcing the efforts of 431 total workers on Amazon Mechanical Turk, each request was rated on level of politeness (from "very impolite" to "very polite") by five annotators. The annotators also scored each request by the discomfort or stress they experienced when reading each request (while asked to imagine themselves performing the role of an editor in Wikipedia). The Stanford Dependency Parser (de Marneffe et al., 2006) extracted the politeness markers and created a specialized set of lexicons from this annotated data. These lexicons were then used to create the Convokit:politeness software to identify words or phrases that reveal 15 forms of politeness (positive ratings) and 6 forms of impoliteness (negative ratings), summarized in Table 1. The software was used to score each posting in the debates on the 21 forms of politeness/impoliteness (as a 0 or 1) and to score each posting on the stress level exhibited in each posting.

Table 1. Debate postings scored on the following forms of politeness and impoliteness identified by the Convokit: politeness software

Markers	Politeness Rating	Example from Wikipedia*
Gratitude	0.87	I appreciate that you've done them.
Deference	0.78	Nice work so far on your rewrite.
Greeting	0.43	Hey, I just tried to…
Positive lexicon	0.12	Wow! This is a great way to deal…
Negative lexicon	-0.13	If you're going to accuse me…
Apologizing	0.36	Sorry to bother you…
Please	0.49	Could you please say more…
Please start	-0.30	Please do not remove warnings…
Indirect (btw)	0.63	By the way, where did you find…
Direct question	-0.27	What is your native language?
Direct start	-0.43	So can you retrieve it or not?
Counterfactual modal	0.47	Could/Would you…
Indicative modal	0.09	Can/Will you…
1st person start	0.12	I have just put the article…
1st person pl.	0.08	Could we find a less complex name…
1st person	0.08	It is my view that…
2nd person	0.05	But do you have in mind?
2nd person start	-0.30	You explain that…
Hedges	0.14	It might be true some of the time…
Factuality	-0.38	In fact you did link…

**Source*: Danescu-Niculescu-Mizil et al. (2013)

3. RESULTS

3.1 When Polite/Impolite Markers are used in the Debates

The most common polite markers used in the debates were positive lexicon, followed by first-person and hedges. At the same time, the remaining politeness strategies (e.g., gratitude, deference, greeting, apologies) occurred at very low frequencies overall. Among the six impolite markers examined in this study, negative lexicon and factuality were used most frequently. In contrast, the use of direct questions and direct start was used in moderate numbers. Polite markers were most frequent in challenges (about 44% times more so than in presented ARGs) among the four dialog moves, with moderate effects size (d = .28). Likewise, the presence of impolite markers was highest in challenges (about 32% times more so than in presented ARGs) among the four dialog moves, with overall effect size was small (d = .16). The frequency of polite markers was not statistically different between BUT, EXPL, and EVID. In contrast, the frequency of impolite markers was significantly higher in BUT than in EXPL and EVID. Of the 955 challenges posted in the debates, 663, or 69.5% of challenges contained impolite markers, and the remaining challenges (30.5%) possessed no impolite markers. More than half of all postings contained both polite and impolite markers, while a third contained only polite markers, with few containing only impolite markers or no markers at all.

As to when the markers appear within discussion threads, the ANOVA on the observed frequencies of all polite markers posted in thread levels 1 through 6 showed significant differences in mean number of polite markers between levels (increasing by 139% from level 1 through 6, $F(6,2001) = 61.13$ p =.000). A significant difference was also found in the mean number of impolite markers between levels 1 through 7, $F(6, 2001) = 10.39$, p = .000, increasing by as much 84% from level 1 through 7. In contrast, 0%, 1%, 0%, and 9% of all posts at thread levels 2, 3, 6, and 8 contained apologies that convey politeness. In general, the use of positive lexicon remained relatively stable from early to later posts in threads, whereas the use of negative lexicon increased in frequency at higher thread levels.

Comparing the frequency distributions of the six impolite markers across thread levels 1 through 11 produced a Chi-square test that was statistically significant, X^2 (df = 50) = 103.68, p = .0000. The use of negative lexicon, direct questions, second person, and factuality increased as discussions progressed, while the use of please start and direct starts remain largely constant from early to late in discussion threads. When comparing the frequency distributions of the 14 polite markers across thread levels 1 through 11, the Chi-square test was statistically significant, X^2 (df = 120) = 299.18, p =.0000. This finding indicates that as discussions progressed, students used progressively more gratitude, positive lexicon, 1st person starts, 1st person pl, 1st person, 2nd person, and hedges. Politeness markers that showed no change in usage from early to later in the threads (and were rarely used in students' postings) were deference, greetings, apologies, please, indirect, counterfactual, and indicative modal.

3.2 How Politeness Impact Responses to Opposing Team Posts

The Discussion Analysis Tool or DAT (Jeong, 2005a) was used to sequentially analyze (Bakeman & Gottman, 1997; Jeong, 2005b) the threaded discussions by: a) determining the frequencies and relative frequencies (or transitional probabilities) of each transition from one dialog move to another dialog move (e.g., -ARG→+BUT, +BUT→-EXPL); b) applying z-score tests (critical p-value at .05) to determine if each observed probability was significantly higher than the expected probability based on chance alone; and c) creating transitional state diagrams to reveal and compare response patterns that emerged from posts with versus without polite and impolite linguistic markers. The transitional state diagrams showed that the way the opposition replied to posts with polite markers only (P) vs. impolite markers only (I) vs. with both polite and impolite markers (B) were largely similar. Overall, the response patterns to posts with P and to posts with B were nearly identical. Three notable differences in response patterns can be found when comparing the behavior patterns between the four state diagrams. For example, arguments posted with P, I, and B were more likely to elicit challenges from the opposition while arguments with N were less likely to elicit challenges (BUT) from the opposition (and in turn) are more likely to elicit counterevidence from the opposition. Challenges (BUT) with N were more likely to elicit counterchallenges from the opposition than

challenges with P, I, and B. Evidence presented with I was more likely to elicit no responses from the opposition than evidence presented with P, B, and N.

3.3 How Students Respond to Challenges Presented with Polite & Impolite Markers

The correlation between the number of polite and impolite markers in each posting was significant, $r = .349$ ($n = 2027$), $p = .000$. This finding suggests that students used more polite language when presenting ideas (particularly ideas that convey disagreement) that others could perceive to be contentious and/or impolite in tone. No significant difference was found in the number of responses students posted in the ensuing discussions following the initial rebuttal posted in response to challenges with polite markers only ($M = 1.55$, $STD = 1.23$, $n = 20$) versus with both polite and impolite markers ($M = 1.17$, $STD = .90$, $n = 46$), $t(19, 45) = 1.38$ at $p = .085$ with a one-tailed test and the assumption that students feel more comfortable and are more engaged when the tone of the discussion is more positive than negative. Though not significant, the overall trend in findings indicates that students might post more responses when challenges to their arguments are posted with more polite language and less impolite language.

No significant difference was found in the number of turns into the conversation (the response posted at the highest thread level) students posted in the ensuing discussions following the initial rebuttal posted in response to challenges with polite markers only ($M = 3.55$, STD = 1.28, $n = 20$) versus with both polite and impolite markers ($M = 3.37$, $STD = 1.16$, n = 46), $t(19, 45) = .562$ at $p = .287$ using a one-tailed test under the same assumption describe above. Though not significant, the overall trend in the findings shows students might post responses deeper into the discussions when challenges to their arguments are posted with more polite and less impolite language.

A significant difference was found in the average levels of stress exhibited across all responses students posted in the ensuing discussions following challenges with polite markers only ($M = -1.84$, $STD = .88$, $n = 20$) versus with both polite and impolite markers ($M = -2.30$, $STD = .95$, $n = 46$), $t(19, 45) = 1.86$ at $p = .033$ using a one-tailed test under the previously stated assumption. This finding shows that students can feel more discomfort when responding to challenges with more impolite than polite language.

4. DISCUSSION

Online discussions are vital for interactive learning, and emphasis on critical thinking in online environments promotes deep engagement, problem-solving, decision-making, and effective communication skills. Group debates, a form of collaborative argumentation, support student learning by fostering critical thinking, creativity, and problem-solving. However, social conflicts in online discussions can disrupt effective communication, impacting dialogue quality. Linguistic and interactional features influence social conflicts in online discussions. Politeness theory highlights the role of politeness strategies in mitigating face threats during argumentative interactions, and prior studies show how politeness can facilitate and inhibit argumentation. To gain a deeper understanding of the impact of politeness on how students engage in argumentation, this study utilized a natural language processing tool to analyze a large corpus of postings from online debates to determine what politeness markers were used in the debates, where and when they are used in the debates, what impact they have on student responses to posts from the opposition.

The findings show that positive lexicon, first person, and hedges were used most frequently among the 14 polite makers examined in this study and that polite markers were used most frequently when presenting arguments in the debate. In contrast, negative lexicon and factuality were the most frequent impolite markers, and these and other impolite markers were used most often when students presented challenges. When impolite markers were used in postings in general, students almost always included polite markers. Furthermore, students used increasingly more polite markers in posts as the frequency of impolite markers increased in posts made later in discussion threads. These two findings suggest that students in the debates tried to soften the tone of their oppositional posting (and potentially reduce the perception of impoliteness and social conflict) by including polite language.

The sequential analysis of how posts with markers impact how students in the opposition respond to posts revealed the unexpected finding that arguments with N were less likely to elicit challenges from the

opposition. This finding suggests that polite markers can help invite or elicit responses from the opposition and that students from the opposition are less likely to post a response when they are absent. In theory, the absence of impolite markers in arguments can help increase students' willingness to respond to arguments with challenges, but the findings show the opposite. One possible explanation for this unexpected finding is that the students posted arguments in response to the debate prompt (not in direct response to another student's posting) and, as a result, had no reason to use direct questions, direct starts, and 2nd person starts. Also, the specific arguments with N may have been weak arguments that lacked supporting facts or were arguments posted supporting the proposition under debate. In contrast, arguments with I elicited more challenges than expected, possibly because many of these arguments were posted to oppose the debated proposition.

In determining how students respond to challenges presented with polite and impolite markers, the sequential analysis revealed that challenges with N revealed a higher-than-expected tendency to elicit counterchallenges from the opposition than challenges with P, I, and B. This finding is partly expected given that the absence of impolite markers in a challenge (when challenges are already contentious) can help reduce students' inhibitions from posting a counterchallenge. It is possible that this specific dynamic prevailed over the potentially negative impact caused by the absence of politeness in the posted challenges. Overall, these findings above emphasize the importance of examining the impact of politeness markers in context to the specific dialog moves in which they are used. Most of all, the findings highlight the importance of politeness when presenting arguments for critical review and discussion.

In examining how responses with specific markers that challenge presented arguments impact discussions, this study found no significant difference in the number of responses students posted following challenges with polite markers only versus challenges with polite and impolite markers. Nevertheless, the data reveal a trend that suggests that students might post more responses when challenges are framed with more polite language and less impolite language. Similarly, no significant difference was found in the number of turns (depth of engagement) in the conversation following challenges with polite markers compared to challenges with polite and impolite markers. Yet, the trend in the data suggests that students might post responses deeper into the discussions when challenges are presented more politely and less impolitely. Also, a significant difference was found in students' average stress levels in response to challenges with P versus B. The postings exhibited more discomfort when responding to challenges framed with more impolite than polite language. As a result, these findings suggest a nuanced relationship between politeness, impoliteness, and student engagement in online discussions, and the significant difference in stress levels highlights the discomfort students can potentially feel when responding to challenges framed with impolite language, emphasizing the importance of maintaining a polite tone in online discussions.

The study's findings regarding the limited impact of politeness on both the frequency and depth of engagement in responses can be partially attributed to several factors. Firstly, the need to focus on a smaller subset of data, specifically responses from individual students who countered challenges to their arguments, may have influenced the observed outcomes. Additionally, challengers' occasional use of polite markers could have moderated the effects of impolite markers, whether intentional or not. Moreover, members of each debate team comprising 12 or more students per side could contribute additional rebuttals to challenges, reinforcing the initial arguments. Combined with the requirement that each student post a minimum of for postings per debate, this ample team size likely motivated students to participate more frequently and contribute to ongoing discussion threads. Finally, certain behaviors that might be perceived as impolite, such as using a negative lexicon, were inherent to the nature of argumentation and were possibly accepted by the students within the context of the debate.

Regarding the instructional implications, this study's findings provide valuable information for shaping and improving netiquette standards. These standards cover behavioral expectations such as showing acknowledgment, using respectful language, embracing diverse opinions, avoiding personal questions, offering sincere apologies, and demonstrating consideration. Adhering to these norms can reduce confusion, conflicts, and interruptions in online interactions. The study underscores the importance of these norms, especially in contexts where students face challenges and engage in deeper discourse over the merits of a specific argument. Additionally, it identifies impolite behaviors that may emerge in such debates, which instructors can work to discourage.

The findings from this study also uncover the potential impact of specific behaviors on how and to what extent students engage in argumentation, guiding instructors on which behavioral standards to emphasize when students participate in group debates. Moreover, examining polite and impolite markers in the study

lays the groundwork for establishing behavioral standards with clearer definitions of specific linguistic markers. Future iterations of netiquette guidelines (developed by researchers and instructors) can draw upon these findings and those of similar studies to furnish students with concrete examples that illustrate the practical application of each behavioral norm.

In conclusion, the tools and methods presented in this study provide one approach that researchers can use in the future to measure and achieve deeper insights into the use and the impact of politeness markers on student participation and engagement in online discussions, with a specific focus on how they can influence the level and quality of critical thinking in group discussions. Using the described tools and methods, this study's findings give researchers and instructors a clearer understanding of the underlying dynamics and interplay between social and cognitive presence in online learning. Applying the findings produced with these methods and reported in this study may help improve student engagement, increase the quality and depth of group discussions in online courses, and, most of all, help students improve learning and understanding.

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