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Does a Sender's and Recipient's Relationship Influence Readers' Interpretation of Message Tone?

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Abstract

Given the importance of computer-mediated communication (CMC) and the uniqueness of the cues that have meaning in this environment, research is warranted to investigate how the relationship between the people communicating via CMC might impact the way the message and cues are interpreted. This study aims to investigate whether different inherent levels of authority and familiarity between a message sender and recipient affect how email tone is interpreted. Previous studies demonstrate that when individuals communicate with authority figures, they employ different strategies than when communicating with peers. Furthermore, individuals adapt their behavior to mimic the interactants behavior, which in turn may lead to authority figures mimicking the formality and politeness used. Additionally, when individuals are familiar with people in a group in a face-to-face setting, they reported higher satisfaction ratings than working with strangers, but this same effect was not seen in CMC groups. Participants read stories featuring a main character's interactions with a secondary character (i.e., mom, professor, classmate, friend), and an email reply at the end, in which participants were asked to rate the tone of that reply from the sender (i.e., secondary character). Results indicate that individuals with high authority (mom and professor) had more positive tone ratings on average than individuals with low authority (classmate and friend). However, there was no main effect found for familiarity, and no interaction effect. The findings provide partial evidence that information about a sender may be another cue in CMC that provides context to help disambiguate the meaning of messages.

Keywords: computer-mediated communication, email, reading, language processing, language comprehension, memory

Does a Sender's and Recipient's Relationship Influence Readers' Interpretation of Messages?

In day-to-day life, people frequently encounter ambiguous language in both face-to-face conversation and computer-mediated communication (CMC) methods like email and text messaging that are frequently used to stand in for spoken communication. The current climate created by a global pandemic has resulted in people relying on CMC more than ever before. Meetings often occurred on digital conferencing platforms like Zoom or WebEx instead of face-to-face, people organized workspaces on platforms like Slack and Discord, and many times this communication lacked the benefit of seeing people's faces via video. The absence of face-to-face pragmatic cues in CMC adds another layer of ambiguity and difficulty for language processing and comprehension, however, even when people had the ability to decrease ambiguity in Zoom calls with video turned on, they often chose not to do so. Many chose to rely on text messaging to avoid Zoom fatigue and burnout instead of communicating via video call during the pandemic, and CMC usage increased by 43% to become the primary and preferred form of communication (Nguyen et al., 2020). Thus, CMC methods like text messaging and email have become the new necessary standard for communication, especially as people have become more reliant on technology in modern society. The prevalence of CMC presents language users with difficulty and ambiguity in language processing and communication but makes for a rich area of empirical investigation into the types of cues that are used to convey pragmatic information and help make communication via text and email clearer and more efficient.

Current Research Question

CMC is challenging to navigate because it is missing many of the pragmatic cues that are used in face-to-face communication to disambiguate the meaning of a message beyond the words

simply being said. Listeners use cues such as facial expressions, body language, and prosody to infer what the speaker means. More recently, CMC users have created their own cues to mimic cues otherwise portrayed in face-to-face communication. These CMC cues include emoticons and emoji, phonemic extension, bold font, and punctuation.

However, another pragmatic cue that may be important in disambiguating a message in CMC conversation is information about the sender as it may provide context about the conversation for the message's recipient and impact the way CMC messages and cues are received and interpreted.

The primary goal for the current study is to investigate if knowledge about the message sender provides information that may possibly disambiguate the tone and meaning of a message. More specifically, do individuals interpret the tone of email replies differently depending on if the conversational partner that sent the message has low or high familiarity and authority with respect to the recipient? To provide further insight into the current question, literature about pragmatics, pragmatics specific to computer-mediated communication, common ground, authority, familiarity, communication, and politeness theory is reviewed below.

Pragmatics

CMC is unique because it is written language that is meant to function as an analog to spoken language. Using written language in a way that is speech-like presents ambiguity for processing and comprehension because readers are missing important pragmatic cues in these CMC environments (e.g., email or text messaging) that would ordinarily be present in spoken conversation and help people interpret a message's meaning (Kay, 2008). When communicating via email and text message people cannot see facial expressions, gestures, and body language, or hear the change in prosody, tone, pitch, and intonations.

In face-to-face conversations, interactants will typically adjust their behavior and continuously give nonverbal feedback based on the behavior of the other interactant. The adaptions of behavior, such as change in facial expressions and body movements are what facilitates an efficient and coherent conversation (Yang et al., 2014). Body language is a key element of nonverbal behavior used to convey attitudes and emotions towards the other speaker. The adaption of behavior also depends on the goals of the interaction, such as whether the nature of the conversation is assumed to be friendly or conflictive (Yang et al., 2014). Humans unconsciously mimic each other's behavior during interaction to achieve a more effective and pleasant interaction (Chartrand et al., 1999).

Furthermore, speech contains elements known as paralanguage, which include voice lesson quality, emotion, prosodic features, such as rhythm, intonation, and stress. Prosody is what carries most of the emotive content of speech and the speaker's emotional state is often reflected through their body language (Adolphs, 2002). The pitch and intensity a speaker use are what drives their facial expressions. Duration naturally corresponds to the rate of speech, and all three aspects (pitch, intensity, duration) are informative in determining a speaker's emotional state (Scherer et al., 1991). Daft and Lengel (1984) found that face-to-face communication was preferred when communicating about topics that were more ambiguous, referred to as equivocality, versus when topics of conversation were more straightforward, referred to as equivocality. Because comprehension in face-to-face conversation often requires people to go beyond simply the meaning of the words presented, more pragmatic cues are necessary to inform meaning.

The lack of such cues in written conversation leads to miscommunication, for example via CMC, because it is hard to recognize whether someone is, for example, being sincere or

sarcastic simply by reading a text message or email (e.g., Gunraj et al., 2016; Houghton et al., 2018). Thus, pragmatic nonverbal elements, such as the use of emoticons (e.g., :), :(, :/) to convey emotional expressions in picture form, have been developed to inform comprehension (Agarwal & Garg, 2012).

CMC Pragmatics

CMC is a unique form of written communication because it is specifically meant to represent spoken conversation through the rapid reciprocal exchange that mimics the back-and-forth style of face-to-face speech (Darics, 2013). However, even though communication via CMC is seemingly more immediate, it still creates distance between the sender and receiver that face-to-face communication does not experience. Because CMC creates distance and lacks pragmatic cues that are present in face-to-face communication, it has led to the creation of *new* cues specific to digital communication environments, such as *textisms*, like the use of emoji in text messaging, as well as existing language cues taking on new meaning in CMC, like punctuation, to communicate meaning in environments where ambiguity is prominent due to the lack of pragmatic information (Riordan, 2017).

Carey (1980) identified five categories of "nonverbal" cues used in CMC: vocal spelling, lexical surrogates, spatial arrays, manipulation of grammatical markers, and minus features. Vocal spellings, such as "weeellllll" or "okayyyy," use phonemic extension and nonstandard spelling to convey vocal intonation or tone. Spatial arrays refer to the use of emoticons, which are used to convey facial expressions and emotions of the sender. Manipulated grammatical markers are typically additional punctuation and capital letters or bold to indicate pauses (...), excitement (!!!), or mimic tone of voice, such as shouting or emphasis (NO WAY). Minus features are the absence of language standards that are typically seen in formal writing, such as a

lack of capitalization at the beginning of a sentence. Characteristics of CMC, such as the five categories, provide pragmatic information about the degree of emotion the sender is trying to convey (Harris & Paradice, 2007). More recently, research on the use of periods in CMC has been explored and found that it does not take on its usual role of simply ending a sentence but has instead taken on a different meaning by being perceived as conveying negative emotional tone and abruptness (Gunraj et al., 2016).

Houghton et al., (2018) expanded on the findings of Gunraj et al., (2016) to investigate the effects of including a period at the end of positive, negative, and neutral text messages in three separate experiments. Participants were shown short exchanges consisting of four messages. The final message was a single word reply that answered a question asked by the other sender. In the first experiment participants read positive one-word repliesT (e.g., yup, yeah, sure, ok). In the second experiment participants read negative one-word replies (e.g., no, nah, nope). In the third experiment participants read one-word replies that were neutral/ambiguous in tone (e.g., maybe, fine, alright). In each experiment there were two versions of each message. In one version the single word reply was followed with a period, and in the second version the message was left to stand alone. Participants were asked to rate the level of enthusiasm of the single word final response of each exchange. In all three experiments the rating of perceived enthusiasm was reduced when a period was included; thus the period was interpreted to be a sign of negative intonation. Negative messages with the period had the greatest reduction in perceived enthusiasm, thus negative messages with a perceived negative cue will lead to larger perceived negativity than neutral or positive messages. Neutral responses were the least affected by the inclusion of a period, possibly because the messages were more nuanced and led to more

ambiguity in the interpretation of both the message and the included cue. The perception of these types of textisms may also depend on the shared relationship between the participants.

Common Ground

In addition to pragmatic cues that help people interpret message meaning, common ground provides useful context about the conversation based on the relationship of the participants. Common ground refers to the idea that there needs to be mutual knowledge in order for two people to have meaningful communication (Monk, 2003). One way that mutual knowledge is established in CMC and conversation is through the communication principle of *audience design*, meaning that speakers create a model of the listener's knowledge and consult this model when communicating a message (Clark & Schaefer, 1987). Thus, the speaker tailors their message to the listener, so the listener only needs to refer to the mutual knowledge shared between the speaker and the listener. The listener automatically assumes that the sender will adhere to the principle of audience design, and information is tailored to them, and consequently, the listener restricts the information retrieved in their memory when trying to interpret the message from the sender (Clark & Carlson, 1981). CMC conversational participants track what is known by each member of the conversation in much the same way.

Fussell and Krauss (1989) suggest people also infer mutual knowledge with others through perceptual and linguistic evidence, and community membership. Community membership refers to the group membership status that individuals may share (e.g., same race, same gender, same age, living in the same area). Perceptual and linguistic evidence refers to shared experiences between individuals. One example of a shared experience that creates mutual knowledge is when two people saw the same movie. This movie becomes part of the shared knowledge between the two people because they have a similar frame of reference for the

experience. Another example of creating mutual knowledge would be when an inside joke is formed between friends. In this case, the context behind the joke, and the joke become part of their shared understanding and frame of reference. For the purpose of the current study, when referring to sender characters having common ground with the main student character, we are referring to perceptual and linguistic evidence in terms of built mutual knowledge that the participants reading the narratives should be tracking. This was demonstrated by Isaacs and Clark (1987) when participants were paired up and given a set of 16 postcards of New York City landmarks (e.g., Empire State Building, Shea Stadium, Brooklyn Bridge). One participant in the pair was given a grid with the 16 postcards placed in a designated order by the researchers. The participant's partner had to match the order of the 16 postcards that their partner was given based on the partner's description of the landmarks. There were six trials, and each trial had a different grid order. It was found that the time it took for the partner to get the postcards in the correct order decreased on each trial. Participant pairs were able to use their history of the previous trials and standardize their conceptions of the postcards to create common referential terminology such as "the large bridge.". With each trial participants gained more mutual knowledge, so the descriptor was able to shorten the descriptions for their partner. Thus, it took less time on each trial for the matcher to put the postcards in order. (Isaacs & Clark, 1987).

However, sometimes there are occasions when a speaker overestimates the listener's ability to understand their message, which is referred to as the *curse of knowledge* (Birch et al., 2017). Importantly, for CMC, the curse of knowledge can lead individuals to overestimate how they think a person will behave in certain social contexts based on how they themselves would behave in that same context, and this effect may be increased because of the physical distance that CMC creates between the sender and receiver. The physical distance and lack of face-to-face

kinesic (e.g., body gestures) and proxemic (e.g., proximity) pragmatic cues in this communication context requires recipients to fill in more of the gaps of the message (Crystal, 2001), and these overestimations may lead to misunderstandings in communication and quick judgment in social situations (Bazerman & Neal, 1982). For the current study, the curse of knowledge may impact how participants approach thinking about the relationship between the student main character and each of the secondary sender characters.

This idea was demonstrated by Kelly and Miller-Otte (2018) when they investigated miscommunication in friends and romantic partners text messages and found that one of the biggest reasons for miscommunication was that the sender used a word or short phrase that the receiver did not have a shared meaning (i.e., overestimating the mutual knowledge shared between the sender and receiver and the information needed for the receiver to understand the message). Another theme Kelly and Miller-Otte (2018) found was the receiver's inability to read the tone, or affect, from the sender in the text message, so generally the receivers assumed that the emotion of the message was negative when the sender was simply trying to be humorous or sarcastic. Lastly, Kelly and Miller-Otte (2018) found that when senders were trying to be sarcastic and joke, the receiver interpreted the message literally. The participants attributed these miscommunications to the interactions being via text and not face-to-face, which indicates the influence of a lack of pragmatic nonverbal cues (Kelly & Miller-Otte, 2018). This is important to consider in how participants approach reading exchanges between the sender and recipient characters in the current study because the narratives are limited in scope of the CMC-like exchange, and not a lot of background information about each character is given which may create more distance between the participant and the story/characters, and influence ratings of tone.

Authority

Common ground informs communication and relies on mutual knowledge and a shared relationship. A factor present in that shared relationship may be the hierarchy of authority between the participants. Authority is defined as power that comes from institutionalized roles or arrangements (Keltner et al., 2003). Power is typically associated with "positive affect, attention to rewards, and disinhibited behavior," and reduced power is typically associated with "negative affect, attention to threat and punishment, and inhibited social behavior" (Keltner et al., 2003, p. 265). Influence is one way that power is assessed, and ranges from power being defined as dominant and authoritative to power being defined as important and significant (Glaser, 2006). When power is defined as dominant and authoritative, influence is attributed to coercion. When power is defined as more important and significant, influence is attributed to recognized importance or contribution to the greater benefit (Glaser, 2006).

In addition to the different ways to operationally define power that exist, there are also many different types of power. The taxonomy of power includes reward power, coercive power, legitimate power, expert power, and referent power. Reward power refers to when an individual complies with authority to obtain a reward. Coercive power refers to when an individual complies with authority to avoid punishment. Legitimate power refers to an individual complying with authority because they feel as though they have an obligation to comply. Expert power refers to an individual complying with authority because they believe the authority figure holds special knowledge about the best way of doing something. Referent power refers to when an individual complies because they admire the authority figure, or identifies with them, and wants to gain their approval (Yukl, 2003). ad stories with exchanges between a student main character and one of four secondary email-sender characters: their professor, mom, friend, or

classmate. For the current study, participants should infer that the professor character has expert power relative to the main character. This is because the main character is a student who enrolled in classes to learn from professors who have special knowledge about their domain, or subject area, of expertise. Participants should also infer that the mom character has referent power relative to the main character. This is because the student main character is likely to identify the most with their mom since this is a family member, and because the student main character is likely to seek their mom's approval as most children do from their parents. When reading stories that depict exchanges between the student main character and their friend, or their classmate, participants should understand that friend and classmate characters are peers at the same level as the student character. Thus, there should not be any power differential or authority present in these relationships between the student main character and their friends or classmates.

Familiarity

Because there is no universal operational definition of familiarity, measures using a priori questionnaires on interpersonal knowledge have typically been used to operationalize the concept in empirical studies. In one study by Gruenfeld and colleagues (1996) participants were measured on the level of interpersonal knowledge about the other participants in the study, and this measure was used to define the level of familiarity. Researchers asked participants four questions that prompted the group members to think about the other members in the context of previous team situations, social interactions, class, or club organizational activities. The four familiarity questions were combined to create an overall familiarity score. Higher scores on the interpersonal knowledge quiz indicated individuals had higher familiarity levels than lower scores on the interpersonal knowledge quiz. Groups that had members who were more familiar with each other had increased levels of comfort in expressing disagreement, openness to learning

from each other, and enjoyment of working together (Gruenfeld et al., 1996). Thus, for the purpose of the current study, when thinking about the operational definition used by Gruenfield et al., (1996) the mom and friend characters would most likely score higher on the interpersonal knowledge questionnaire about the main character (indicating high familiarity) than the professor and classmate would score on the questionnaire about the main character in the story (indicating low familiarity).

Ambiguity & Formality in Communication

Communication can be defined as the exchange of information, thought, and emotion between individuals and groups. Communication requires a sender, a message, an intended recipient, and requires that the sender and receiver have a shared area of communicative commonality (e.g., common ground) (Agarwal & Garg, 2012; Monk, 2003). To effectively communicate, the sender must be conscious of their individual linguistic ability so that they avoid using difficult or inappropriate language which can prevent the receiver from understanding the communication (Agarwal & Garg, 2012). When people do not keep in mind that everyone has their own individual linguistic ability and not everyone has the same ability, this is what tends to result in the curse of knowledge (Birch et al., 2017). Moreover, the sender must consider the audience they are conveying the information to, so that the sender can adjust or simplify their vocabulary to aid the receivers' understanding, which helps avoid the curse of knowledge.

There are two different types of communication: formal communication and informal communication. Formal communication is the degree to which the flow of information is controlled and needs deliberate effort to be communicated properly. Formal communication typically follows a hierarchical structure or chain of command (e.g., authority) (Price, 1997).

Informal communication also plays an inevitable role in organizational life. Informal communication refers to the unofficial form of communication where information is exchanged spontaneously without conforming to the hierarchical structure or chain of command. Informal communication is based on the social relationship between people (i.e., not hierarchical) (Anderson & Narus, 1990).

Within CMC there are different forms of formal and information communication as well. Informal communication via CMC typically takes place through internet forums and social media, and these are conversations that generally involve people of similar social distance (i.e., no power differential, or difference in level of authority between conversational participants). An example of formal communication in CMC would be correspondence by email. Email has become the official means of communication for public institutions and workplace communication. When using email in these situations, a formal communication style is expected because email functions as an official form of discourse used to communicate with authority figures (Chejnova, 2014).

In formal CMC, the relative status of the sender and receiver influence the linguistic choice in the emails, such that messages that are addressed upward (i.e., to those of higher authority) tend to be more polite and conform more to conventional norms (Jessmer & Anderson, 2001). Emails may be perceived negatively if the sender does not use an appropriate level of formality and politeness based on the authority level of the message's recipient (Jessmer & Anderson, 2001). Duthler et al. (2006) found that email requests were considered to be more polite than voicemail requests because email allowed for editing and planning a response, and this provided senders with the opportunity to create more socially desirable messages.

Moreover, in email conversations between students and professors, where there is an imbalance of power and higher authority on the part of the professor, the senders were particularly careful to elaborate at the beginning of the email before diving directly in the request or question (Bau-Fraunch, 2011). The same communication style was not seen when one professor emailed another professor. Here, the two professors had equal power and authority in the conversation, and thus, the senders were more direct with their comments, requests, and questions.

Furthermore, as another example of the more indirect communication that might be seen between two participants of different authority levels, Chejnova (2014) found that students most frequently used the syntactic downgrader “by chance” when emailing professors. Students did this to lessen the feeling of imposition, and with the intention that this type of phrasing would be viewed as a more polite way to request something (Chejnova, 2014). Students also used politeness markers (e.g., please) more often when making requests to higher authority figures.

In addition to syntactic downgraders and politeness markers, students also used external modification when communicating with professors. They were more likely to give the entire context of their situation prior to asking for a request, as well as express thanks in advance at the end of an email (Chejnova, 2014).

Politeness strategies seem to be employed in both directions when people of different levels of authority are communicating with each other. Both superiors and subordinates adjust the way they speak to each other via email communication by using formal communication and employing politeness strategies (Brown and Levinson, 1987). Like the students did when emailing their professors, when superiors emailed low authority figures they also retained the use of politeness strategies (Kim & Lee, 2017). Even though the high authority figures maintained

legitimate power and control in these situations, the low authority figures appreciated when a superior allowed them to be autonomous and self-regulating (Kim & Lee, 2017). Thus, the superiors mitigated their requests (Kim & Lee, 2017).

Politeness Theory

Brown and Levinson (1987) proposed the Politeness Theory which suggests that people often communicate indirectly rather than directly. For example, instead of a person saying, "get me a drink," they would instead be more likely to word the request to sound more polite. Instead, they might say, "Hey, bud, could you please grab me a cold one while you're up?" Alternatively, they may hint with an even more indirect request like, "I'm so thirsty," in the hopes that someone would offer to get up and grab the person a drink (Baxter & Braithwaite, 2008). Politeness Theory begins with the concept of *face*, which is defined as the public image that everyone wants to claim for themselves, and this image is based on approved social attributes (Goffman, 1967). *Face* can be both saved and lost, and *face work* serves to counteract incidents. If a person's actions threaten their *face,* then the speaker must use *saving face* techniques to prevent their positive image being lost (Goffman, 1967).

Brown and Levinson (1987) found three features of social situations that dictated which politeness strategy would be the most effective for keeping face. These three features are power, rank, and distance. Power refers to if the two individuals are peers or if one person has a higher status than the other. Distance refers to the closeness in social similarity between the two people, for example, are the individuals' strangers or close friends? Do they share the same age, race, or other social identities? Rank refers to the culturally defined level of difficulty for the topic of conversation (e.g., it is much easier to discuss the rising cost of airfare, as opposed to discussing

weight loss advice). The combination of power, distance, and rank affects the degree of *threatening face* experienced in social situations (Baxter & Brathwaite, 2008).

Research on *face*, *saving face*, and *threatening face* experienced in social situations was taken a step further by Holtgraves and Purdew (2016) when they investigated if speakers vary their messages as a function of politeness, and the effects that this function has on judgements by the recipient. Participants were asked to create messages to convey negative information with varying degrees of face-threat. If the information in the message pertained directly to someone in the scenario (i.e., increased face-threat), then the messages were significantly more indirect than when information pertained to a person not in the scenario (i.e., decreased face-threat). One scenario read, "It's obvious that your roommate, Roxanne, is failing her first semester. You believe that she is failing due to her excessive drinking and partying. One night during dinner Roxanne asks you why you think that she is failing, and you say…," and the participants filled in what they would reply to Roxanne. This is an example of an increased face-threat scenario because the information pertained directly to someone in the situation.

However, if the scenario read, "It's obvious that Ethan's roommate, Roxanne, is failing her first semester. Roxanne wonders if she is failing due to her excessive drinking and partying. One night during dinner Roxanne asks Ethan why he thinks she is failing, and Ethan says…," then this scenario presented less face-threat risk. This is because the participant was not asked how they would reply directly to a character in the scenario, so they were further removed from the situation. Therefore, if participants were given the scenario with the increased face-threat risk, then they created a more indirect reply. If participants were given the scenario with decreased face-threat, then they created a more direct reply. Thus, indirectness varied significantly as a function of the level of face-threat present in the situation from the participants'

perspective (Holtgraves and Purdew, 2016). This provides further evidence in support of the Politeness Theory because indirectness is a primary mechanism used in politeness and face work (Brown & Levinson, 1987). Other politeness mechanisms, like formality, as previously discussed, may also be employed when communicating with people of different authority levels.

Additional Considerations from Theories of Reading & Discourse Processing

The investigation of CMC is largely interdisciplinary and thus, many factors from the wider scope of cognitive and language research also contribute to understanding how people comprehend written CMC discourse like text messages and emails. These are discussed in more detail below. Moreover, because the materials of the current study are written as narratives additional theoretical considerations are mentioned here.

Skilled Readers. Younger children who are not as skilled at reading compared to older children and adults fail to integrate the information they read actively into their memory. Instead, they process the narrative word by word, which prevents them from creating a coherent representation of the entire story (August et al., 1984). Skilled readers can process the narrative as a whole and comprehend the entire story rather than by constructing meaning piece by piece based on individual word meaning (Palmer et al., 1985). Working memory experiences a bottleneck effect in reading comprehension. The bottleneck effect refers to individuals having a limited capacity of working memory and attentional resources that can be used at once, so information and stimuli are filtered through, and only the most salient and important information is perceived (Resnik & Weaver, 1979). Thus, working memory is particularly taxed when the reader must keep track of information in an iterative manner, and take in narratives word-by-word to try and construct a full understanding of the text. However, if some components of the reading process do not require attention once initiated (i.e., automatic components), then there

will be less working memory congestion (Resnik & Weaver, 1979). Skilled readers do not necessarily have a larger working memory capacity, but instead are more effective at using this capacity (Resnik & Weaver, 1979).

In the current study, college-level readers were the participants. College-level readers are considered to be skilled readers, as they must pass entrance exams for standard reading levels (Hunt et al., 1975). Because reading is an automatic process for skilled readers at the college-level, these readers employ strategies to ease the working memory cognitive load. In some instances, college-level skilled readers can choose which tasks require higher attention and memory engagement, and which can be completed at a "good-enough" level of comprehension (i.e., minimal coherence) (Hunt et al., 1975).

Standards of Coherence. While reading, it is impossible to keep all the information in a text within the focus of a reader's memory and attention (van den Broek et al., 2001). To help mitigate cognitive load and task demands, as well as guide discourse processing and comprehension, readers create and maintain a *standard of coherence*. A reader's standard of coherence refers to the type and strength or depth of coherence that a reader aims to achieve when reading (van den Broek et al., 2001). Readers engage in a variety of processes to serve their standard of coherence and aid comprehension. As a reader reads through text, each new segment of the text is processed, which, in turn, automatically activates additional concepts from information read previously in the text, or semantic background knowledge. If these automatically activated concepts meet the reader's standards of coherence for that text or task, then there are no strategic processes activated, and the reader continues reading (van den Broek, 2001).

When automatic processes do not meet the reader's standards of coherence, strategic processes are initiated to help attain this standard for comprehension of the text. Strategic processes involve the activation of prior knowledge. One example of strategic processes for text comprehension are *bridging inferences*. One type of bridging inference is the backward, often causal, inference that a reader makes to connect a recently read sentence with information that occurred earlier in a narrative, thus connecting new information *backward* to information read prior. Consider the following sentences: 1) Mary poured water on the bonfire. 2) The fire went out (Singer et al., 1992). Though it is not explicitly written that pouring water on the fire *caused* it to go out, readers will make this necessary pragmatic backward causal inference to connect the second sentence to the first one to inform their understanding of the events of the narrative as a whole connected piece of discourse.

The standard that a reader adopts is determined by the reader's desired level of understanding and depends on both implicit and explicit criteria while reading (van den Broek et al., 2011). Implicit criteria are set by the reader, and explicit criteria are set by the task (Linderholm & van den Broek, 2002). Explicit criteria may include elements of the text itself (e.g., the complexity of writing a research article, versus a social media post), the task at hand (e.g., increased tasks demands when given no instructions for a task, versus decreased task demands when there are instructions given with a task prior to reading the text), and the reader's goals (e.g., if the reader is reading for fun, versus reading to study for a test) (Linderholm & van den Broek, 2002). The implicit or explicit criteria set the benchmark to compare if the coherence of the text meets the readers already established standard of coherence (van den Broek et al., 2011).

The theoretical assumption that readers set their individual standard of coherence suggests that most readers will pursue less than maximal coherence, or what is referred to as "good-enough" processing (Warren et al., 1979). One reason that readers may adopt a "good-enough" criterion for processing and comprehending text is because to fully and completely understand a text, it takes a very large number of inferences and the effort it takes may even bring the reading to a halt in order to take in all of the information (Warren et al., 1979). Furthermore, it may be that the task itself does not demand a higher standard of coherence; skimming the news does not require a high standard of coherence like reading a research article for a class assignment would. Readers self-regulate and monitor their allocation of cognitive resources while reading, and thus, satisfying this standard of "good enough" processing is not due to laziness or a lack of comprehension, but has more to do with efficiency and preserving limited cognitive resources like memory and attention (Ferreira et al., 2002; Karimi & Ferreira, 2016).

Situation Models

One challenge for a reader's limited attention is that a text often implies more than what it explicitly states, so a reader needs to reserve attention for making inferences to fill in the gaps for comprehension. Readers can only focus their attention on part of the information conveyed in a narrative because a small part of the previously read information is held active in their working memory (Kintsch & van Dijk, 1978). By knowing where to focus attention as a reader, this greatly reduces the cognitive load and constrains the amount of inferencing required to comprehend the narrative (Black et al., 1979).

During comprehension, relevant information from the narrative should be what is held in working memory, and thus, active and readily accessible (Morrow et al., 1987). Readers

understand narratives by constructing a situation model of the text (Johnson-Laird, 1994). The situation model is constructed by integrating linguistic knowledge with general background knowledge about objects and actions mentioned in the narrative, and knowledge of the referent situation (i.e., the situation in the external physical world that a word or phrase in the text refers to) . The situation model is used to aid comprehension when reading new sentences, which, in turn, then updates the model with the new recently read information (Morrow et al., 1987). Situation models tend to be centered around important main characters, protagonists, antagonists, and main effects in the narrative (van Dijk & Kintsch, 1983), thus many of the details in the reader's model are consistent with the main character's perspective (O'Brien & Albrecht, 1992). For example, Levine and Klin (2001) found that readers responded more quickly to a probe word that represented an object in the main character's current location (e.g., tree or bench) than to a probe word from a character's previous location. Thus, readers seem to track the main character's perspective and keep aspects of the situation that are salient to them active and accessible in their working memory (Drumm & Klin, 2011).

The Current Study

The current exploratory study investigated how emails are interpreted when the exchange was between two story characters of differing levels in familiarity and authority. The first character was always a student, and the second character was either the student's friend, classmate, professor, or mom. I investigated whether the different levels of authority and familiarity inherent in the relationship between the sender and recipient in the story provided narrative framing and context that influenced how the tone of the message was perceived.

Hypotheses & Predictions

Predictions of Authority. When communicating with individuals of high authority, those with low authority include elaboration before requests, syntactic downgrading, politeness markers, external modification, and express thanks in advance (Chejnova, 2014). Furthermore, individuals with low authority tend to use formal communication, which is a politeness strategy, when communicating with high authority individuals (Brown & Levinson, 1987). When communicating, interactants change their behaviors based on the goals of the interaction (Yang et al., 2014), and humans also unconsciously mimic each other's behavior during interactions. Thus, it is possible that high authority figures mirror the use of formality and politeness markers in their responses, based on the communication that they receive from those with lower authority. Kim and Lee (2017) found that more powerful speakers retain the use of politeness strategies. This is because although the authority figures have legitimate power and control in this situation, encouraging those below them to be autonomous and self-regulating was valued by the subordinates, which led supervisors to employ politeness strategies and mitigate their requests. Because participants in the current study are college students, and therefore, lower in authority relative to the mom and professor sender characters, it was hypothesized that participants will adhere to pragmatic expectations of formal communication when making their ratings. Thus, there will be a main effect of authority, such that senders with high authority (mom and professor) will have more positive tone ratings than senders with low authority (classmate and friend).

Predictions of Familiarity. Gruenfeld et al., (1996) found that when people worked on tasks with people, they were more familiar with there were higher satisfaction ratings, as compared to when people worked on tasks with strangers. Furthermore, the curse of knowledge occurs when people have a difficult time separating what they know from what other people

know, especially in social situations where someone believes that the other person will respond to the situation the same way they would. That overestimation often leads to misunderstanding and quick judgments in social situations (Birch et al., 2017). Thus, it was hypothesized that participants would pay attention to the level of familiarity in the relationship between the main character and the sender, and this should provide contextual framing for the email reply, such that senders with high familiarity (mom and friend) would have more positive tone ratings than senders with low familiarity (professor and classmate).

Prediction of Authority-Familiarity Interaction. It was predicted that replies from the mom characters would be rated the most positively compared to replies from professors, classmates, and friends. This was because the relationship between the student main character and the mom character should reflect the positive effects of both high familiarity and high authority, as evidenced by prior research on politeness, authority, and familiarity. The mom characters have a higher level of shared common ground with the student main characters, and in fact, because it is a family member relationship, this is the *highest* level of shared common ground overall, compared to not only the professor characters, but the friend and classmate characters as well.

Because there is less common ground between the student main character and a professor, but the high authority level remains, the professor should thus be rated more positively than friend and classmate, but more negatively than mom.

For replies from the friend, it was predicted that these would be rated more negatively than replies from the mom and professor, but more positively than classmate because although there is a low level of authority, there is more common ground between a student character and the friend (i.e., familiarity) than the classmate, and this may lead to a higher rating.

Classmate characters were predicted to be rated most negatively because there is a low authority level and low familiarity with the main character.

Norming Method

Norming of Materials

To investigate the impact that a sender's relationship to the recipient may have on message interpretation, I first needed to develop target lines written to be ambiguous and neutral and norm these to determine how the target lines of experimental interest would be interpreted without adding in the narrative context manipulation to measure the influence of level of authority and familiarity in the relationship between the main character and the secondary character.

Participants

A total of 60 James Madison University undergraduates participated in the norming study. Participants were recruited from the psychology department SONA online participant pool. Participation in the experiment earned course credit**.** Previous norming studies for analogous materials have used a similar sample size ranging between 45-71 participants (Arp et al., 2021; Gunraj et al., 2017; Phillips et al., 2022; Upadhyay et al., 2018).

Materials

There were 48 total sentence stimuli: 24 target lines were neutral and written to reflect ambiguity in whether they can be interpreted positively or negatively (e.g., Thanks for all your advice); 12 positive non-experimental filler lines were written to be unambiguously positive (e.g., I am so excited to see you tomorrow); 12 negative non-experimental filler lines were written to be unambiguously negative (e.g., I didn't like that restaurant at all) (See Appendix A).

The positive and negative filler lines were included to mask the purpose of the study, and to ensure that participants paid attention to what they were reading and selecting for their response, not simply clicking through the experiment survey to give all items the same rating.

Design

Participants rated the 48 lines on a 7-point Likert scale of 1 (Very negative) to 7 (Very positive). All lines were shown to participants and presented in a random order to control for any presentation order effects.

Procedure

Participants completed an informed consent before reading and rating items via an online QuestionPro survey. In the survey, participants read 20 target lines, as well as 20 non-experimental filler lines (10 positive and 10 negative) (See Appendix A). Participants were instructed to rate the tone of the lines on the 7-point Likert scale.

Norming Results

Thirteen target lines were rated as neutral. Nine target lines were not rated as neutral. Three of the positive and negative filler lines were rated as neutral. This resulted in a total of 16 experimental neutral target lines, eight non-experimental positive fillers, and eight non-experimental negative fillers that were used in Experiment 1.

Experiment

In the experiment, target lines rated as “4” on average from the norming procedure were used as experimental items of interest to investigate how the inherent levels of familiarity and authority present in the relationship between a story character who sends a message and a recipient character who receives the message affects the interpretation of tone in the received reply (target line). Non-experimental positive filler lines rated on average around “7,” and non-

experimental negative filler lines rated on average around "1" in the norming procedure were used to again mask the manipulation and serve as a manipulation check to encourage participants to pay attention when reading and carefully rate the items.

Participants

A total of 221 James Madison University undergraduates were recruited from the psychology department SONA online participant pool. Participation in the experiment earned participants course credit. We did not collect any additional demographic information.

Sixteen participants dropped out of the survey after consenting to participate. Participants who did not follow rating instructions or give attention to the survey task were removed if: 1) they did not answer 50% or more of the experimental items (i.e., did not respond to 8 or more of the 16 experimental items), 2) they misidentified 25% of the non-experimental filler items (i.e., rated filler items as neutral, rated positive filler items as negative, or negative filler items as positive). Thus, data from 41 of the 221 participants was excluded resulting in data from 180 participants that was analyzed.

A-priori Power Analysis

The target sample size of 221 participants for this experiment was determined based on the recommendation from Bartlett (2022) and studies where similar stimuli and a similar design (e.g., Upadhyay et al., 2017), and/or a similar analysis was used (e.g., Klin & Drumm, 2010; Klin et al. 2007, 2009; Drumm & Klin, 2011). A power analysis was conducted in WebPower. Based on WebPower's instructions (2021), the number of groups is one for repeated measures ANOVA and the number of measurements is four because each participant will have a mean for items within the mom, professor, classmate, and friend conditions. Based on previous research (e.g., Upadhyay et al., 2017; Klin & Drumm, 2010; Klin et al. 2007, 2009; Drumm & Klin,

2011), a medium effect size was determined as Cohen's d = .32, and a small effect size was d =.13.

For the current study, a parallel, though not exactly analogous, medium effect size criterion was used in the WebPower calculation, Cohen's f = 0.25. The resulting sample size needed for the experiment was 210 participants, power = 0.85 for a repeated measures 2x2 ANOVA design. A more generous power estimate for this exploratory study was used to account for the fact that Cohen's f is used in the power calculation, yet the cited similar studies (e.g., Upadhyay et al., 2017; Klin & Drumm, 2010; Klin et al. 2007, 2009; Drumm & Klin, 2011) use Cohen's d in their final analyses.

Materials

Experimental Target Items. To explore the relationship between familiarity, authority, and message interpretation, target lines from the norming procedure that participants rated as neutral (ratings clustered around "4" on the Likert scale) were embedded into short experimental stories.

The stories featured a main character's interactions with a secondary character (i.e., mom, professor, classmate, friend). The secondary characters were the message senders who have different relationships with the main character, and accordingly, different familiarity and authority levels with respect to the main character.

Non-experimental Filler Items. Filler lines that were rated as positive (ratings clustered around "7" on the Likert scale) and negative (ratings clustered around "1" on the Likert scale) from the norming procedure were also kept to help obscure the manipulation in this experiment from participants. These lines were embedded in stories using primary and secondary characters with different relationships from the four of experimental interest (e.g., sister, cousin, neighbor,

co-worker, etc.) to mask the manipulation. After reading each story, participants were asked to rate the tone of the reply (target line) on a scale of 1 (Very negative) to 7 (Very positive).

Design

In the experiment, participants read 32 total items: 16 experimental stories, eight non-experimental positive filler stories, and eight non-experimental negative filler stories. All stories were pseudo-randomly organized into four blocks in QuestionPro so that each participant would only see four items in the professor version, four in the mom version, four in the classmate version, and four in the friend version for a total set of 16 experimental items, along with all eight non-experimental positive and eight non-experimental negative filler stories (See Appendix B). Participants were randomly assigned to one of the four blocks to complete the ratings for all items in that block, and all items within the block were randomly presented to the participant.

This design achieved three goals. First, it helped to reduce the influence of any single item on subsequent items' ratings because as is common practice in language research, a set of stimuli is created with multiple passages to assess the same construct for reliability. Second, in language research stimuli are treated as random-effect variables rather than fixed-effect variables, and in doing so, this overcomes the language-as-fixed-effect fallacy, which incorrectly implicitly assumes that the items we choose constitute the complete population of items we wish to generalize to (Clark, 1973). Third, randomizing the presentation of the 16 experimental stories within and across blocks for each participant helped to avoid order presentation effects or other influence for any single passage and allows for the generalizability of results to other possible texts that may present a similar dynamic of familiarity and authority. In turn, this helped with potential ecological validity for generalizing to the types of messages that people might be

exchanging with people of varying degrees of familiarity and authority in their real-life communication.

The sample passage below is one of the 16 experimental stories. This version frames the reply as coming from the character's mom:

STORY 1 (Parent)

1 Rachel was planning out her weekly schedule, and
2 was not sure if she remembered to let people know
3 that she would be out of town for a weekend wedding.
4 She wouldn't be able to do any schoolwork while away.
5 Rachel decided to email her mom to ask if it's better to
6 catch up on schoolwork before or after the wedding.
7 Her Mom was at work when she replied to Rachel,
8 "Try to get the work done before you leave." **(TARGET LINE)**

Procedure

As with the norming procedure, participants completed the experiment via an online survey in QuestionPro software. Participants provided informed consent and then read through experiment instructions. They were instructed to approach rating the messages as if they themselves were receiving each message. Participants read each story and rated the tone of the target line reply on a scale of 1 (Very negative) to 7 (Very positive).

Results

A 2 (high authority vs low authority) x 2 (high familiarity vs low familiarity) repeated measures analysis of variance (ANOVA) was conducted, with an alpha level of .05, to investigate the impact of inherent levels of familiarity and authority on email tone interpretation.

In the current study, each participant read and rated a different randomized set of 16 experimental stories. In language research, the items are treated as a random-effect variable nested within the random-effect variable of the participants. For language data, two separate

analyses are often conducted to examine the random-effect of subjects (participants in the experiment) and items (stimuli in the experiment).

The items analysis collapses across subjects to compare means across all stimulus items ($N = 16$ in the current study). The subject's analysis collapses across items to compare means across all participants ($N = 180$ in the current study).

For the current study, all reported analyses were conducted with participants as a random-effect variable (F_1) and items as a random-effect variable (F_2). Participant ratings for the non-experimental filler items were not analyzed as they were used to mask the manipulation. Only ratings for the 16 experimental items were analyzed.

Statistical Assumptions

Items Analysis. To make sure that the data was normally distributed and that participants gave attention to all items, an outlier analysis was conducted on the item means and participant/subject means. For the analysis by items, no data was dropped. The assumption of normality was met for the items analysis data. Because my independent variables only have two levels, the assumption of sphericity was not required (Laerd Statistics, 2015). All other assumptions were met, and the Type I error rate was set to be .05.

Subjects Analysis. For the analysis by subjects, there were five participants whose means were outliers in the professor condition only, and one participant whose mean was an outlier in the classmate condition only. All outlier means were removed, but the remainder of those participants' data was retained for analysis. Thus, the assumption of no significant outliers in any cell of data was met (Laerd Statistics, 2015).

Analysis of the studentized residuals showed that normality was violated in all four groups when running the Shapiro-Wilk Test, however, because I had a sample size larger than 50

participants I examined the Normal Q-Q plots. At larger sample sizes, the Shapiro-Wilk test flags even the most minor deviations from normality as statistically significant (Laerd Statistics, 2015). After examining the Normal Q-Q plots, the points layed directly over the straight diagonal line for all four groups with no deviation from the line, thus the data needed no transformations before analysis.

Items Analysis

Descriptive statistics computed by items can be seen in Table 1.

Table 1

Descriptive Statistics for Sender Tone Interpretation (1 Very Negative - 7 Very Positive)

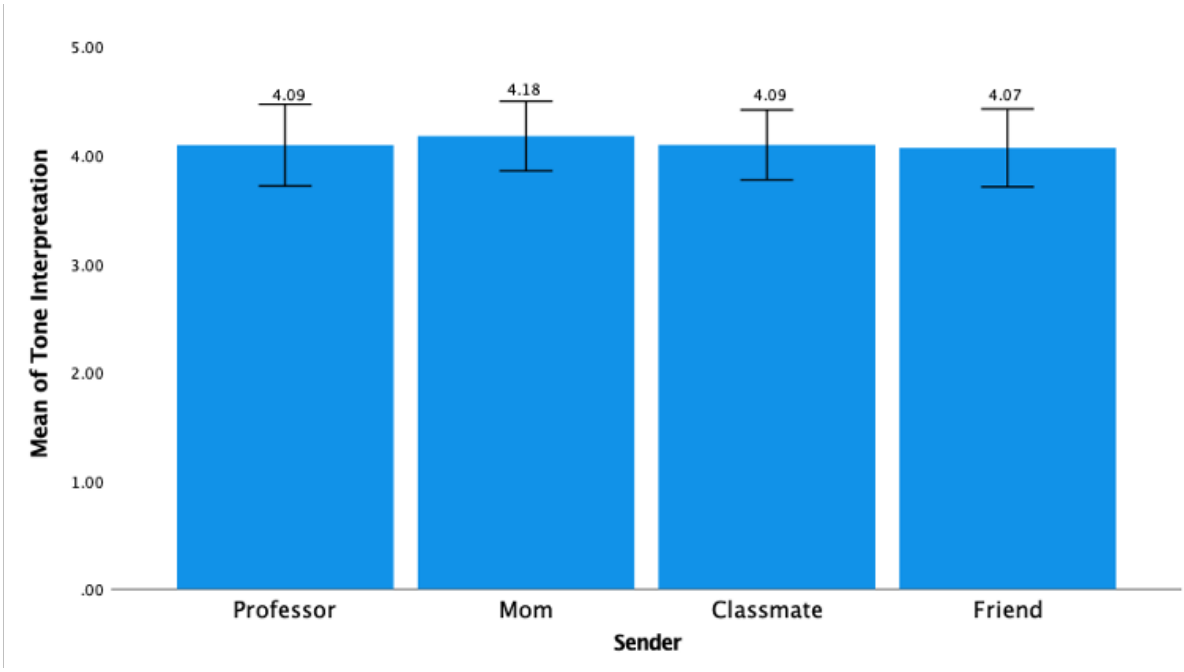
Sender	N	*M*	SD	Skewness	Kurtosis
Professor	16	4.09	.71	.843	.822
Mom	16	4.18	.60	.354	-.607
Classmate	16	4.09	.60	.480	-.043
Friend	16	4.07	.67	.258	-.607

Based on the descriptive statistics (Table 1), there was no difference in the ratings of tone between the professor items ($M = 4.09$, $SD = .71$) and the classmate items ($M = 4.09$, $SD = .60$). The friend items mean is .02 lower, thus, ratings of tone for friend items ($M = 4.07$, $SD = .67$) was nearly equivalent to both professor and classmate item means. Mom items ($M = 4.17$, $SD = .60$) were rated slightly more positive than items from the rest of the sender characters. However,

the mean differences between mom items and the items from classmate and professor (.08) and friend (.1) are negligible. This is shown visually in Figure 1.

Figure 1

Average Tone Rating by Sender (1 Very negative -7 Very Positive)



Note. Error bars represent 95% confidence intervals.

For the analysis by items, there was no main effect of authority, $F_2(1, 15) = 1.499$, $p = .24$, partial $\eta 2 = .091$. There was no main effect of familiarity, $F_2(1, 15) = .121$, $p = .732$, partial $\eta 2 = .008$. There was no significant interaction, $F_2(1, 15) = 1.749$, $p = .206$, partial $\eta 2 = .104$.

Subjects Analysis

Descriptive statistics computed by participants can be seen in Table 2.

Table 2

Descriptive Statistics for Sender Tone Interpretation (1 Very Negative - 7 Very Positive)

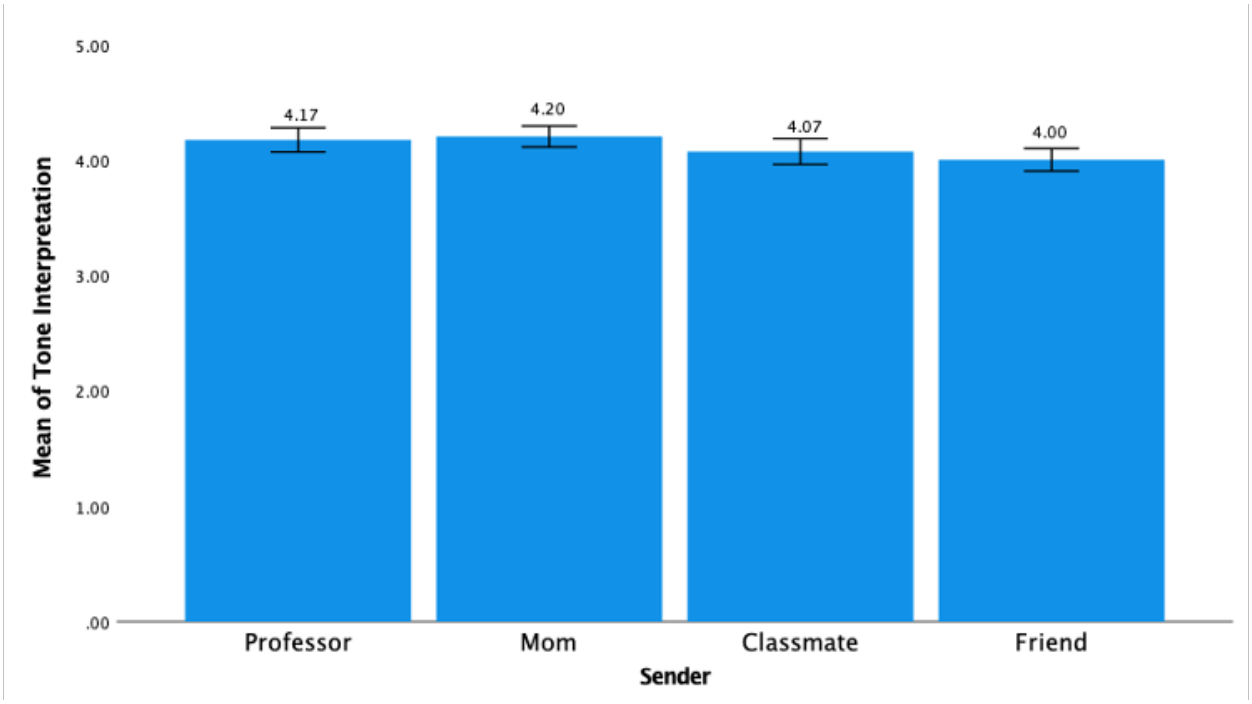
Sender	N	*M*	SD	Skewness	Kurtosis

Professor	178	4.17	.69	-.048	-.318
Mom	177	4.2	.61	-.010	-.380
Classmate	179	4.07	.75	-.088	.100
Friend	180	4.01	.66	-.024	.521

Participants rated the tone of items with mom characters as the most positive ($M = 4.2$, $SD = .61$), professor ratings ($M = 4.17$, $SD = .69$) were the second highest compared to classmate ($M = 4.07$, $SD = .75$) and friend was rated the most negative ($M = 4.01$, $SD = .66$). This is shown visually in Figure 2.

Figure 2

Average Tone Rating by Sender (1 Very negative -7 Very Positive)



Note. Error bars represent 95% confidence intervals.

For the analysis by subjects, there was a main effect of authority, $F_1(1, 173) = 12.464$, $p < .001$, partial $\eta 2 = .071$, and a mean difference of .151 (95% CI, .067 to .234), such that participants rated replies from characters with high authority as having a more positive tone than replies from characters with low authority. There was no significant main effect of familiarity, $F_1(1, 173) = 1.425$, $p = .234$, partial $\eta 2 = .008$. There was no significant interaction between authority and familiarity, $F_1(1, 173) = .134$, $p = .715$, partial $\eta 2 = .001$.

Discussion

The purpose of the present study was to examine how inherent levels of familiarity and authority in the relationship between two characters corresponding by email may affect how participants interpret the tone of the email replies in a narrative. Participants were randomly assigned to read a total of 32 stories via a survey. Each story described a student main character sending an email to a secondary character with a different level of authority and familiarity based on the relationship between the two characters (e.g., mom, professor, classmate, and friend). At the end of each story participants read and rated the tone of the secondary character's email reply to the main student character.

Sixteen of the total items were experimental and 16 were non-experimental filler items. In the set of 16 experimental items that each participant read, there were four randomly presented mom items, four randomly represented professor items, four randomly presented classmate items, and four randomly presented friend items. All participants also read the same set of non-experimental filler items: eight positive and eight negative. After reading each of the 16 experimental story items, participants rated the tone of an email reply from the sender character

(e.g., mom, professor, classmate, or friend) on a 7-point Likert scale (1 Very negative to 7 Very positive).

There were three predictions. First, it was predicted that there would be a main effect of authority, specifically, more positive ratings for characters with high authority (e.g., mom and professor) than those with low authority (e.g., classmate and friend). Second, it was predicted that there would be a main effect of familiarity, specifically, more positive ratings of tone for email replies from characters with high familiarity (e.g., mom and friend) than those with low familiarity (e.g., professor and classmate). Third, it was predicted that there would be an interaction between familiarity and authority, such that the tone of email replies would be rated differently at each level of each independent variable. Thus, if a significant two-way interaction was found, the tone of the email replies would be rated most positively for sender characters with both high authority, and high familiarity (e.g., mom), followed by characters with high authority and low familiarity (e.g., professor). Furthermore, characters with low authority and high familiarity (e.g., friend) would be rated as more negatively than mom and professor, but more positively than classmate. Finally, classmate characters with low authority and low familiarity will be rated the most negative.

Summary of Findings

Authority. It was hypothesized that there would be a main effect of authority, such that individuals with high authority (mom and professor) would be rated as having a more positive tone than individuals with low authority (classmate and friend), which was supported by the results of my study. Prior research about communication with authority suggests that when low authority individuals email high authority individuals both parties use a formal communication style and maintain politeness strategies (Bau-Fraunch, 2011; Brown & Levinson, 1987;

Chejnova, 2014; Duthler et al., 2006; Jessemer & Anderson, 2001; Kim and Lee, 2017). Participants in the current study may have understood the interactions between the student main character and professor character, and the student main character and mom character to operate in much the same way as real-life interactions between high and low authority individuals would, which supported the hypothesis and led to the main effect, though this needs to be interpreted with caution.

Politeness Theory & Power. One reason that a main effect of authority was observed could be due to the Politeness Theory. Peterson et al. (2011) examined corpus emails based on Brown and Levinson's (1987) model of politeness, which stated that there are three factors considered in social situations when deciding what politeness strategies to use as a communication technique. Those three factors include power, distance, and rank. In this study, researchers assigned a rank of 0-6 for positions in a company. Positions with a rank of zero included employees, traders, and in-house lawyers. The position with a rank of one was manager. The position with a rank of two was director. The position with a rank of three was managerial director. The position with a rank of four was Vice President. The position with a rank of five was President. Finally, the position with the highest rank of six was CEO. When emailing someone two to four ranks above the sender, it resulted in a more formal email than if the person was emailing someone two ranks lower than them. Overall, it was found that email threads with someone who has a higher power, or more authority, were more formal than with co-workers of the same rank or lower power, thus lower authority. In terms of the current study's results, formality could be interpreted as a sign of politeness and thus be seen as more positive.

Indirectness & Formality. Another reason a main effect of authority was found could be indirectness. Holtgraves and Purdew (2016) found that indirectness varies as a function of

politeness, such that when participants were asked to provide an opinion on a scenario that involved someone close to them, they replied with a more indirect reply. Conversely, when participants were presented with a scenario that involved someone further removed from them, they were more direct, indicating a lack of politeness for people more distant from their own perspective.

Two of the politeness strategies that are used most in communication are indirectness and formality. Mom and professor characters are authority figures, and therefore hold more power over the main characters, therefore, the messages may be perceived as more formal because of this power difference, which in turn may be interpreted as more polite or positive in tone. Classmates and friends are peers, and therefore do not have a different, or higher, power or authority relative to the main characters.Thus, their interactions may be perceived as more informal and thus less polite, leading to more negative ratings of tone.

Furthermore, in the current experiment, the participants were instructed to imagine that they received a reply from the sender and asked how it would make them feel. Similar to Holtgraves and Purdew (2016), the participants in the current study were likely more involved and immersed in the narrative situation because they were asked to perceive it from their point of view and answer how they think the character in the story would rate the tone of the reply, which would have created higher face threat because they felt they were directly involved. Additionally, readers hold the relevant information of a narrative in their working memory and integrate their linguistic knowledge with their background knowledge about what is discussed in the narrative to create a mental model (Johnson-Laird, 1994). The situation model is used to aid a reader in their comprehension of the story when they read new sentences, such that the model is updated with the newly read information. These models tend to be centered around the main

characters of a narrative, which leads the readers to take on that main character's perspective, and their situation model is consistent with the main character's perspective (O'Brien & Albrecht, 1992).

Taken together, it is possible that participants in the current study might have felt that because they were asked about their perception, this scenario presented higher face-threat, and were therefore rating the tone as more polite or positive, than they might have if the participants were further removed and had less face-threat present in the situation. Furthermore, as seen in situation model research, it is also possible that despite the instructions to approach ratings from their own perspective, the participants may have taken the main character's perspective when rating the tone of the reply. If participants took the main story character's perspective, then this would present higher face-threat because they would have felt that they were directly involved in the situation. This also would have led to more polite or positive tone ratings.

Familiarity. Researchers found that when individuals worked with group members with more familiarity compared to strangers, there were higher satisfaction ratings (Gruenfeld et al., 1996). Furthermore, the curse of knowledge occurs when there is an overestimation of what others know based on one's own knowledge. That overestimation often leads to misunderstandings and quick judgments in social situations (Birch et al., 2017). Participants will pick up on the familiarity in the relationship between the main character and the sender, and rate the tone based on their own experiences how familiarity informs their communication (i.e., their own bias or curse of knowledge). Thus, it was originally hypothesized that senders with higher familiarity would be rated as having a more positive tone than senders with low familiarity. However, this hypothesis was not supported. There was no main effect of familiarity, meaning that there were not significant differences when comparing the average ratings of mom and

friend to classmate and professor, even though it was hypothesized that participants would understand there to be greater common ground between the main character and sender characters with high familiarity (i.e., mom and friend).

Common Ground. One reason for the lack of a main effect of familiarity may be that the participants did not register the shared common ground between the student main character and the characters with high familiarity (i.e., mom and friend), and it was not salient enough in the shorter narrative materials used. Additionally, it is possible that the difference between familiarity in the friend and classmate characters was not elaborated enough in the short narratives to make it distinct that the friend was closer to the main character than the classmate acquaintance, and thus, participants may have understood the student main character to share the same level of common ground with friend and classmate characters. In turn, this would bring rating means closer together for high familiarity characters (i.e., mom and friend) and low familiarity characters (i.e., professor and classmate).

Another possible explanation for the lack of a main effect of familiarity is that the mode of communication between characters in the stimuli was depicted as CMC, and described as an email, rather than a face-to-face interaction. Gruenfeld et al., (1996) found that groups with more familiar members had higher satisfaction rates than groups with strangers, and this study only included face-to-face groups. Adams and colleagues (2005) replicated and extended the Gruenfeld and colleagues' (1996) study on familiarity and group membership, to compare face-to-face communication and computer-mediated-communication via chat room technology. Adams et al., (2005) were hoping to replicate the finding that groups with familiar members would have higher satisfaction rates than groups with strangers in the face-to-face condition and extend that finding to CMC chat room groups. Participants in both the face-to-face and

computer-mediated groups completed a Lost-at-Sea intellectual task. The Lost-at-Sea task is a consensus seeking task where participants were given a scenario about being lost at sea and were told to rank the importance of items. Following the task, participants in each group were given a group member satisfaction questionnaire, and questions were measured on a 5-point likert scale. The questions were: (a) I enjoyed completing this task because I thought the group members worked well together. (b) I enjoy completing tasks like Lost-at-Sea in a group scenario. (c) I would use this method of communication in future group-decision tasks. (d) I enjoyed completing this task because I thought the method of communication was effective. Overall, they were not able to replicate the results of Gruenfeld et al., (1996), more specifically, Adams et al. (2005) found no main effect of familiarity, and this is similar to the pattern of results in the current study.

Because Gruenfeld et al. (1996) found that participants had higher satisfaction working with familiar members face-to-face, but this was not seen in Adams et al. (2005) with computer-mediated groups, it is possible that CMC adds perceived distance between familiar members. This may have affected participants in the current study who were approaching the narrative materials from their own perspective, and treating the materials like CMC, as instructed. The use of CMC may add a layer of ambiguity that might be too strong to overcome even when communicating with someone of high familiarity, which, in turn, effectively nullifies the effect of the familiarity manipulation.

Limitations

Power

There are several limitations in this study to consider. In the analysis by subjects, there was a significant main effect of authority with a medium effect size. However, the conclusions

drawn from this finding need to be made cautiously for several reasons. First, the means of the professor, mom, classmate, and friend were all clustered around 4, indicating neutral ratings of tone for the email replies across all item types for all participants. Second, this was an exploratory study with only one experiment; therefore, without self-replication it cannot be determined if the pattern of results is reliable. Third, it is possible that the same main effect of authority was not seen in the items analysis because it was underpowered. The general accepted minimum power is .80 (Cohen, 1988). Observed power is the post hoc statistical power based on the effect size of the data. In the analysis by items, the observed power for the main effect of authority was .209, the observed power for the main effect of familiarity was .062, and the observed power of the interaction was .236. This indicates that both main effects and the interaction were underpowered. Two elements of research design that can affect the effect size of a study include the sensitivity of the dependent variable to measure differences between participants, and the salience of the manipulation to observe differences between participants based on the independent variables. It is likely that the items analysis being underpowered is driven by the fact that the participants were rating the items as neutral. The items were intentionally written to be neutral, so that only the secondary character's relationship with the main student character (e.g., mom, professor, friend, or classmate), and the implied inherent levels of familiarity and authority in those relationships would frame participants' perception of tone and their rating of the email reply.

However, because the tone ratings clustered around neutral, the manipulation of familiarity/authority may not have been salient enough for participants to recognize those inherent differences and lead to a difference in tone rating between senders, which, in turn, led to small effect sizes, and resulted in the study being underpowered. Ways to strengthen the salience

of the manipulation in the materials and methods are discussed further in the future directions for research.

Alternative Interpretations of Results

The results of the current study make it necessary to consider an alternative explanation for the main effect of authority. It is possible that participants perceived the difference between high authority characters (e.g., mom and professor) and low authority characters (e.g., friend and classmate) as simply an effect of age. This is because the mom and professor characters are understood to be older than the friend and classmate characters, relative to the age of the student main character. In the current design, age is a confounding factor within one of our variables of interest, authority, thus age cannot be separated from the inherent level of authority present in each secondary character's relationship relative to the main student character. This is discussed further in the proposed future directions with a study designed to address age and separate it from authority.

From a discourse processing theoretical perspective, participants may simply have paid attention to the age difference between the high authority (e.g., mom and professor) and low authority (e.g., friend and classmate) characters because it satisfied their *standard of coherence* for comprehension of the story and completing the rating task. People consume a large amount of written information daily, and most often need to understand the "gist" or main points of the information needed to make a decision or complete a task quickly (Green & Benjamin, 2022). Thus, for day-to-day tasks that do not require a more thorough or deeper level of comprehension, most readers will not pursue a maximal standard of coherence when it is not necessary. Instead, skilled readers are practiced in reading efficiently to satisfy a "good-enough" level of processing and will often operate with a cognitive miser perspective to preserve limited mental resources,

like memory and attention (Krashen, 1989; Warren et al., 1979). Moreover, skilled readers especially utilize automatic processes when reading, and constantly compare their current understanding of the recently read text information to their standard of coherence. If their current understanding meets their standard of coherence for the task, then they go no further, and do not engage in strategic processes to preserve cognitive resources (van den Broek et al., 2011).

Furthermore, the standards of coherence that the reader adopts depend largely on the circumstances of why they are reading (e.g., reading for enjoyment, or studying for a test). The participants in the current study were recruited from the participant pool for course credit, received this credit regardless of if their attention was fully on the task at hand, could take the survey anywhere, at any time, and were not in a controlled lab setting. Given these factors and readers' individual standards of coherence, it was possible that participants in the current study were reading the items at a minimal standard of coherence and relying on "good-enough" processing to achieve comprehension at a level that was sufficient to complete the rating task. If this were the case, then they would solely rely on their automatic processes (e.g., reactivation of concepts from a text) during reading, and not engage in any strategic processes (e.g., bridging gaps in context and making inferences). By relying on automatic reading processes, readers may have only noticed the more obvious age difference between the adult senders with high authority (e.g., mom and professor) and the younger college-aged peers with low authority (e.g., friend and classmate). If this were enough to satisfy readers' "good-enough" standard for comprehension to complete the rating task, then readers would not need to engage additional effort and strategic processes to make inferences about the different inherent levels of authority present in the secondary character's relationship with the student main character. In this case, participants would not have made the inference that the mom and professor characters indicated high

authority and a power difference relative to the student main character, and the friend and classmate indicated low authority and no power difference relative to the student main character. In the current study's design and pattern of results it is not possible to confidently separate the influence of age and authority without further investigation in future studies.

Demographic Information

Another limitation of the current study is that no participant demographic information was collected. This is addressed more extensively in future directions to address limitations. Even though the current study did not require participants to produce their own responses to the CMC message that they read, the existing body of research on gender differences in CMC indicates the importance of collecting information on participant gender. Collecting gender demographic information would have allowed us to determine if there were differences in how participants interpreted message tone and rated the replies based on their gender. To prevent gender from becoming a confound in the design of the study the characters in every story were the same gender; all senders and student main characters were female.

Future Directions to Address Limitations

Writing More Experimental Items. There was a medium-sized main effect (partial $\eta 2$ = .071) for authority in the analysis by subjects, but in the analysis by items the effect was underpowered. One way to address this in a future experiment is to design a replication study with more items, though this also has the potential risk of fatiguing participants' attention if there are too many items. Participants could also become aware of the manipulation of experimental interest with a larger set of items. Brysbaert and Stevens (2018) suggest a sample size of 40 participants and 40 items as a starting point for reaction time studies, and this recommendation

may be helpful to consider for improving the present study's design to help determine if there is a main effect of authority by items, similar to the one found by subjects.

Separating Age from Authority in the Characters. Furthermore, the current study's e design included mom and professor as high authority figures, who are understood to be older in relation to the student main character than the low authority peer figures (e.g., classmate and friend). Thus, another design change would be necessary to modify the items in order to confidently determine if the main effect authority was simply an effect of age because participants understood the perceived level of authority as something that was inherent in the age difference between the high authority characters and the main character.

In order to separate the effect of authority and age, the sender characters need to be changed to individuals who still have high authority and low familiarity relative to the main student character but are closer in age to the main character. The professor could be changed to teaching assistant (TA) because this character would still have high authority and low familiarity with respect to the main student character. With this change, the TA authority figure would be similar in age to the other senders (e.g., classmate and friend), as well as close in age to the main character.

It is possible to change mom (high authority and high familiarity) to another high familiarity character that would be closer in age to the main character. However, this presents the risk of weakening the perception of high authority. Friend is the other sender character with high familiarity relative to the student main character. Thus, creating a character with high familiarity without the age difference may mean that participants perceive the new character similarly to the friend. Consequently, this new character may be perceived as low authority, not high authority,

and this would, in turn, likely decrease the effect of authority seen at the level of high familiarity between the new high authority character and the low authority friend.

Therefore, another possible way to separate age and authority is to make all the sender characters older relative to the main student character. In this design, mom as the high authority/high familiarity figure, and professor as the high authority/low familiarity figure would stay the same, but the classmate and friend characters would change to someone older. Classmate could be changed to an older co-worker, and this would still preserve the low authority/low familiarity levels in the relationship. Friend could be changed to an older cousin, and this would still maintain the low authority/high familiarity manipulation. In the current study, there was a significant main effect of authority. If the study were to be replicated with older senders and this effect was not replicated, then the results would indicate that participants were simply paying attention to the age difference while reading, and not the level of authority inherent in each character's relationship with the student main character. However, if the main effect were to be replicated, then this would provide evidence that the participants were in fact paying attention to the difference in authority levels, and the main effect was not simply due to the perceived age difference between the high authority characters and the student main character.

Adding Narrative Elaboration to the Experimental Items. Rewriting the stimuli to make them more extended narratives may strengthen the character representation of familiarity and authority and increase the saliency of the familiarity/authority manipulation for readers. Expanded narratives may require increased cognitive processing, and this will be more likely to increase readers' attentional engagement, and allocation of effort towards the reading task. In turn, this recruitment of mental effort and attention will increase immersion, or *transportation*

into the narrative, and create a stronger memory representation of the character and events of the narrative in the reader's situation model for the story (Green, 2004; van den Broek, 2001).

Elaborated narratives will also likely facilitate the recruitment of automatic and strategic processes for reading comprehension. One example of an automatic process that activates information from earlier in the narrative or a reader's prior background knowledge and semantic memory is cohort activation (Tzeng et al., 2005). For example, if a narrative is talking about the White House, then the narrative might not explicitly say that the President lives in the White House. Nonetheless, this semantic information is activated in a reader's memory, and they would create associations with the current information in the narrative to fully comprehend the text's events. Likewise, concepts from earlier in the narrative are automatically reactivated from the reader's memory. For example, if the narrative gives biographical backstories about two characters at the beginning of a narrative, and later on these two characters are having a conversation, then the biographical information from earlier in the text is reactivated in association with the characters to help comprehend the conversation. In both cases, the activation, or reactivation, of narrative events and information happens automatically with no strategic recruitment of mental effort from the reader (McKoon & Ratcliff, 1992).

Strategic processes include those that help readers build inferences throughout a narrative to inform the connected representation in the mental model. Together, both the automatic and strategic processes create a foundation for a coherent mental representation. The more strongly and frequently that two concepts are activated in memory simultaneously, the more likely it is that readers will be able to create a semantic connection (van den Broek & Kendeou, 2008). Thus, both types of processes working together leads to the semantic connections between prior narrative content and a reader's prior background/semantic knowledge, which leads to a full

mental representation, and more complete comprehension of the narrative (van den Broek et al., 2011). In sum, writing the materials as more complete narratives could increase engagement and mental representation for the characters, which could lead to a more pronounced effect of authority and possibly familiarity, and the interaction between both as well.

The current materials were written to be shorter so that the reader's focus of attention would be on treating the items as emails rather than narrative stories. However, to increase salience of the familiarity/authority manipulation it might be necessary to add more narrative elaboration, so that the first introduction to the sender character happens earlier in the story, rather than line seven of the eight total lines in each stimulus item. Evidence for this comes from Troyer et al. (2016) and Hofmeister and Vasishth (2014), where short discourse sentences were supplemented by elaborative information, such as more context. In Hofmeister and Vasishth's (2014) study, participants read 28 sentence stimuli, and for each item, the participant read the sentence in one of four conditions: "simple simple," "complex simple," "simple complex," and "complex complex." The simple simple condition had no added cues to the sentence. The complex simple condition added cues before the first noun. The simple complex added cues before the second noun. The complex complex condition added cues before both nouns. Critically, compared to the "simple simple" condition, each of the other three conditions included elaboration at different points of the sentence. The item "The congressman interrogated the general who a lawyer from the White House advised not to comment on prisoners" was considered their "simple simple" condition. "The *conservative U.S.* congressman interrogated the general who a lawyer from the White House advised not to comment on prisoners" was their "complex simple" condition. "The congressman interrogated the *victorious four-star general* who a lawyer from the White House advised not to comment on prisoners" was their "simple

complex" condition. "The *conservative U.S.* congressman interrogated the *vicious four-star* general who a lawyer for the White House advised to not comment on the prisoners" was their "complex complex" condition. Adding contextual elaboration provided participants with more cues for retrieval, and this resulted in faster reading times at critical retrieval sites (e.g., the parts of the sentence with the added cues). Reading time is indicative of cognitive processing. When there are more cues in the narrative for retrieval, that information is active and accessible in participants' memory, which leads to faster reading times.

Similarly, Troyer et al., (2016) had participants read texts with two referents, or characters, (e.g., two senators). In the "many cue" condition, the character description had more elaboration, for example, "The Republican had voted for the other, a man from Ohio who was running for president." In the "one cue" condition, there was less information about the character, for example, "The Democrat had voted for one of the senators." Readers had facilitated memory retrieval (e.g., faster reading times) for the "many cue" condition than the "one cue" condition, beginning with the verb section (e.g., "had voted for") and this pattern continued for the rest of the sentence (Troyer et al., 2016).

There are other ways that elaborating on the current materials may encourage readers to retrieve more cues regarding familiarity and authority, increase salience of the manipulation, and facilitate better separation of the high and low levels for authority and familiarity in each character (Hofmeister and Vasishth, 2014; Singer et al., 1994; Troyer et al., 2016; van den Broek, 1993; van den Broek, 2008; van den Broek et al., 2011). Creating more cues about the secondary characters and their relationship with the main character, describing more conversational exchanges back and forth besides one email reply, or adding more background knowledge and context about the events of the narrative could all serve as elaboration to

encourage memory retrieval and increase attentional engagement. With more narrative elaboration, when readers read the last line of interaction between the characters and are asked to rate the tone, it may increase the likelihood that they will reactivate the information that was given earlier in the story. In turn, readers can integrate the prior information with the last interaction between the two characters to increase salience and clarity of the familiarity/authority manipulation, and the added information about the characters should provide more framing to interpret the tone of the reply. This was not possible with the shorter materials in the current study.

Collecting Participant Demographic Information. In the current study, participants were asked to rate the tone of the reply that was given to investigate if knowing the relationship between the student main character and the secondary sender character they were told the email came from influenced their rating of the reply's tone. All replies were the same across the different versions of a particular stimulus item. The only thing that changed was who was sending the reply: the student character's mother, professor, classmate, or friend. Additionally, all characters (e.g., student main characters, and senders) across all narrative items were kept consistent and written as female to eliminate gender of the character as a potential confounding factor that influenced the results.

Men and women tend to use and understand language in different ways (Coates, 1986). In Western cultures, men are expected to be assertive, competitive, and aggressive, yet women are expected to be co-operative, supportive, and indirect (i.e., polite) (Mullany, 2012). Felice and Garretson (2018) found that females used canonical downgraders for requests and suggestions, such as "I think" when making a suggestion. The use of downtoners is generally attributed to women rather than men. Instead of using "I think," men will typically use "we should" before

making a suggestion, such as “we should discuss your speech.” When looking at use of the word “you” between men and women, it was found that women typically use “you” in emotive phrases, such as “hope you’re feeling well,” or “the public thinks you’re doing a fantastic job.” Males were more likely to use “you” when requesting or asking about information and commitments, such as “can you talk?” or “I’ll call you this week to tell you what he said” (Felice & Garretson, 2018). Overall, women tend to use more politeness markers in CMC and communicate indirectly when making requests or suggestions, which is viewed as more polite. Therefore, a design that included different gendered senders and measured if participants’ interpretation of the email reply’s tone differed based on the gender of the character would be informative to observe if participants have prior expectations about each gender and their tone in CMC. Thus, given the research on gender differences in CMC, it is possible that by adding male sender characters in addition to female senders would also provide useful insight into how the context of knowledge about the sender may frame the interpretation of the message.

Some sociolinguistic researchers argue that discourse is characterized by patterns of speech, and those patterns are sex specific, thus discourse between genders can be considered cross-cultural communication (Preisler, 1987). Male patterns of communication tend to follow a social hierarchy, and female communication tends to be network oriented. Although, in general, both genders need intimacy and independence, women tend to focus more on creating intimacy and males tend to focus more on asserting dominance and gaining respect (Tannen, 1990). This is explained by the generalization that men are typically perceived as more likely to use hostile language than women in the interest of competing, while women are perceived as “more proper” and polite. Gender differences in communication styles can cause arguments or disagreement; for women, asking questions is a way to keep the conversation going. For men, questions

represent a threat of independence, creating the feeling that they must answer to someone (Cameron, 2008).

Given the evidence surrounding how differently males and females communicate, and researchers go as far as to say that male-female communication is analogous to cross-cultural communication, it is important to recognize that the male and female participants in my study may have perceived the character replies differently. Moreover, the senders were female characters, and they were asked to rate the replies according to their own perspective, which includes their own gender. Thus, collecting demographic data and running sub-group analyses would have been an additional informative measure to examine if there were sub-groups that divided participants' response patterns in a meaningful way. Without the demographic information, this cannot be examined, and thus, participant gender cannot be eliminated as a possible factor that contributes to the results of the study.

Future Directions to Investigate Gender & CMC. The materials used in the current study were short narratives that stated the characters' exchanges were via email. It was a subtle manipulation that aimed to present the exchanges as CMC, and this subtlety and lack of manipulation salience may have led to the lack of conclusive findings. There are more naturalistic ways to investigate CMC and account for the possible influence of participants' gender to gain more information about how they approach the narratives and the characters. One such design would be to investigate participants' CMC response behavior more directly via participants' interactions with each other, or with researchers who served as confederates in the study.

There was no part of the task or question designed with the express intent to investigate or measure gender differences in language production. Participants were not asked to provide

any such information about their language use or provide any written language responses at all. Participants did not, for example, produce their own replies based on how they personally would respond to the student character's email, or write a story continuation for what they thought the secondary sender's reply should be to the student's initial email.

Future Directions to Investigate Emoji Use in CMC

Another future direction to explore a new research question would be investigating how the use of emoji is affected by the relationship between the sender and recipient, and the corresponding authority and familiarity levels present in the communication. Emoji serve as another way to add context and meaning that helps disambiguate CMC messages, and the usage patterns of emoji may indicate how much common ground is shared between two people. Arp et al., (2021) found that emoji valence can impact the interpretation of neutral text messages, such that when neutral text messages were paired with a positive emoji, the messages were rated as more positive than neutral text messages paired with a negative emoji. Furthermore, when neutral messages were paired with a mild positive (🙂 or 😊) or mild negative emoji (😕 or ☹️), the messages were rated closer to neutral than when paired with a strong positive (😄 or 😁) or strong negative (😔 or 😠) emoji. First, neutral stimuli were normed, such as "I asked Mike to take another look at it for me." Second, when this neutral message appeared as, "I asked Mike to take another look at it for me 🙂" versus "I asked Mike to take another look at it for me 😄 " the strong positive emoji in the latter example influenced the valence and rating of the message, and it was rated more positive than when the same neutral message was presented with the mild positive emoji.

Similarly, Phillips et al. (2022) first conducted a norming rating study to determine slightly positive and slightly negative messages for experimental use. Then, participants rated 14

slightly positive messages, paired with mild positive and strong positive emoji taken from Arp et al. (2021). “We split desert 😋” was an example of a slightly positive text paired with a mild positive emoji. “We got a lot of work done 😄” was an example of a slightly positive text paired with a strong positive emoji. Participants also rated 14 slightly negative messages, paired with mild negative and strong negative emoji taken from Arp et al. (2021). “I can’t help you move 😕” was an example of a slightly negative text paired with a mild negative emoji. “I got a parking ticket yesterday 🤬” was an example of a slightly negative text paired with a strong negative emoji. Phillips et al. (2022) found that emoji valence can impact text message interpretation, such that the slightly negative texts paired with the strong negative emoji were rated significantly more negative than the slightly negative texts paired with a mild negative emoji. This pattern was not seen with the positive text/emoji pairs, possibly because the same level of attention is not needed to track nuance in positive messages. Good may be “good-enough,” regardless of whether the emoji is strongly positive or mildly positive.

Thus, importantly, negative emoji carry some nuanced meaning that allows senders to convey gradation of a negative emotion, and readers pay attention to how negative a negative message is (Phillips et al., 2022). Taken together, the results of prior work investigating how emoji valence influences the interpretation of text messages (Arp et al., 2021; Phillips et al., 2022) specifically indicate that emoji use can convey meaning, intention, and subtlety that would otherwise be expressed by facial expressions, gestures, and tone of voice. The use of emoji is one way that CMC users have bridged the communication gap in CMC. These new cues specific to CMC environments help make up for the lack of pragmatic information that is available in face-to-face conversation but is absent in communication by text message or email.

Furthermore, emoji impact the amount of attention a text receives (Willoughby & Liu, 2018), possibly because an emoji requires increased engagement for readers to allocate the attention needed to process and integrate the meaning of an emoji with the written message. Thus, creating email stimuli with emoji cues could increase participants' attentional engagement in the current study.

Additionally, because emoji valence adds pragmatic information and provides context for CMC, it is possible that emoji make conversational styles and authority/familiarity levels in a relationship more salient, specifically in terms of the decision of where in a conversation, and with whom, to use an emoji. In such a design, similar to the current study, a norming procedure would be done first. I could select 15 face emoji and instruct participants to think about the context in which they would use them and rate the emoji on a scale of 1 (Very informal) to 7 (Very formal). For example, I expect emoji that could be used to convey sarcasm, or a secondary meaning aside from the literal use of the emoji (e.g., 🤪 or 🙃) would be interpreted as more informal. This is likely because such emoji require an established meaning based on common ground between the users, compared to emoji that are typically used to convey more literal meaning (e.g., a standard smiling face) and do not require prior common ground to disambiguate their meaning (e.g., 😊 or 🙂). Following the norming procedure, a second experiment would be conducted. In this experiment, participants would first read a background story, then read the student main character's message to the secondary character (e.g., mom, professor, classmate, or friend), and finally, read the sender's reply. Participants would be given a new follow-up reply from the main character to the sender and be asked to select the emoji that they think the main character would include in that reply based on the relationship of the two characters, and the inherent familiarity and authority. This would provide insight into how readers perceive the use

of emoji in terms of both the tone of the message and the level of formality. Moreover, this design would add to our understanding of how people consider the levels of familiarity and authority present in the relationships between different conversational partners when making communication decisions.

Conclusion

The current study investigated how different relationships between sender and recipient characters, and the inherent levels of authority and familiarity in each relationship, influenced the perceived tone of a message. The findings suggest that authority may have an effect on how readers interpret messages, such that individuals with higher authority may have more formal exchanges with individuals of lower authority, which may be interpreted as more polite, and therefore, be perceived as more positive.

The implications for the current study extend beyond simply how we approach interactions and communication via text messaging or email. CMC provides psycholinguists with a rich landscape to investigate language processing, comprehension, and usage behavior. Specifically, this is due to how widely prevalent CMC is and how it has ostensibly replaced face-to-face communication. Because of this, people have naturally found and developed ways to convey cues used in face-to-face conversation through CMC to help clarify communication, and language will only continue to evolve in time with technological advances. As people continue to communicate more readily via electronic and digital means, like email, text message, and social media, this makes it all the more vital, exciting, and empirically interesting to study language communication and change as it is happening, and where it is happening the most.

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Appendix A

Norming Materials

Target Lines

1. Try to get the work done before you leave.
2. I'll get to it when I have the chance.
3. Sure, I don't have anything else going on.
4. It was quite a memorable experience.
5. I hope it's not an inconvenience.
6. No, I don't mind rescheduling.
7. I'll let you know more tomorrow.
8. It was an interesting presentation.
9. If that's alright with you.
10. I have it all written down.
11. She sure is timely.
12. Thanks for your help.
13. I should be finished soon.
14. I don't think I can come today.
15. I'm sorry about that.
16. I submitted it two days early.

Positive Fillers

1. I am so excited to see you tomorrow.
2. My new neighbors are really nice.
3. I love my new car.
4. My roommate surprised me with a cake.
5. We got a lot of work done.
6. Good job on the presentation yesterday.
7. Was so great to run into him last week.
8. Your new dog is so cute.

Negative Fillers

1. I didn't like that restaurant at all.
2. That professor was really mean.
3. I thought that show was boring.
4. I did not like that book.
5. That lecture was confusing.
6. That barista was really rude.
7. I forgot how unreliable she is.
8. I got a parking ticket yesterday.

Appendix B

STORY 1 (Parent)

1 Rachel was planning out her weekly schedule, and
2 was not sure if she remembered to let people know
3 that she would be out of town for a weekend wedding.
4 She wouldn't be able to do any schoolwork while away.
5 Rachel decided to email her mom to ask if it's better to
6 catch up on schoolwork before or after the wedding.
7 Her Mom was at work when she replied to Rachel,
8 "Try to get the work done before you leave." **(TARGET LINE)**

STORY 1 (Professor)

1 Rachel was planning out her weekly schedule, and
2 was not sure if she remembered to let people know
3 that she would be out of town for a weekend wedding.
4 She wouldn't be able to do any schoolwork while away.
5 Rachel decided to email her professor to ask if it would
6 be better to catch up on schoolwork before or after
7 the wedding. Her Professor Payton replied to Rachel,
8 "Try to get the work done before you leave." (**TARGET LINE)**

STORY 1 (Classmate)

1 Rachel was planning out her weekly schedule, and
2 was not sure if she remembered to let people know
3 that she would be out of town for a weekend wedding.
4 She wouldn't be able to do any of the group project while away.
5 Rachel decided to email her classmate to ask if it's
6 better to complete her part of the project before or after
7 the wedding. Her classmate Payton replied,
8 "Try to get the work done before you leave." (**TARGET LINE)**

STORY 1 (Friend)

1 Rachel was planning out her weekly schedule, and
2 is not sure if she remembered to let people know
3 that she would be out of town for a weekend wedding.
4 She wouldn't be able to do any of the group project while away.
5 Rachel decided to email her friend to ask if it's
6 better to complete her part of the project before or after
7 the wedding. Her friend Payton replied,
8 "Try to get the work done before you leave." (**TARGET LINE)**

STORY 2 (Parent)

1 Addison's brother had his first baseball game and she wanted to
2 come home from college to attend the game on Thursday
3 but couldn't remember what time it starts. She decided to email
4 her mom to ask what time the game starts, so she could
5 plan for traffic because it's a two hour drive to get there. Her
6 Mom was at work and didn't have the baseball schedule with her.
7 Her Mom replied from her work email address,
8 "I'll get to it when I have the chance." (**TARGET LINE)**

STORY 2 (Professor)

1 Addison got a call from the doctor's office saying they overbooked
2 appointments for Tuesday and the only time they had available
3 to squeeze her in was on Thursday. She was in the middle of
4 writing her final paper for Psychology of Learning when she got the
5 call and almost forgot to email her professor to ask if she
6 could look over it for her. So, she decided to send the paper.
7 Her Professor Serena replied,
8 "I'll get to it when I have the chance." (**TARGET LINE)**

STORY 2 (Classmate)

1 Addison got a call from the doctor's office saying they overbooked
2 appointments for Tuesday and the only time they had available
3 to squeeze her in was on Thursday. She was in the middle of
4 writing her final paper for Psychology of Learning when she got the
5 call and almost forgot to email her classmate to see when the paper
6 was due. Addison asked if she could check her calendar for the due date.
7 Her classmate Serena replied,
8 "I'll get to it when I have the chance." (**TARGET LINE)**

STORY 2 (Friend)

1 Addison got a call from the doctor's office to tell her they overbooked
2 appointments for Tuesday and the only time they had available to
3 squeeze her in was on Thursday. She was in the middle of
4 writing her final paper for Psychology of Learning when she got the
5 call and almost forgot to email her friend to see when the paper
6 was due. Addison asked if she could check her calendar for the due date.
7 Her friend Serena replied,
8 "I'll get to it when I have the chance." (**TARGET LINE)**

STORY 3 (Parent)

1 Aya was writing a paper for her Ethics in Criminal Justice class. She
2 wrote a very rough first draft to get all of her thoughts down on paper.
3 She has all of the concepts needed but is concerned about the grammar.
4 Aya's mother is as an editor for a publishing company, so she decided
5 to email her mom the paper to ask if she can review it, proofread,
6 and edit any grammatical errors for her.
7 Her Mom replied
8 "Sure, I don't have anything else going on." (**TARGET LINE)**

STORY 3 (Professor)

1 Aya was writing a paper for her Ethics in Criminal Justice class. She
2 wrote a very rough first draft to get all of her thoughts down on paper.
3 She has all of the concepts needed, but is concerned about connecting
4 them. The professor said she was willing to look over papers prior
5 to the due date, so Aya decided to email the paper to her professor
6 and ask if she can review it and give her tips for connecting concepts.
7 Her Professor Scarlett replied
8 "Sure, I don't have anything else going on." (**TARGET LINE)**

STORY 3 (Classmate)

1 Aya was writing a paper for her Ethics in Criminal Justice class. She
2 wrote a very rough first draft to get all of her thoughts down on paper. She
3 has all of the concepts needed but is concerned about connecting them.
4 Her classmate agreed to exchange papers so they could review each
5 others work, so Aya decided to email the paper to her classmate to
6 review it, proofread for grammar, and provide tips for connecting concepts.
7 Her classmate Scarlett replied
8 "Sure, I don't have anything else going on." (**TARGET LINE)**

STORY 3 (Friend)

1 Aya was writing a paper for her Ethics in Criminal Justice Class. She
2 wrote a very rough first draft to get all of her thoughts down on paper. She
3 has all of the concepts needed but is concerned about connecting them.
4 Her friend agreed to exchange papers so they could review each
5 others work, so Aya decided to email the paper to her friend to
6 review it, proofread for grammar, and provide tips for connecting concepts.
7 Her friend Scarlett replied
8 "Sure, I don't have anything else going on." (**TARGET LINE)**

STORY 4 (Parent)

1 Jada was telling a friend about one Valentine's Day when a delivery driver
2 came shimmying into her boss's office with a rose for the boss.
3 The entire office was laughing as the driver came in the building but the
4 boss didn't notice until he was right in front of her. She gave the driver a big hug and
5 said thank you. Jada's friend thought the story was unbelievable,
6 so Jada emailed her mom, who also worked there, to ask if she remembered.
7 Her Mom replied
8 "It was quite a memorable experience." (**TARGET LINE)**

STORY 4 (Professor)

1 Jada was telling a friend about one Valentine's Day when a student who wasn't
2 in the class came shimmying down the aisle with a rose to give the professor.
3 The entire class was laughing as the student walked down the aisle, but the professor
4 didn't notice until the student was right in front of her. The professor gave
5 the student a big hug and said thank you. Jada's friend thought the story was
6 unbelievable, so Jada emailed her professor to ask if she remembered.
7 Her Professor Melanie replied
8 "It was quite a memorable experience." (**TARGET LINE)**

STORY 4 (Classmate)

1 Jada was telling a friend about one Valentine's Day when a student who wasn't
2 in the class came shimmying down the aisle with a rose to give the professor.
3 The entire class was laughing as the student walked down the aisle, but the professor
4 didn't notice until the student was right in front of her. The professor gave the student
5 a big hug and said thank you. Jada's friend thought the story was unbelievable,
6 so Jada emailed her old classmate to ask if she remembered.
7 Her classmate Melanie replied
8 "It was quite a memorable experience." (**TARGET LINE)**

STORY 4 (Friend)

1 Jada was telling a friend about one Valentine's Day when a student who
2 wasn't in the class came shimmying down the aisle with a rose to give the professor.
3 The entire class was laughing as the student walked down the aisle, but the professor
4 didn't notice until the student was right in front of her. She gave the student a big
5 hug and told her thank you. Her friend thought the story was unbelievable,
6 so Jada emailed another friend that was in the class to ask if she remembered.
7 Her friend Melanie replied
8 "It was quite a memorable experience." (**TARGET LINE)**

STORY 5 (Parent)

1 Braelyn was supposed to go home this weekend to help throw a surprise
2 party for her younger sister's birthday. She was not sure if she needed
3 to bring anything or help set up for the party, but she really wanted to
4 help out. She decided to go shopping at Party City anyways, so Braelyn
5 emailed her mom to ask if she should come home the day before
6 with decorations to set up and keep her sister distracted.
7 Her Mom replied
8 "I hope it's not an inconvenience." (**TARGET LINE)**

STORY 5 (Professor)

1 Braelyn's assignment was late, and she knew she was supposed to send
2 it in as soon as possible. She got a notification on her phone, but ignored it
3 because she was in the middle of reading her textbook for her other homework.
4 Ten minutes later, Braelyn's phone buzzed again, so she read it and saw that
5 her professor was emailing to tell her to submit her assignment.
6 Braelyn apologized and said she was emailing it now.
7 Her Professor Jocelyn replied
8 "I hope it's not an inconvenience." (**TARGET LINE)**

STORY 5 (Classmate)

1 Braelyn's assignment was late, and she knew she was supposed to send
2 it in as soon as possible. She got a notification on her phone, but ignored it
3 because she was in the middle of reading her textbook for her other homework.
4 Ten minutes later, Braelyn's phone buzzed again, so she read it and saw that
5 her classmate was emailing to tell her to submit her assignment.
6 Braelyn apologized and said she was emailing it now.
7 Her classmate Jocelyn replied
8 "I hope it's not an inconvenience." (**TARGET LINE)**

STORY 5 (Friend)

1 Braelyn's assignment was late, and she knew she was supposed to send
2 it in as soon as possible. She got a notification on her phone, but ignored it
3 because she was in the middle of reading her textbook for her other homework.
4 Ten minutes later, Braelyn's phone buzzed again, so she read it and saw that
5 her friend was emailing to tell her to submit her assignment.
6 Braelyn apologized and said she was emailing it now.
7 Her friend Jocelyn replied
8 "I hope it's not an inconvenience." (**TARGET LINE)**

STORY 6 (Parent)

1 Zoe had a study session for her Organic Chemistry class Thursday
2 evening. She had not been home since the semester started because
3 she was so busy with classes and clubs. She remembered she was
4 supposed to meet her family for dinner Thursday, but she really
5 needed to attend this study session. Her mom usually had book club on
6 Fridays, but Zoe emailed to see if her mom would mind having dinner Friday.
7 Her Mom replied
8 "No, I don't mind rescheduling." (**TARGET LINE)**

STORY 6 (Professor)

1 Zoe had a study session for her Organic Chemistry class Thursday
2 evening. She had been really busy this semester with her classes.
3 Zoe remembered she was supposed to go over what she missed
4 on her Abnormal Psychology test. She knew Friday isn't an ideal day
5 to meet, but decides to email her professor explaining the
6 situation to see if they could meet on Friday instead.
7 Her Professor Gabby replied
8 "No, I don't mind rescheduling." (**TARGET LINE)**

STORY 6 (Classmate)

1 Zoe had a study session for her Organic Chemistry class Thursday
2 evening. She had been really busy this semester with her classes.
3 Zoe remembered she was supposed to meet her partner to work on a
4 project for their Abnormal Psychology class. She knew Friday wasn't an
5 ideal day to meet, but decided to email her classmate explaining the
6 situation and to see if they could meet on Friday instead.
7 Her classmate Gabby replied
8 "No, I don't mind rescheduling." (**TARGET LINE)**

STORY 6 (Friend)

1 Zoe had a study session for her Organic Chemistry class Thursday
2 evening. She had not been home since the semester started because
3 she was so busy with classes and clubs. She remembered she was
4 supposed to meet her friend for dinner Thursday, but she really needed
5 to attend this study session. Her friend sometimes has to work on Fridays,
6 but Zoe emailed to see if her friend would mind getting dinner on Friday.
7 Her friend Gabby replied
8 "No, I don't mind rescheduling." (**TARGET LINE)**

STORY 7 (Parent)

1 Sadie needed to pick up her sociology textbook from her mom because she
2 left it at home when she was visiting for the weekend. She had reading and
3 questions she needed to get done for Wednesday's class. She knew her
4 Mom was really busy with work and her younger siblings, but she needed
5 her book. So, she emailed her mom to let her know she didn't have class
6 Tuesday and was wondering if they could meet then to get the book.
7 Her Mom replied
8 "I'll let you know more tomorrow." **(TARGET LINE)**

STORY 7 (Professor)

1 Sadie was trying to complete her reading questions that are due on Wednesday.
2 She read the textbook chapter and understands the concepts well but was still
3 confused on what some questions were asking. She had other classes and work,
4 but she needed to find a time to meet to go over the questions, so Sadie
5 emailed her professor that she is available on Tuesday afternoon
6 and was wondering if they could meet then to review.
7 Her Professor April replied
8 "I'll let you know more tomorrow." **(TARGET LINE)**

STORY 7 (Classmate)

1 Sadie realized that she didn't have the textbook needed to complete
2 her reading questions for class on Wednesday. She couldn't remember
3 exactly where she left it though. She thought about the last time she had it
4 and what she was doing that day. That was when she remembered that she
5 had a study session with her classmate and must have left it in her dorm.
6 Sadie emailed to ask if they could meet on campus tomorrow to get the book.
7 Her classmate April replied
8 "I'll let you know more tomorrow." **(TARGET LINE)**

STORY 7 (Friend)

1 Sadie realized that she didn't have the textbook needed to complete
2 her reading questions for class on Wednesday. She couldn't remember
3 exactly where she left it though. She thought about the last time she had it
4 and what she was doing that day. That was when she remembered that she
5 had a study session with her friend and must have left it in her dorm.
6 Sadie emailed to ask if they could meet on campus tomorrow to get the book.
7 Her friend April replied
8 "I'll let you know more tomorrow." **(TARGET LINE)**

STORY 8 (Parent)

1 Talia had a case study due to present Monday. She was very nervous
2 about presenting in front of the whole class. She emailed her mom
3 to ask if she had any advice to help her stress less and calm her nerves.
4 Talia's Mom told her to meditate and download a breathing app to use
5 before she presented to the class. Talia also emailed her presentation
6 to her mom so she could get another set of eyes on it before she presented.
7 Her Mom replied
8 "It was an interesting presentation." (**TARGET LINE)**

STORY 8 (Professor)

1 Talia had a case study due to present Monday. She was very nervous
2 about presenting in front of the whole class. She emailed her professor
3 to ask if she had any advice to help her stress less and calm her nerves.
4 Talia's professor told her to meditate and download a breathing app to use
5 before she presented to the class. Talia also emailed her presentation
6 so she could get another set of eyes on it before she presented.
7 Her Professor Leilani replied
8 "It was an interesting presentation." (**TARGET LINE)**

STORY 8 (Classmate)

1 Talia had a case study due to present Monday. She was very nervous
2 about presenting in front of the whole class. She emailed her friend
3 to ask if she had any advice to help her stress less and calm her nerves.
4 Talia's classmate told her to meditate and download a breathing app to use
5 before she presented to the class. Talia also emailed her presentation
6 to her friend so she could get another set of eyes on it before she presented.
7 Her classmate Leilani replied
8 "It was an interesting presentation." (**TARGET LINE)**

STORY 8 (Friend)

1 Talia had a case study due to present Monday. She was very nervous
2 about presenting in front of the whole class. She emailed her friend
3 to ask if she had any advice to help her stress less and calm her nerves.
4 Talia's friend told her to meditate and download a breathing app to use
5 before she presented to the class. Talia also emailed her presentation
6 to her friend so she could get another set of eyes on it before she presented.
7 Her friend Leilani replied
8 "It was an interesting presentation." (**TARGET LINE)**

STORY 9 (Parent)

1 Kennedy wanted to go to the library after she got out of class to
2 find some books that would help her better manage finances.
3 She has never been to the library in her town, but she heard that
4 it has a good number of books about managing money and savings.
5 She emailed her mom to see if she could come help her look. Kennedy
6 asked if she should just pick her mom up when she was done with work.
7 Her Mom replied
8 “If that’s alright with you.” (**TARGET LINE)**

STORY 9 (Professor)

1 Kennedy wanted to go to the library after she got out of class to
2 find some books that would help her study for her sociology test.
3 She has never been to the library on east campus, but she heard
4 that it has more sociology books than the library on main campus.
5 She emailed her professor to see if she could help. Kennedy
6 asked if she should just wait after class so they could walk over together.
7 Her Professor Rose replied
8 “If that’s alright with you.” (**TARGET LINE)**

STORY 9 (Classmate)

1 Kennedy wanted to go to the library after she got out of class to
2 find some books that would help her study for her sociology test.
3 She has never been to the library on east campus, but she heard
4 that it has more sociology books than the library on main campus.
5 She emailed her classmate to see if she could help. Kennedy
6 asked if she should just wait after class so they could walk over together.
7 Her classmate Rose replied
8 “If that’s alright with you.” (**TARGET LINE)**

STORY 9 (Friend)

1 Kennedy wanted to go to the library after she got out of class to
2 find some books that would help her better manage finances.
3 She has never been to the library in her town, but she heard that
4 it has a good number of books about managing money and savings.
5 She emailed her friend to see if she could come help her look. Kennedy
6 asked if she should just pick her friend up when she was done with work.
7 Her friend Rose replied
8 “If that’s alright with you.” (**TARGET LINE)**

STORY 10 (Parent)

1 Vera was going to present at an academic conference.
2 She had her research poster printed and a sturdy
3 poster tube to take on the airplane with her.
4 She was almost done packing her clothes too.
5 Vera remembered she needed to email her mom
6 at work to send the travel itinerary and conference schedule.
7 Her Mom replied
8 "I have it all written down." **(TARGET LINE)**

STORY 10 (Professor)

1 Vera was going to present at an academic conference.
2 She had her research poster printed and a sturdy
3 poster tube to take on the airplane with her.
4 She was almost done packing her clothes too.
5 Vera remembered she needed to email her professor
6 to say that she would be missing class.
7 Her Professor Michelle replied and said to Vera
8 "I have it all written down." **(TARGET LINE)**

STORY 10 (Classmate)

1 Vera was going to present at an academic conference.
2 She had her research poster printed and a sturdy
3 poster tube to take on the airplane with her.
4 She was almost done packing her clothes too.
5 Vera remembered she needed to remind her classmate
6 to say that she would need to get the notes.
7 Her classmate Michelle replied to Vera saying
8 "I have it all written down." **(TARGET LINE)**

STORY 10 (Friend)

1 Vera was going to present at an academic conference.
2 She had her research poster printed and a sturdy
3 poster tube to take on the airplane with her.
4 She was almost done packing her clothes too.
5 Vera remembered she needed to remind her friend
6 to say that she would need to get the notes.
7 Her friend Michelle replied to let her know
8 "I have it all written down." **(TARGET LINE)**

STORY 11 (Parent)

1 Katie had been working on a class project and her partner had done nothing
2 in the shared Google document, and wouldn't answer any messages or emails
3 when Katie asked about the project. Katie was stressed about completing
4 the project in time because her partner wasn't done with her section.
5 Katie told her mom about this, but the project was due in a few days
6 and she didn't know what to do, so she emailed her mom to fill her in.
7 Her Mom replied
8 "She sure is timely." (**TARGET LINE)**

STORY 11 (Professor)

1 Katie had been working on a class project and her partner had done nothing
2 in the shared Google document, and wouldn't answer any messages or emails
3 when Katie asked about the project. Katie was stressed about completing
4 the project in time because her partner wasn't done with her section.
5 She told her professor about this, but the project was due in a few days
6 and she didn't know what to do, so she emailed her professor to fill her in.
7 Her Professor Carissa replied
8 "She sure is timely." (**TARGET LINE)**

STORY 11 (Classmate)

1 Katie had been working on a class project and her partner had done nothing
2 in the shared Google document, and wouldn't answer any messages or emails
3 when Katie asked about the project. Katie was stressed about completing
4 the project in time because her partner wasn't done with her section.
5 She told another classmate about this, and since the project was due soon,
6 she emailed that classmate to fill her in on what's been going on.
7 Her classmate Carissa replied
8 "She sure is timely." (**TARGET LINE)**

STORY 11 (Friend)

1 Katie had been working on a class project and her partner had done nothing
2 in the shared Google document, and wouldn't answer any messages or emails
3 when Katie asked about the project. Katie was stressed about completing
4 the project in time because her partner wasn't done with her section.
5 She's told her friend about this, but the project was due in a few days
6 and she didn't know what to do, so she emailed her friend to fill her in.
7 Her friend Carissa replied
8 "She sure is timely." (**TARGET LINE)**

STORY 12 (Parent)

1 Megan's car was taking much longer at the shop than expected. The
2 mechanic said there were a few things that needed to be fixed
3 which required her to leave her car there. So, she needed someone
4 to come and pick her up at the shop. She realized that her
5 mom was at work and doesn't check her phone while there. Megan emailed
6 her mom asking to be picked up. She also sent directions with the quickest route.
7 Her Mom replied,
8 "Thanks for your help." (**TARGET LINE)**

STORY 12 (Professor)

1 Megan's car was taking much longer at the shop than expected. The
2 mechanic said that there were a few things that needed to be fixed
3 which required her to leave her car there. So, she needed someone
4 to come and pick her up at the shop. She realized that her class started in
5 thirty minutes and she needed to email her professor her
6 homework and let her know why she would not be able to make it to class.
7 Her Professor Ashley replied,
8 "Thanks for your help." (**TARGET LINE)**

STORY 12 (Classmate)

1 Megan's car was taking much longer at the shop than expected. The
2 mechanic said that there were a few things that needed to be fixed
3 which required her to leave her car there. So, she needed someone
4 to come and pick her up at the shop. She realized that her class started in
5 thirty minutes and she needed to email her classmate their group homework
6 assignment and let her know why she would not be able to make it to class.
7 Her classmate Ashley replied,
8 "Thanks for your help." (**TARGET LINE)**

STORY 12 (Friend)

1 Megan's car was taking much longer at the shop than expected. The
2 mechanic said there were a few things that needed to be fixed
3 which required her to leave her car there. So, she needed someone
4 to come and pick her up at the shop. She realized that her
5 friend is at work and doesn't check her phone while there. She emailed
6 her friend Ashley asking to be picked up. She also sent directions with the quickest route.
7 Her friend Ashley replied,
8 "Thanks for your help." (**TARGET LINE)**

STORY 13 (Parent)

1 Mikayla had been working hard on her research project for the microbiology lab.
2 She was going to present at a conference, and was very excited about
3 the project because it will be her first time attending a conference. The
4 submission deadline was two days away and she just finished writing the
5 discussion. She told her mom how she's very excited but nervous about finishing
6 it in time and emailed it to her mom to look over before she submitted it.
7 Her Mom replied
8 "I should be finished soon." (**TARGET LINE)**

STORY 13 (Professor)

1 Mikayla had been working hard on her research project for the microbiology lab.
2 She was going to present it at a conference, and was very excited about the
3 project because it will be her first time attending a conference. The submission
4 deadline was two days away and she just finished writing the discussion. She
5 told her professor who was also presenting how nervous she was about
6 finishing it and emailed it to the professor to look over before she submitted.
7 Her Professor Jessica replied
8 "I should be finished soon." (**TARGET LINE)**

STORY 13 (Classmate)

1 Mikayla has been working hard on her research project for the microbiology lab.
2 She was going to present it at a conference, and was very excited about
3 the project because it will be his first time attending a conference. The
4 submission deadline was two days away and she just finished writing the
5 discussion. She told his classmate who is also presenting how nervous she
6 was about finishing it and emailed it to her classmate to look over before he submitted.
7 Her classmate Jessica replied
8 "I should be finished soon." (**TARGET LINE)**

STORY 13 (Friend)

1 Mikayla had been working hard on her research project for the microbiology lab.
2 She was going to present at a conference, and was very excited about
3 the project because it will be her first time attending a conference. The
4 submission deadline was two days away and she just finished writing the
5 discussion. She told hers friend how she's very excited but nervous about
6 finishing it in time and emailed it to her friend to look over before she submitted.
7 Her friend Jessica replied
8 "I should be finished soon." (**TARGET LINE)**

STORY 14 (Parent)

1 Jordan was doing poorly in her Statistics class and has tried multiple study
2 techniques with little improvement in her grade. Her midterm was coming
3 up and she was worried she would not pass the class. She was trying
4 to figure out how to improve her grade and thought about tutoring.
5 So, Jordan emailed her mom saying she made an appointment at the local
6 tutoring center in their town, and asked if she would show her where it was.
7 Her Mom replied
8 "I don't think I can come today." (**TARGET LINE)**

STORY 14 (Professor)

1 Jordan was doing poorly in her Statistics class and has tried multiple study
2 techniques with little improvement in her grade. Her midterm was coming
3 up and she was worried she would not pass the class. She was trying
4 to figure out how to improve her grade and thought about tutoring.
5 So, Jordan emailed her professor to ask her if she would be willing to
6 show her where the tutoring center is on campus since she volunteers there.
7 Her Professor Latoya replied
8 "I don't think I can come today." (**TARGET LINE)**

STORY 14 (Classmate)

1 Jordan was doing poorly in her Statistics class and has tried multiple study
2 techniques with little improvement in her grade. Her midterm was coming up
3 and she was worried she would not pass the class. She was trying
4 to figure out how to improve her grade and thought about tutoring.
5 So, Jordan talked to her classmate who worked at the tutoring center
6 as a receptionist and asked if she would show her where it is on campus.
7 Her classmate Latoya replied
8 "I don't think I can come today." (**TARGET LINE)**

STORY 14 (Friend)

1 Jordan was doing poorly in her Statistics class and has tried multiple study
2 techniques with little improvement in her grade. Her midterm was coming up
3 and she was worried she would not pass the class. She was trying
4 to figure out how to improve her grade and thought about tutoring.
5 So, Jordan talked to her friend who worked at the tutoring center
6 as a receptionist and asked if she would show her where it is on campus.
7 Her friend Latoya replied
8 "I don't think I can come today." (**TARGET LINE)**

STORY 15 (Parent)

1 Paige was planning to take the GRE over spring break to apply for graduate school.
2 She started searching online to find some of the best study books and programs.
3 She bought a couple of books that she found on the internet with good reviews.
4 Test time rolled around, Paige took the GRE and got her scores back.
5 She was in the 20th percentile for the verbal reasoning, 35th percentile for
6 math and was waiting for the writing score. She emailed her mom her scores.
7 Her Mom replied
8 "I'm sorry about that." (**TARGET LINE)**

STORY 15 (Professor)

1 Paige was taking the GRE over spring break to apply for graduate school.
2 She started searching online to find some of the best study books and programs.
3 She bought a couple of books that she found on the internet with good reviews,
4 and also wanted some advice from someone who took the test. She knows that
5 professors have had to take GRE and asked for advice on test prep resources.
6 When Paige got her scores back, she emailed them to her professor.
7 Her Professor Kensley replied
8 "I'm sorry about that." (**TARGET LINE)**

STORY 15 (Classmate)

1 Paige was taking the GRE over spring break to apply for graduate school.
2 She started searching online to find some of the best study books and programs.
3 She bought a couple of books that she found on the internet with good reviews,
4 and also wanted some advice from someone who took the test. She remembered
5 her classmate took the GRE and asked for advice on test prep resources.
6 When Paige got her scores back, she emailed them to her classmate.
7 Her classmate Kensley replied
8 "I'm sorry about that." (**TARGET LINE)**

STORY 15 (Friend)

1 Paige was taking the GRE over spring break to apply for graduate school.
2 She started searching online to find some of the best study books and programs.
3 She bought a couple of books that she found on the internet with good reviews,
4 and also wanted some advice from someone who took the test. She remembered
5 her friend took the GRE and asked for advice on test prep resources.
6 When Paige got her scores back, she emailed them to her friend
7 Her friend Kensley replied
8 "I'm sorry about that." (**TARGET LINE)**

STORY 16 (Parent)

1 Tammy works at the career and academic planning center at her school
2 where she helps students with creating and editing resumes to gear
3 them towards the jobs they are applying to upon graduation. She has
4 worked there for three out of her four years of college. She received
5 an email from her mom asking to look over her resume. Tammy
6 edited the resume and left constructive criticism throughout it.
7 Her Mom replied
8 “I submitted it two days early.” (**TARGET LINE)**

STORY 16 (Professor)

1 Tammy worked at the career and academic planning center at her school
2 where she helped students create and edit resumes to gear them towards
3 the jobs they are applying to after graduation. She had been working there
4 for three out of her four years of college. She received an email from
5 her professor asking to look over one of her student’s resume.
6 Tammy edited the resume and left constructive criticism.
7 Her Professor Henrietta replied
8 “She submitted it two days early.” (**TARGET LINE)**

STORY 16 (Classmate)

1 Tammy works at the career and academic planning center at her school
2 where she helps students with creating and editing resumes to gear
3 them towards the jobs they are applying to upon graduation. She has
4 worked there for three out of her four years of college. She received
5 an email from her classmate asking to look over her resume. She
6 edited the resume and left constructive criticism comments throughout.
7 Her classmate Henrietta replied
8 “I submitted it two days early.” (**TARGET LINE)**

STORY 16 (Friend)

1 Tammy works at the career and academic planning center at her school
2 where she helps students with creating and editing resumes to gear
3 them towards the jobs they are applying to upon graduation. She has
4 worked there for three out of her four years of college. She received
5 an email from her friend asking to look over her resume. She
6 edited the resume and left constructive criticism comments throughout.
7 Her friend Henrietta replied
8 “I submitted it two days early.” (**TARGET LINE)**