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**CONVERSATIONS: RECIPROCITY, DISCOURSE MARKERS, AND
MEMORY**

A dissertation submitted in partial satisfaction
of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

PSYCHOLOGY

by

Andrew J. Guydish

June 2023

The dissertation of Andrew J. Guydish is
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Abstract

Conversations: Reciprocity, Discourse Markers, and Memory

Andrew J. Guydish

Every day, we have many conversations with others. What makes you consider these conversations as being *good* or *bad*? Three studies explored subjective conversational experience, or how people feel about conversations. Study 1 focuses on the replication of the reciprocity in conversation effect as well as the influence of off-task conversation on conversational perception (Guydish et al., 2021; Guydish & Fox Tree, 2022) by having individuals converse over videoconferencing software. This study showed that having an opportunity to engage in off-task conversation improves both conversation enjoyment but also perceptions of conversational partners. Study 2 focused on the influence of discourse markers on subjective conversational experience by analyzing their use in three corpora. While no relationship between discourse marker use and subjective conversational experience was observed, differing use of discourse markers between on-task and off-task conversation across corpora was observed. Study 3 focused on how memory plays a role in making distinctions between good and bad conversations by having individuals read and answer questions about previously transcribed conversational snippets. Study 3 showed the importance of contribution balance in making distinctions between good and bad conversations. These studies provide a more holistic picture of how we make determinations between good and bad conversations. In a world that is increasingly polarized, learning what and why our behaviors influence our subjective conversational experiences becomes increasingly important.

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CONVERSATIONS: RECIPROCITY, DISCOURSE MARKERS, AND MEMORY

1 Introduction

In a given day, we have many conversations with others. From discussing the day's activities with our loved ones, to casual chats with colleagues, to more formal discussions in meetings, we encounter several social interactions as we navigate through our day. At the end of the day, what makes you consider these conversations as being *good* or *bad*? What makes us tell our loved ones about a particularly weird conversation we may have had with a colleague or perhaps a good conversation we had with our boss? Surprisingly, the current state of the literature is void of an in depth understanding of how we make these distinctions in conversational perception. Here I report three studies that explore this topic.

The first study explored whether casual conversation influences how conversations come to be perceived. In particular, I examined whether or not having an opportunity to converse about off-task topics during breaks while working on a task influences how the interaction is later perceived. Additionally, I go further by testing whether or not having the opportunity to converse during breaks while working on a task has an influence on how we perceive one another. The second study explored how small words in conversations, known as discourse markers, are used across conversation types. Importantly, due to their coordination qualities, discourse markers were tested to determine whether they are associated with how much conversations are enjoyed. Finally, the third study explored how

psycholinguistic characteristics of conversations are remembered and how these memories influence how conversations are perceived.

1.1 Communication Accommodation Theory

During a conversation, we have far greater control over our behaviors besides what is simply said. In addition to content, individuals have control over things such as the slang they decide to use, the pitch of their speech, how fast they talk, the accent they use, among many others. These behaviors have direct influence on how the speaker is perceived, and these same behaviors influence how others perceive us. Contextualized in *communication accommodation theory*, these types of behaviors are characterized as strategies that are used by speakers to adjust social distance (Gasiorek, 2015) or achieve cognitively related goals (Dragojevic et al., 2016).

1.1.2 Divergent Strategies

In some situations, we might wish to increase the social distance between ourselves and another individual. In other words, we may want to highlight our differences with these individuals. Within communication accommodation theory, we may utilize a divergent strategy to do so. With *divergence*, interlocutors highlight and accentuate differences in speaking behaviors to achieve these goals (Gasiorek, 2016).

In a classic study on divergence (Bourhis & Giles, 1977), a Received Pronunciation English speaker challenged the ethnic identity of a Welsh individual. During their interaction the English-speaking individual asked why the Welsh individual was learning the Welsh language (with the English speaker referring to Welsh as a dying language). By doing so, the English speaker highlighted the social

group differences between themselves and their interlocutor. After this challenge, Bourhis and Giles (1977) documented several changes made by the Welsh individual in their speaking style. Not only did the Welsh individual accentuate their Welsh accent, but they also introduced Welsh English words into the conversation itself. Bourhis and Giles (1977) took this as evidence of divergence, as the Welsh individual was attempting to distance themselves from the English speaker after they had challenged their identity.

More recently, Hargie (2014) explored communication behaviors amongst Protestant and Catholic university students in Northern Ireland. In these interactions, participants were simply told to discuss their events of the last week, but to discuss anything that may emerge during the interaction. While interactions between participants of the same religious background demonstrated characteristics of convergence, interactions between individuals from different religious backgrounds were characterized by less evidence of convergence (Hargie, 2014). In other words, participants of differing religious backgrounds maintained social distance from one another.

1.1.3 Convergent Strategies

In other situations, we might want to decrease the social distance between ourselves and another individual. In other words, we may want to highlight our similarities, drawing closer to that person and their social group. Within communication accommodation theory, we may use convergent strategies to do so.

With *convergence*, interlocutors may match the speaking behaviors of the individual they wish to draw closer to (Dragojevic et al., 2016).

Convergence has been documented in several different modalities. For example, previously unknown to one another college students began to converge phonetically the longer they lived with one another, ultimately positively influencing the reported closeness between the participants (Pardo et al., 2012). Similarly, phonetic convergence led to increases in the amount interlocutors liked one another (Schweitzer & Lewandowski, 2013), and convergence on speech rate led to increased ratings of attractiveness reported by interlocutors (Putman & Street, 1984). In email, participants responded more politely if the original email was polite, versus more impolitely if the original email was impolite (Bunz & Campbell, 2004). In texting, participants converged on certain texting behaviors more so when they liked the individual they were texting (Adams et al., 2018).

1.1.4 Speech Complementarity

Finally, in some situations that involve clear differences in interlocutor status or role, interlocutors may expect a speech complementarity situation. In *speech complementarity*, interlocutors linguistically diverge, but cognitively converge (Giles, 1980). For example, in a professor and student interaction, there are clear differences in the roles each interlocutor plays when a conversation takes place. If a student comes to a professor's office hours to discuss course content, both the student and the professor may expect that the professor is going to be doing most of the talking, as they are more knowledgeable about the course's content. In these types of situations,

where role differences lead to clear expectations about how the conversation is to take place, the interlocutors linguistically diverge with no negative influence, while cognitively converging.

Such differences in social roles leading to differences in contribution behaviors has been observed previously. For example, dominant speakers were found to talk more than their subordinates while individuals of a similar social status were found to converge on the number of words spoken (Niederhoffer & Pennebaker, 2002). Similarly, when individuals were assigned roles to complete a task, those in the directing role tended to dominate the conversation even when the roles switched several times (i.e., the director became the follower; Pardo et al., 2013).

While the influence of role had been documented, the interaction role has with conversational content had yet to be explored. In both Niederhoffer and Pennebaker (2002) and Pardo et al., (2013), participants had clear guides as to what they were to converse about. In Niederhoffer and Pennebaker (2002) participants were either simply chatting with their interlocutor (study one) or told to try and get to know their interlocutor (study two). In the third study, transcripts from the Watergate scandal were analyzed, in which president Nixon was talking to subordinates. In all of these situations, the roles of the interlocutors did not change. In study one and two, participants remained as peers, in which convergence would be expected and was observed. In study three, which had clear role differences, a speech complementarity type situation, linguistic divergence would be expected and was observed. In the study done by Pardo et al. (2013), participants were assigned roles to complete a task.

While the roles switched during the study, the participants were not given the freedom to discuss anything beyond the task, limiting the influence of conversational content on contribution behavior.

Therefore, an unanswered question to this point was how conversational content interacted with conversational role. While speech complementarity situations would lead to differences in contribution behaviors based on roles, how would this behavior influence subsequent conversation when roles were removed, which would be more typical in a naturalistic conversation? In two studies, Guydish et al. (2021) and Guydish & Fox Tree (2022) attempted to address this question.

1.1.5 Reciprocity in Conversation as a Convergent Strategy

Speech complementarity situations lead to linguistic divergence but cognitive convergence. However, naturalistic conversations rarely are strict speech complementarity situations. In other words, conversations often flow from speech complementarity type situations, where role differences are clear, to other topics, where role differences may not be as clear. This switching that occurs within conversations has influence on contribution behavior as one would expect based on the behaviors associated with the strategies of communication accommodation theory.

For example, a student who is particularly knowledgeable in a subject may tutor their fellow student in a particular class. In this case, two interlocutors who belong to a similar social group (young, college student). In this situation, the student who is more knowledgeable would be expected to speak more, as they aid their fellow student – a speech complementarity type task. Outside of discussion about the

class, students may be expected to invoke convergent strategies, as they attempt to draw closer to one another socially to confirm social group belonging and the roles associated with the speech complementarity type task are removed. However, the movement from a speech complementarity type situation to a convergent type situation cannot be thought of independently of one another within a single conversation. In our example, the amount each interlocutor has contributed may be unbalanced due to speech complementarity behaviors. If this is the case, the less knowledgeable student may feel as though they've simply been lectured to by their fellow student, rather than having active engagement in the interaction. Therefore, such imbalances must be redressed to avoid the negative influence uncorrected contribution differences have on how the interlocutors perceive the interaction that has taken place. To do this, interlocutors adjust their behavior accordingly. Individuals who have talked less in the interaction during periods of the conversation requiring speech complementarity behaviors ultimately should talk more during off-task interactions, as the interlocutors attempt to redress contribution imbalance, converging overall on the amount contributed to the conversation.

This question of the influence of contributional balance on conversational perception was addressed in a series of studies examining *reciprocity in conversation* (Guydish et al., 2021; Guydish & Fox Tree, 2022). In reciprocity, interlocutors of the same social group compensate for contributional differences created by speech complementarity situations by adjusting speaking behaviors in off-task conversation (when speech complementarity roles have been removed) to maintain a similar

contribution distribution across the entire conversation. In short, the more interlocutors are able to do this, the more positive the experience due to the convergence on contribution behaviors. The less they are able to do this, the more negative the experience due to lack of redressing the contribution imbalance.

In the original study, Guydish et al. (2021) explored reciprocity in conversation using a previously collected corpus (Artwalk corpus; Liu et al., 2016). The Artwalk corpus consists of a series of transcribed conversations of interlocutors performing a well-defined task. In the task, a *director*, who was located in the lab, directed a *follower* to a series of art installations in downtown Santa Cruz. During the task, the director had access to all the information required to complete the task, including images of the art installations, their location, as well as a photo of the art installation. Alternatively, the follower did not have any information, and simply had to follow the directions given by the director. Due to the clearly defined roles and differences in accessible information, Guydish et al. (2021) argued this was a clear instance in which the interlocutors were in a speech complementarity situation. There was an expectation when conducting the task that the director would speak more than the follower, linguistically diverging, all in an effort to effectively and easily complete the task, psychologically converging.

However, what was unique about the Artwalk corpus was that it allowed for unprompted off-task conversation. In other words, the interlocutors were free to talk about whatever they liked as they were completing the task. Due to the nature of the task, in which there were long periods in which the follower had to walk to the next

art installation, the interlocutors often talked about things that did not relate to the task that they were completing.

Guydish et al. (2021) hypothesized that in these speech complementarity type situations among interlocutors of the same social group, contributional imbalance associated with speech complementarity still might have a negative influence on the perception of the interaction if the contributional imbalance was left uncorrected, due to an expectation of contributional convergence. If interlocutors made up for this imbalance, striving for more equal contributions throughout the conversation, this would have a positive influence on conversational perception, a process which was termed *reciprocity in conversation* (Guydish et al., 2021). Therefore, to make up for this imbalance, the interlocutors should redress the contributional imbalance created by the task. Due to the unique nature of the corpus, this allowed interlocutors an opportunity to correct for imbalance during off-task conversation. While the roles were well-defined during the task (director and follower) during off-task discussion, these roles were effectively removed, allowing interlocutors to converse as peers.

These hypotheses were confirmed. Not only was it found that interlocutors changed behaviors according conversation type (directors talking more than followers in on-task vs. followers talking more than directors in off-task), but it was also found that this balancing act had a positive influence on how interlocutors viewed their interaction. While there was no direct evaluation of conversational perception (e.g., conversational enjoyment) collected with the Artwalk corpus, Guydish et al. (2021)

found that the more balanced a conversation was the more the interlocutors reported enjoying the Artwalk task.

Later, a replication and extension was conducted by Guydish and Fox Tree (2022). In this study, interlocutors spoke via instant messaging – a very limited communication medium – while working on a collaborative tangram shape task. The tangram task was very similar in scope to the Artwalk task. Interlocutors were assigned to be either a director or a matcher. The director had print out of the shapes as well as the correct order the shapes were to be placed. The matcher, on the other hand, had all the shapes pasted on cards, but placed in a random order. Similar to the Artwalk task, the director's task was to guide the matcher to place the shapes in the correct order. In addition to the task, the interlocutors also had built-in periods in which they could engage in off-task conversation. Again, interlocutors demonstrated reciprocal contribution behaviors, making up for contributional balance created via the task in off-task conversation, with more balanced conversations being associated with more enjoyable conversations (Guydish & Fox Tree, 2022). Therefore, not only was the reciprocity effect replicated, but it was replicated in a limited modality that is instant messaging.

However, questions remain regarding how behaviors (such as the reciprocity in conversation behaviors, among others) influence individual's *subjective conversational experience*. Subjective conversational experience can be defined as how the conversation developed and how it was conducted (Guydish & Fox Tree, 2021). Therefore, do certain behaviors during conversations influence perception?

More specifically, what is the influence of having an opportunity to engage in off-task conversation versus not having that opportunity? Does the mere opportunity to chat that is providing this positive influence, or is it something about the behaviors specifically – that is, the process of balancing? These questions are addressed below in Study 1.

To summarize, reciprocity in conversation can be thought of as a convergent strategy. As discussed, convergence is a strategy in which interlocutors attempt to match conversation behaviors in order to reduce social distance (Dragojevic et al., 2016). In speech complementarity situations among individuals belonging to the same social group, interlocutors are forced to diverge linguistically in service to some higher purpose (e.g., a task). While such situations may result in little or no negative influence among individuals belonging to different social groups or social statuses (e.g., student and professor, patient and doctor), which would be consistent with the traditional definition of speech complementarity, the reciprocity in conversation findings clearly show that avoidance of such negative influence is dependent on the rigidity of the roles interlocutors hold. Often during conversations among friends, roles can be fluid – one individual may know more information about a particular subject than the other – however, this portion of the conversation comes and goes as the conversation is carried out. Interlocutors may talk about one subject and move into another, taking on different roles. Therefore, the reciprocity in conversation results show that this fluid movement ultimately results in an overall strive towards convergence of contributions to a conversation. While the subjects may change (along

with the roles that come with them), interlocutors belonging to the same social group strive to converge on the amount each contribute to a conversation.

1.2 Discourse Markers and Conversational Perception

How conversation is conducted influences conversational perception. While conversation is of course the product of the content of the discussion (we converse to communicate information), how the interaction takes place also influences our perception of the interaction. One of the many ways interlocutors coordinate speech with one another is through *discourse markers*. Due to the numerous functions of discourse markers, a definite definition is somewhat elusive. Some have argued that while discourse markers aid in language coordination (which influences production and comprehension), they also aid in "creating a congenial interpersonal atmosphere" (Fox Tree & Schrock, 2002, p. 728).

Discourse markers aid in the coordination of conversation. When we enter into a conversation, we enter into a collaborative endeavor with our interlocutor in which meaning is negotiated (Clark, 1996). Here, discourse markers allow for such collaboration. For example, discourse markers were predominantly found in turn-initial position (i.e., the first word of a turn), which suggested they served to start and end topics of talk or grab attention (Fung & Carter, 2007). In other words, discourse markers allow interlocutors to weave in and out of conversations when both are ready to do so. Beyond their simple position in a turn, specific discourse markers have been found to serve specific functionalities. For example, *oh* was found to indicate that the following words are not meant to be interpreted with preceding

words (Fox Tree & Schrock, 1999). Similarly, *you know* was argued to indicate invitation by a speaker for the listener to make inferences about what was said, whereas *I mean* indicates warning of upcoming adjustments (Fox Tree & Schrock, 2002). While there are many examples of these types of findings it is clear that such words, and their position in a turn, can help interlocutors coordinate their communication with one another.

In addition to conversational coordination, discourse markers have been argued to inform interpersonal relationships during conversation. More specifically, the use of discourse markers informs the speakers about the interlocutors themselves, the situation, as well as the level of politeness required (Fox Tree & Schrock, 2002). For example, discourse markers were found to be more abundant in the speech of young, working-class individuals compared to the speech of older, middle class individuals (Stubbe & Holmes, 1995), reflecting clear distinction in their use based on speaker social grouping characteristics. In an evaluation of the use of the discourse marker *pues* in Spanish across Ecuadorian, Chilean, and Spanish college students engaged in informal conversation, variation of use was found depending on what type of situation participants were assigned to for Ecuadorian and Spanish participants (Fuentes-Rodríguez et al., 2016), suggesting social situational influence on discourse marker usage. Similarly, *you know* and *I mean* were found to be more abundant in casual conversations than in formal interviews (Stubbe & Holmes, 1995). Finally, discourse marker *well* was found to be present in turns in which interlocutors were

about to disagree with their peer, suggesting that *well* serves as a tool to achieve positive politeness and manage interpersonal relation (Holtgraves, 1997).

Considering all the influences discourse markers have on the success or failure of conversation, it is clear that their presence should have influence on how individuals evaluate a conversation. While the coordination capabilities of discourse markers is clear, less attention has been paid to their interpersonal functionality. More specifically, how the interpersonal functionality of discourse markers influences conversational evaluation. To address this question, Study 2 examined how these small words are used and ultimately influence how we experience conversations.

1.3 Conversational Memory

To understand how individuals perceive conversational quality, we must understand conversational memory. In other words, we must consider what individuals are recalling when determining whether or not a conversation was good or bad. In such instances, it has been argued that individuals consider whether they have achieved their desired conversational outcomes as well as their subjective conversational experience (Guydish & Fox Tree, 2021). More specifically, Guydish and Fox Tree (2021) describe subjective conversation experience as encompassing the psycholinguistic characteristics of a conversation (e.g., mutually understanding one another, coordinating and navigating within and between conversational topics, turn-taking behaviors), and how these characteristics influence the overall experience of the interlocutor. While content certainly influences conversational memory, these

smaller psycholinguistic features also influence the ability to determine whether a conversation was good or bad.

1.3.1 What Do We Remember from Conversations?

Conversations are about content. As mentioned previously, we converse with one another in order to communicate content. Whether it be communicating what is needed from the store with someone you live with, to communicating higher level concepts to a colleague, conversations are about content. Therefore, it is relatively straightforward to argue that conversational content is what is ultimately remembered from a conversation, however, this has been shown not to be the case. In a review of the literature, it was estimated that we remember anywhere between 0-20% of the information shared in any given conversation (Brown-Schmidt & Benjamin, 2018) – that is, we forget most of the conversational content. This means that content is not the only information that can be considered when evaluating conversational quality.

One can conclude based on their own personal experience, conversations are recalled often in gist form – we may be able to recall the overall discussion topic, but not necessarily a verbatim transcript of the interaction. In other words, individuals often recall the meaning of what was said, but not necessarily the words that were said (Holtgraves, 2008a). However, how do we formulate that meaning? One way is through the recognition of speech acts that are made by interlocutors. Participants automatically recognized speech acts (e.g., warn, apologize, offer) said by interlocutors during a conversation they had read or heard (Holtgraves, 2008b). Further, Holtgraves (2008a) found that individuals rely on the illocutionary force of

these speech acts as the basis for long term memories of conversations. Participants were more likely to recall lure utterances as being present in the original conversational interaction when they contained the same speech act verb as the original utterance compared to a control version which did not contain the speech act verb. For example, an individual was more likely to recall *I apologize for ruining your shirt* as being present in the interaction after having read *I'm so sorry for ruining your shirt* than after reading *Ed is so sorry for ruining your shirt* (Holtgraves, 2008a). Therefore, the verbatim exchange of words during a conversation is often lost when forming conversation memory, with the resulting gist memories predominantly relying on the illocutionary forces that were at play.

Outside of content, we can also be harsh critics of ourselves, often underestimating the extent individuals view us positively. This phenomenon has been termed "the liking gap" (Boothby et al., 2018, p. 1743). Across three groups (strangers in a laboratory, first-year college students and their dorm mates, strangers in a personal development workshop), individuals consistently underestimated the extent their interlocutors liked them. Possible explanations for such an effect given by Boothby et al. (2018) include recall of conversational mistakes, comparison of this conversational episode to previous ones, and overestimation of displays of emotion. In other words, when evaluating conversation, interlocutors rely directly on memory to not only recall possible conversational mistakes they made, such as struggling to recall the name of a very famous movie, but also for comparison purposes to other conversational encounters ("I remembered that movie name last time I talked about

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this!") and emotional displays ("I probably looked so flustered"). This effect extends, some might say unfortunately, to small groups and over extended periods of time (Mastroianni et al., 2021). Such recall could be considered interlocutor evaluation of their subjective conversational experience (Guydish & Fox Tree, 2021). Interlocutors consider the psycholinguistic characteristics of conversations, such as effort expended during a conversation, in addition to conversational outcomes when evaluating a conversation. If more effort is expended than thought needed, this might have a negative impact on the overall subjective conversational experience.

In addition to the influences of content gist and self-criticisms on conversational memory, early work explored whether interlocutor characteristics, such as status, influenced memory for conversational information. Reading a transcript of a previous conversation in which the status of one of the interlocutors was manipulated (i.e., one interlocutor was a coworker, whereas the other was either a coworker or a boss), participants remembered information from high status speakers differently from low status speakers (Holtgraves et al., 1989). They were worse at distinguishing between direct quotes ("I need to know its present status") and assertive paraphrases ("Tell me what its present status is") of the boss's remarks (Holtgraves et al., 1989, p. 152). That is, when conversational content was said by an assertive speaker, such as a boss, they were remembered as being more assertive, making it difficult to distinguish between direct quotes and assertive paraphrases of those quotes. This work shows that speaker status is tied to memory formation of what was said (Holtgraves et al., 1989). Interestingly, this result vanishes when

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participants are told the status of the speaker after reading the exchange and asked to recall remarks from the conversation, suggesting that speaker status influences encoding of conversational memory, but has no influence on reconstructive recall of such memories (Holtgraves et al., 1989).

While past work has provided a great understanding of how – and what – we remember from conversations, it does not provide an understanding of how we use this information to make distinctions regarding our subjective conversational experiences. For example, if so little is remembered from a conversation (e.g., Brown-Schmidt & Benjamin, 2018), what is recalled when determining whether a conversation was good or bad? What types of information is being used when making this distinction? In a study discussed below, this type of question was addressed by examining how participants use information from previously viewed conversational snippets to make judgements regarding conversations.

In summary, the question of what is remembered from conversations is unclear. While it appears that we remember very little of conversational content (Brown-Schmidt & Benjamin, 2018), the work of Holtgraves and colleagues (Holtgraves et al., 1989; Holtgraves, 2008a; Holtgraves, 2008b) suggests that we rely on the gist of what was discussed. At the same time, we appear to be harsh critics of our own conversational performance (Boothby et al., 2018; Mastroianni et al., 2021), suggesting that characteristics of conversation that fall outside the realm of conversational content is in fact influencing memory. Therefore, when individuals are

determining whether a conversation was good or bad, what pieces of information are being used? This question remains unanswered and is addressed in Study 3.

1.4 Current Work

The question of how distinctions are made between good and bad conversations is complex and considers multiple processes. First, we must consider how information beyond conversational content influences conversational perception, as this will allow for a more generalized understanding of how such distinctions are made. This information could include conversational balance and the use of discourse markers. Second, we must consider memory, as when we evaluate conversations, this is done so after the conversation has concluded. Based on the literature reviewed, the potential influence of contribution behaviors, discourse marker use, and conversational memory on conversation perception is clear, although not previously tested.

Here, three studies are presented. In Study 1, I report on a study which further examined the reciprocity in conversation effect. This study extends the reciprocity in conversation work in two ways: (1) by examining whether the reciprocity in conversation effect replicates in a videoconferencing modality, and (2) by extending our understanding of the influence of contribution behaviors by manipulating the presence of off-task conversation. By manipulating the presence of off-task conversation (whether participants have the opportunity to have off-task conversation or not) we isolate the influence of contribution behaviors on conversational evaluation and rule out other potential explanations for the previously observed

effects. In Study 2, I examined the influence of discourse markers on conversational perception. While discourse markers are well studied, as shown, little is known about the direct influence they have on conversational perception. Finally, in Study 3 I provide a summary of a recently completed study that examined the intersection between conversational perception and memory.

2 Reciprocity in Videoconferencing Conversations

The purpose of this first study is to replicate and extend the reciprocity results to videoconferencing conversations. With the onset of COVID-19 in 2019, videoconferencing became one of the most common ways individuals communicated with one another, whether it be for work purposes or social reasons. Even with the pandemic now on the downturn, the impact this transition had on both work and social behaviors continues to influence how individuals communicate with one another. Therefore, it is important to determine the influence this modality has on conversational behaviors. In addition, the purpose of this work was to determine whether mere exposure to off-task type conversation has an overall influence on the conversational experience, ultimately affecting how individuals judge the quality and enjoyment of conversations.

2.1 Hypotheses

Individuals who had the opportunity to engage in off-task conversation would have a more positive subjective conversational experience than those who did not have the opportunity to engage in off-task conversation. Specifically, dyads who had an opportunity to engage in off-task communication would report a greater level of

enjoyment as well as a higher level of willingness to work with their fellow participant again in the future. To supplement the willingness to work with participant in the future comparison, a behavioral measure of this willingness was included. Briefly, participants were given an opportunity to continue their conversation after the experimental session had concluded, unprompted by the experimenter. It is believed that dyads who had an opportunity to engage in off-task conversation would be more likely to continue the conversation unprompted. Finally, it was expected that the reciprocity effect will be replicated here.

2.2 Method

The current work builds off the methodology of both Guydish et al. (2021) and Guydish and Fox Tree (2022). However, the current methodology included both an off-task conversation condition as well as a silence condition to isolate the influence off-task conversation on subjective conversational experience.

2.2.1 Participants

Participants were recruited from the University of California Santa Cruz participant pool. Based on previous work (Guydish et al., 2021; Guydish & Fox Tree, 2022) as well as a power analysis assuming 80% power and an effect size of .4, it was determined that 154 dyads (308 participants) were required. Due to technical difficulties or issues with following directions, 9 dyads were excluded from analyses leaving a total of 145 dyads for the current analyses.

2.2.2 Materials

To play the referential tangram game, participants worked with a series of tangram shapes. These materials were reused from Guydish and Fox Tree (2022). However, since the current work is being done remotely, images were taken of the original physical cards and were used to create both a director packet document as well as the matcher document. In the director's packet, images of the shapes were centered on an 8.5 by 11 inch page and enlarged to take up most of the page. Directly above the image on the same page, the number of the tile was listed, indicating where the tile was located in the order (e.g., Tile 1 for the first shape, Tile 2 for the second shape). There is only a single shape on each page, totaling a 20-page directors packet. For the matcher's document, the shapes were randomized and place onto two 8.5 by 11 pages placed into landscape page orientation. The first page displayed 15 shapes whereas the second page displayed the remaining 5 (i.e., four rows of five images). The shapes were spread across two pages to ensure adequate visibility of all the shapes. Below each shape there was a letter indicated moving left to right (e.g., the first shape in the top left corner of the first page was labeled *A*). A single black line was used below each of the rows to help distinguish the rows from one another.

In addition to these materials, two different software programs are being used. Participants communicate with one another via Zoom videoconferencing software. To fill out both consent forms and the post session survey, participants used Qualtrics. The survey consisted of questions regarding how much they enjoyed the conversation, their willingness to work with the other participant again in the future, and some demographic questions.

2.3 Procedure

Approximately 15 minutes before the scheduled start of the session participants received a unique Zoom link to access the session. Once participants entered the Zoom session, the experimenter confirmed that they were accessing the session from a computer. This ensured that all participants had a similar experience during the session and would be able to access both the Zoom session and materials effectively. Once this was confirmed participants were given access to the consent forms. Once participants consented, the experimenter began recording the Zoom session and participants were reminded that both audio and visual information was being recorded for the entirety of the session. Next, the experimenter began the instruction period, in which they outlined the task and how the overall session will take place. During the instructions, participants were assigned as being the director of the matcher. These assignments were counterbalanced. For example, the assignment order for a dyad may be director then matcher. Therefore, the first person to enter the session was assigned to the director role, whereas the second person was assigned to the matcher. In the next dyad, the assignment order switched.

Participants were then given instructions regarding how to work on the task as well as what the session would entail. More specifically, the director was told their goal was to direct the matcher to order the shapes in the order they have in their director's document. The matcher was instructed to record the sequence of letters they believe the director is describing on a piece of paper. For example, if the matcher believed the director was describing the shape labeled as *C* for the first shape, they

were to record *C* as being in the first position. For each session, the matcher is asked

to send the order of the shapes they believe the director has been describing via a

direct private message to the experimenter, who then records this order in a

participant record sheet. Before these instructions were given, participants received

their respective materials via private direct message from the experimenter (i.e., the

director does not see the matcher's materials and vice versa). This allows the

participants to review their materials when instructions were given and ask any

questions they might have had regarding the task.

   If participants were in the off-task conversation condition, they were told that

they would work on the task for three minutes but would have a three minute break

period in which they would be allowed to discuss whatever they'd like (but were

prompted with discussion about their favorite movies or TV shows). For the silence

condition, participants were told they would work on the task for three minutes

followed by a three-minute break period. Once participants had confirmed they had

understood the directions, the experimenter turned off both their audio and video on

Zoom, which signaled to the participants to begin the task. The experimenter then

started a timer for three minutes. Once the three minutes had elapsed, the

experimenter re-entered the conversation by turning their audio and video back on. At

this point, the experimenter then explained the next portion of the study based on the

condition. In the off-task conversation condition, participants were given an

opportunity to engage in off-task conversation with one another about whatever

they'd like but were given the example of discussing their favorite movies or TV

shows. This was done to ensure that participants would at least have an idea of what to talk about. If in the silence condition, participants were told to turn off both their audio and video. These sessions also lasted a total of three minutes. Once the three minutes had elapsed, the experimenter again entered the Zoom session, and moved the participants on to the second task session. This task-then-break (off-task conversation or silence) pattern occurred three times, resulting in nine minutes of task work and nine minutes of break.

Once this process had occurred for the three rotations, the experimenter entered the Zoom conversation and told participants they were now finished with the session. At this point, the experimenter indicated that they were going to finalize some details regarding the experimental session and without indication to the participants, turned off both their audio and video for approximately sixty seconds. This brief period allowed for the examination of whether participants engaged in unprompted conversation. In other words, participants were not told to communicate with one another while the research assistant was away. During this sixty second period, the experimenter finalized the materials in the participant record sheet, but also observed the participant's behaviors, and recorded whether participants continued their conversation unprompted.

Once the experimental portion was completed, participants were given the post-experimental survey to complete on their own. Once done, they were given a post-experimental consent form allowing for the use of their recorded session for

display purposes at scientific conferences. Once completed participants were thanked for their time and released.

2.4 Results

Independent two-sample *t*-tests were used for comparisons. After removing problematic dyads, 72 dyads were in the off-task conversation condition, whereas 73 dyads were in the silence condition. Variables for dyad enjoyment (1 being *Not at All Enjoyable*, and 7 being *Extremely Enjoyable*) and willingness to work with participant again in the future (1 being *Not at All Willing*, and 7 being *Very Willing*) were calculated by averaging the Likert scores of each member of the dyad from the post-experimental survey.

In line with hypotheses, the opportunity to engage in off-task conversation influenced dyad's enjoyment of their conversations. Dyads who had the opportunity to engage in off-task conversation ($M = 6.06, SD = .76$) reported enjoying their conversations more than dyads who did not have that opportunity and were silent during their breaks ($M = 5.67, SD = .87$), $t(143) = 2.87, p = .005$, 95% CI for the difference, [.12, .66], $d = .48$. Also in line with hypotheses, participants who had an opportunity to engage in off-task conversation ($M = 6.32, SD = .70$) reported being more willing to work with their fellow participant in the future compared to participants who did not have that opportunity and were silent during their breaks ($M = 5.97, SD = .83$), $t(143) = 2.72, p = .007$, 95% CI for the difference, [.09, .60], $d = .45$.

In the unprompted chat portion, in which dyads had an opportunity to continue their conversation without direction from the experimenter, the results were again in line with our hypothesis. We observed a significant difference in terms of who talked during the unprompted period $\chi^2(1) = 36.96, p < .001$. Dyads who engaged in off-task conversation were more likely to continue their conversation in the unprompted period (N = 51, 70.80%) compared to dyads who did not have an opportunity to engage in off-task conversation and were silent during their breaks (N = 15, 20.55%). To provide details regarding the order and magnitude of the difference between these proportions, an adjusted Wald 95% confidence interval for proportional difference was calculated. As expected, we can be 95% confident that between 35% and 62.88% more of the dyads who engaged in off-task conversation during breaks continued speaking in the unprompted chat portion compared to those who were silent during breaks.

Finally, we analyzed the contribution behaviors of those in the off-task conversation condition to determine if they were working to balance the amount they contributed to the conversation (i.e., the reciprocity in conversation effect) using a *role* (director vs. matcher) by *conversation type* (task vs. off-task) repeated-measures ANOVA. To do this analysis, the number of words contributed by each individual was collapsed across each of the three sessions. A significant interaction was observed, $F(1, 71) = 270.02, p < .001, \eta_p^2 = .792$. Pairwise comparisons were made using paired *t*-tests for the influence of role at each conversation type. While a difference was observed between director (*M* = 989.90, *SD* = 206.86) and matcher (*M* = 273.32, *SD*

= 120.52) in number of words contributed while working on the task, $t(71) = 23.64$, p < .001, 95% CI for the difference [656.15, 777.02], $d = 4.23$, a significant difference was not observed between matcher ($M = 663.83$, $SD = 219.57$) and director ($M = 729.58$, $SD = 256.24$) in number of words contributed during the off-task conversation period, $t(71) = -1.70$, $p = .094$, 95% CI for the difference [-143.06, 11.56], $d = .28$.

An important part of the reciprocity in conversation effect is that the amount of balance achieved in the conversation influences the reported enjoyment of the dyad. To test this relationship, balance scores were calculated for each dyad (see Guydish et al., 2021, Guydish & Fox Tree, 2022). No significant relationship was observed between contribution balance ($M = .70$, $SD = .14$) and reported enjoyment ($M = 6.06$, $SD = .76$), $r(70) = -.03$, $p = .797$. Therefore counter to our hypothesis, the reciprocity in conversation effect was not replicated here.

2.5 Discussion

The work presented in this first study had two goals, both exploring influences on interlocutor's subjective conversational experience. The first goal was to determine whether merely having an opportunity to engage in off-task conversation caused greater conversational enjoyment and increased willingness to work with that participant again in the future. The second goal was to replicate the reciprocity in conversation effect (Guydish et al., 2021; Guydish & Fox Tree, 2022) in a videoconferencing environment.

With respect to the role of chat on enjoyment individuals who were given an opportunity to engage in off-task conversation during their breaks reported not only greater enjoyment compared to individuals who did not get an opportunity to engage in off-task conversation (silent breaks), but also showed a greater willingness to work with their partner again in the future. Additionally, those in the off-task conversation condition were approximately three and a half times more likely to continue their conversations in the sixty second unprompted conversation period, suggesting that the mere presence of off-task conversation was enough to change their behavior in this period in a significant way.

Guydish and Fox Tree (2021) proposed that individuals use affective information regarding conversational outcomes (whether the goal of the interaction was achieved) as well as their subjective conversational experience to evaluate whether a conversation should be considered good or bad. In particular, Guydish and Fox Tree (2021) emphasize that subjective conversational experience includes evaluation of how conversations developed. The results presented here provide evidence that how conversations develop indeed influences interlocutors' experiences in those conversations. When conversations include an opportunity to simply chat with one another, free of well-defined roles, this can have a positive influence on how individuals view the conversation later.

It is important to note a potential alternative explanation for the results reported here. While we found a clear difference for the level of enjoyment experienced as well as willingness to work with their partner again in the future for

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those in the off-task conversation condition, it is possible that these differences were found simply because they had a longer opportunity to converse with one another. Those in the off-task conversation condition had a total of 18 minutes to communicate with one another, whereas those in the silence condition only had 9 minutes. While the results may be weaker if those in the silence condition simply continued working on the task (therefore having a total of 18 minutes of interaction time), we believe that the same pattern of results would be found again. We believe this because off-task conversation provides an opportunity for individuals to engage in conversation with one another free of well-defined roles and the expectations that come with them. As discussed, previous work has found that when roles are removed during a conversation interlocutors may change their contribution behaviors with such changes being associated with more positive subjective experiences (Guydish et al., 2021; Guydish & Fox Tree, 2022). While the changes in contribution behaviors were not observed here, the subjective conversational differences were again observed. This suggests that perhaps in the videoconferencing modality, contribution balance may be a less important factor than the manipulated factor, which was being able to have an interaction free of well-defined roles.

Additionally, we believe our design to be ecologically valid. Often, when individuals are given a break opportunity while on Zoom, the participants have two potential means of action: to turn off the microphone and camera during the break, or to converse with peers. By emulating these possibilities, our results can generalize to common, everyday uses of Zoom.

In addition to testing the role of chat on enjoyment, our second aim was to determine whether the reciprocity in conversation effect (Guydish et al., 2021; Guydish & Fox Tree, 2022) replicates in a videoconferencing environment. The reciprocity in conversation effect has been found in both phone conversations (Guydish et al., 2020) as well as instant messaging conversations (Guydish & Fox Tree, 2021). However, this effect was not replicated here.

While failure to replicate the reciprocity in conversation effect was unexpected, three main reasons for such a result will be discussed here: (1) seeing and hearing addressees allows additional communicative processes absent in audio-only or text chat (see discussion of *grounding* below), (2) the videoconferencing technology we used (Zoom) contains information that may disrupt communicative processes (see discussion of self-view below), and (3) the videoconferencing technology may have been intrinsically disruptive (see discussion of Zoom fatigue below).

First, reciprocity in conversation may be a strategy that individuals use to have an opportunity to better understand one another when visual information is not available. To understand why audiovisual might differ from audio-only or text, it's important to understand the concept of *grounding* in conversations. During conversation, individuals work to mutually understand one another, something that is referred to as reaching common ground (Clark, 1996). Common ground can be defined as when "contributor and the partners have understood what the contributor meant to a criterion sufficient for current purposes" (Clark & Schaefer, 1989, p. 262).

While individuals attempt to reach common ground in all conversations, the strategies individuals use to ground with one another changes with the communication medium being used (Clark & Brennan, 1991). In particular, Clark and Brennan (1991) discuss how videoconferencing interactions have the benefit of visibility (being able to see one another). With visibility, reaching common ground can be achieved without any verbal contribution by the listener. By simply nodding their head up and down, the listener can indicate to the speaker that not only are they still paying attention to what is being said, but they understand what the speaker is saying. Because this information is lost in both telephone and instant messaging conversations, individuals are forced to show evidence of grounding with one another in other ways (Clark & Brennan, 1991). Therefore, it may be possible that more attention is given to contribution balance as a way to make up for a lack of visual information in telephone and instant messaging conversations. Rather than providing evidence of understanding through visual information (e.g., head nods, facial expressions) individuals are allowing one another more time to contribute to provide such evidence.

Alternatively, the reciprocity in conversation effect may not have replicated due to the unique nature of videoconferencing with the technology we used (Zoom). In particular, individuals may have felt pressure to talk to avoid moments of having to see themselves sitting in silence. In other words, because participants were able to see themselves during this interaction, they may have wanted to avoid moments of listening as they would be forced to encounter an image of themselves listening.

Alternatively, the image of themselves may have distracted them from the more intricate details of the conversation itself (e.g., how much I have contributed to this interaction). In fact, previous researchers found that 40% of participants surveyed found the self-view window in videoconferencing distracting (Balogová & Brumby, 2022). This suggests that the presence of a self-view image (which all the participants in this study had) could lead to less attention being paid to the interaction taking place.

Finally, such a lack of an effect could simply be due to exhaustion with videoconferencing in general, or *Zoom fatigue*. Some have argued that the extra cognitive work that is required to send and receive visual cues (e.g., exaggerated head nods, prolonged eye contact with camera) during videoconferencing may be the cause of such fatigue (Bailenson, 2021). Therefore, it is possible that individuals may simply be tired of interacting with one another via videoconferencing software, ignoring relevant social cues that otherwise would be noticed during face-to-face interaction, audio-only interaction, or text chat.

This result has several implications for a world in which remote work is now more common than it ever was previously. In particular, not only does off-task conversation lead to better perceived interactions, but it also directly influences how individuals view one another. The results suggest that encouraging off-task conversation in remote work environments would yield better interactions between individuals as well as a greater desire to work with coworkers.

While the reciprocity effect did not replicate here, such a result provides for some interesting future questions. For example, do individuals have a general sense of how much they have contributed to a conversation? If they do, does this perception change when having a conversation over video chat? Although we kept self-view on to replicate the most common usage of Zoom, a natural question resulting from our findings is whether results would differ if self-view were turned off. These questions are left for future work.

3 Discourse Markers and Subjective Conversational Experience

Study 2 examined the influence the use of discourse markers has on subjective conversational experience. Three different corpora were analyzed. These corpora were selected as they all are similar in terms of participant's activities and behaviors, providing an excellent opportunity to examine how discourse markers might influence how participants feel about their conversations.

3.1 Hypotheses

Because of their role in negotiating conversations, it is predicted that higher discourse marker use will be positively correlated with outcomes measuring subjective conversational experience (enjoyment of task, enjoyment of conversation) as well as greater contribution balance. While it is possible that more discourse markers could be used in off-task conversation as interlocutors negotiate language use as they get to know one another, another possibility is that people will use more discourse markers to effectively negotiate a task. Therefore, while an analysis will be

completed that explores their use across on-task and off-task conversation across corpora, no a priori hypotheses regarding prevalence across conditions are made.

3.2 Method

Three corpora were analyzed. The Artwalk corpus (Liu et al., 2016) as well as the extension to that corpus (see Guydish et al., 2021), the instant messaging reciprocity corpus (Guydish & Fox Tree, 2022), and the Zoom reciprocity corpus from Study 1.

The Artwalk corpus is a collection of transcripts from phone conversations participants had while completing a guided task to art installations around downtown Santa Cruz (Liu et al., 2016). In total, there are 69 transcripts, 48 of which were released originally by Liu et al. (2016) and 21 that were added later (Guydish et al., 2021). In the task, a director (who is in the lab) directs a follower (who is in downtown Santa Cruz) to art installations around the area. The director has a map as well as images of the art installations themselves, whereas the follower only has the phone in which they are using to communicate with the director. What is unique about the Artwalk corpus is that not only does it have the task related conversation, but also has moments of off-task conversation in which the participants are conversing while navigating to the next art installation. This provides an excellent opportunity to analyze both on-task and off-task communication.

The instant messaging reciprocity corpus (Guydish & Fox Tree, 2022) also has a director and matcher working on a collaborative task. In this task, the director's goal is to guide the matcher to achieving the correct order of tangram shapes. The

director has a specific order the shapes must be placed, as well as enlarged images of the tangram shapes themselves. The matcher, on the other hand, has the shapes pasted onto cards and placed into a random order. In addition to communicating while working on the task, the director and matcher also have break sessions in which they are prompted to communicate with one another about their favorite movies or TV shows, though there were no limitations as to what they were allowed to talk about.

Finally, Study 2 included the transcripts that are obtained from Study 1. As discussed, the methodology of Study 1 is very similar to both Guydish et al. (2021) and Guydish and Fox Tree (2022). For a detailed description, see the methodology section of Study 1.

Importantly, all three corpora have a measure related to subjective conversational enjoyment. Both the instant messaging reciprocity corpus as well as the transcripts from Study 1 have measures of conversational enjoyment. While the Artwalk corpus does not specifically ask about conversational enjoyment, as this was not a focus of Liu et al. (2016), it does include a measure of task enjoyment, which has previously been used as a proxy measure for subjective conversational enjoyment (see Guydish et al., 2021).

Discourse markers were extracted using a program script that has been used previously to extract backchannels (Nguyen et al., in press). Once the discourse markers were extracted, the five most frequent discourse markers (*like*, *so*, *but*, *oh*, *I think*) were selected for further analysis. This ensured that the items of interest occurred frequently enough in our corpora for analysis. Once the discourse markers

had been selected, trained research assistants coded each occurrence of the discourse

marker to confirm that the instance was in fact acting as a discourse marker. If it was

not acting as a discourse marker, that particular instance was removed from the

analysis. If the instance was acting as a discourse marker, it was then classified as

having occurred in either task-related conversation or off-task conversation.

3.3 Results

To begin, discourse markers were collapsed across type to get a total discourse

marker count for each dyad. Due to differences in articulation rate of speakers across

all corpora, as well as differing amounts of time in spent in on-task and off-task

conversation in the Artwalk corpus, the total discourse marker count was divided by

the total number of words spoken by each of the speakers. Correlational analyses

were then used to explore the relationship between discourse marker use and

subjective conversational experience for each of the three corpora analyzed. No

significant relationship between discourse marker use ($M = .04$, $SD = .01$) and task

enjoyment ($M = 5.56$, $SD = .95$) in the Artwalk corpus was observed, $r(57) = -.07$, $p =$

.580, nor was a significant relationship between discourse marker use ($M = .06$, $SD =$

.02) and conversational enjoyment ($M = 6.06$, $SD = .76$) observed in the Zoom

reciprocity corpus, $r(70) = -.07$, $p = .549$. The relationship between discourse marker

use ($M = .02$, $SD = .01$) and conversation enjoyment ($M = 5.93$, $SD = .77$) in the

instant messaging reciprocity corpus trended towards significance, $r(63) = .238$, $p =$

.056, such that higher use of discourse markers was associated with greater

conversational enjoyment.

Next, correlational analyses were again used to explore the relationship between discourse marker use and contribution balance for each of the three corpora analyzed. Contribution balance was measured by calculating contribution balance scores for each of the dyads across the three corpora. Balance scores have been used previously to calculate a measure of contribution balance while controlling for the number of words contributed by each participant (Guydish et al., 2021; Guydish & Fox Tree, 2022). To calculate this score, we divided the absolute value of the difference in words contributed by each participant by the total number of words contributed by each participant. We then took this value and subtracted it from 1. This yields a value between 0 and 1, with a score of 0 being a completely one-sided conversation (only one person speaks) and a score of 1 being a completely balanced conversation. Discourse markers were again measured by dividing the total discourse marker count by total number of words spoken by the interlocutors of the dyad. A significant relationship between discourse marker use (M = .043, SD = .015) and contribution balance (M = .79, SD = .14) in the Artwalk corpus was not observed, $r(57)$ = .06, p = .661. A significant relationship between discourse marker use (M = .064, SD = .018) and contribution balance (M = .70, SD = .14) was not observed in the Zoom reciprocity corpus, $r(70)$ = .007, p = .953. Finally, a significant relationship between discourse marker use (M = .02, SD = .01) and contribution balance (M = .81, SD = .08) in the instant messaging reciprocity corpus was not observed, $r(63)$ = .043, p = .735.

Next, discourse marker use was analyzed using a *corpora* (between participant; Artwalk vs. instant messaging reciprocity vs. Study 2 Zoom reciprocity) by *conversation type* (within participant; on-task vs. off-task) mixed effects ANOVA.

A significant corpora by conversation type interaction was observed, $F(2, 193) = 66.95$, $p < .001$, $\eta_p^2 = .41$ (see Figure 1). Using paired t-tests, pairwise comparisons of simple main effects revealed that fewer discourse markers were used by dyads in off-task conversation ($M = .02$, $SD = .02$) compared to on-task conversation ($M = .05$, $SD = .02$) in the Artwalk corpus, $t(58) = -8.82$, $p < .001$, 95% CI for the difference [-.03, -.02], $d = -1.40$. More discourse markers were used by dyads in off-task conversation ($M = .07$, $SD = .02$) compared to on-task conversation ($M = .06$, $SD = .02$) in the Zoom reciprocity corpus, $t(71) = 3.62$, $p < .001$, 95% CI for the difference [.004, .015], $d = .45$. Finally, more discourse markers were used by dyads in off-task conversation ($M = .02$, $SD = .01$) compared to on-task conversation ($M = .01$, $SD = .01$) in the instant messaging corpus, $t(64) = 6.11$, $p < .001$, 95% CI for the difference [.005, .01], $d = .82$.
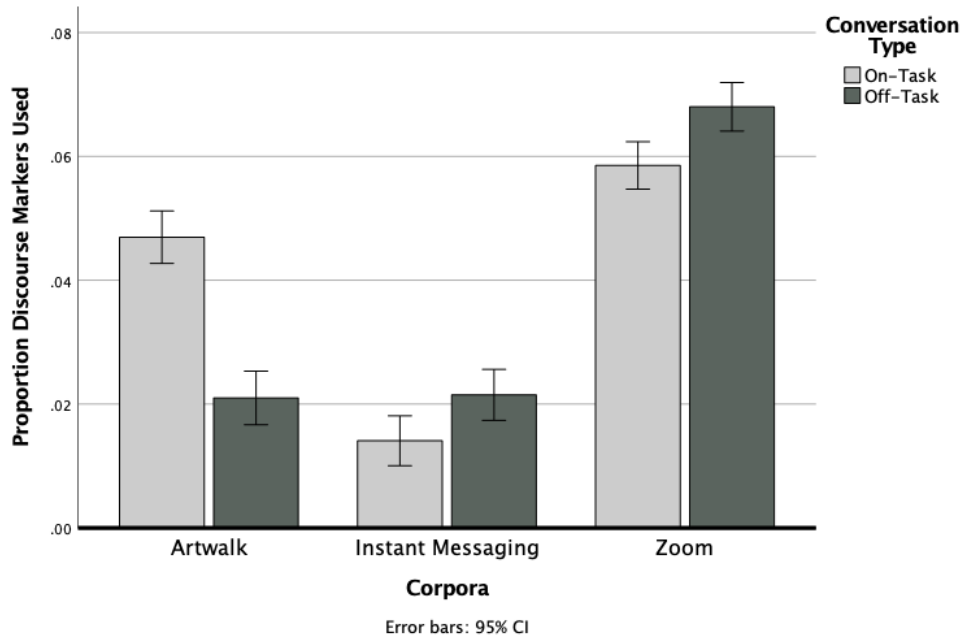
Figure 1. Proportion of discourse markers used in each corpora.

3.4 Discussion

Study 2 had two main aims. First, it was hypothesized that higher use of discourse markers would be associated with greater subjective conversational experience. Due to their role in collaboration during conversation, it was also hypothesized that greater discourse marker usage would be associated with higher levels of contribution balance. Second, Study 2 aimed to examine how discourse marker usage varied between on-task and off-task conversation across corpora.

Counter to hypotheses, there were no significant relationships observed between discourse marker usage and measures of subjective conversational experience (as measured by task enjoyment and conversation enjoyment) nor contribution balance. However, there was a strong trending relationship between

conversational enjoyment and discourse marker usage in the instant messaging corpus.

It is possible that discourse markers play a greater role in subjective conversational experiences for interlocutors communicating via instant messaging compared to videoconferencing or phone communication. As discussed above, conversations are collaborative (Clark, 1996). Interlocutors must work collaboratively with one another to negotiate meaning and eventually reach common ground. In the absence of visual and audio information (i.e., instant messaging conversations) interlocutors use other means to reach mutual understanding (Clark & Brennan, 1991). Therefore, discourse markers may play a role in navigating the negotiation processes required to reach common ground during instant messaging conversations, ultimately creating a more enjoyable conversational experience.

Discourse marker usage in on-task and off-task conversation was found to vary in each of the corpora. While dyads used more discourse markers in on-task conversation in the Artwalk corpus, dyads used more discourse markers in off-task conversation in the instant messaging reciprocity and Zoom reciprocity corpora. These observed differences speak to the importance of discourse markers in the negotiation of meaning and grounding processes.

In the Artwalk corpus, participants had a fairly difficult task. As discussed, the director was required to provide directions for the follower as the follower navigated a busy downtown area. This included not only discussing directions to a target art installation (e.g., discussing which street to go down, discussing possible shortcuts),

but eventual discussion as to whether or not the follower was looking at the correct

art installation. Such an interaction requires a great deal of coordination. In moments

of off-task communication, while interlocutors still used discourse markers, the same

degree of coordination was not required as it was for on-task conversation.

Additionally, these moments of off-task conversation were spontaneous and varied in

length. While some may have been extended interactions about an off-task subject,

some were only a few sentences long as they actively switched between off-task and

on-task conversation.

Comparatively, participants in both the instant messaging reciprocity and

Zoom reciprocity corpora had an easier task. Rather than trying to provide directions

through a busy downtown area, participants only had to work on agreeing that a shape

had been correctly selected. While discourse markers still play an important role in

coordinating such on-task conversation in both the instant messaging reciprocity and

Zoom reciprocity corpora, they were not as needed compared to the Artwalk task.

Alternatively, discourse marker usage was greater in off-task conversation in the

instant messaging reciprocity and Zoom reciprocity corpora due to the unstructured

and extended nature of the off-task conversation periods.

Rather than naturally weaving between on-task and off-task conversation,

resulting in off-task interactions that varied in length throughout the conversation (as

was true in Artwalk), participants of the instant messaging reciprocity corpus (20 total

minutes of off-task conversation) and Zoom reciprocity corpus (9 total minutes of

off-task conversation) had set periods in which they were asked to have off-task

conversation. These extended periods of off-task conversation in the two reciprocity

corpora likely required more negotiation and coordination by the speakers than in the

off-task conversations in Artwalk. Such a sustained off-task conversation session was

likely more difficult for participants compared to the simplistic in-lab tangram

matching game they played. Where the tangram task had a clear conversational

structure (e.g., the director describes a shape, the matcher asks follow up questions

until they think they have the shape, they move on to the next tile immediately in

front of them) the off-task conversation had little to no structure, requiring use of

discourse markers to help with coordination and negotiation efforts.

4 Testing How (1) Contribution Balance, (2) Common Ground, and (3)

Conversational Closings Affect How Conversations Are Assessed and

Remembered

4.0 Pre-Introduction

Here I include a brief summary of a published paper, *In Pursuit of a Good*

Conversation: How Contribution Balance, Common Ground, and Conversational

Closings Influence Conversation Assessment and Conversation Memory (Guydish &

Fox Tree, 2023). For a complete version of the paper, please see Guydish and Fox

Tree (2023). The final version of the paper also includes a link to find stimuli used.

4.1 Summary

To understand how individuals perceive conversational quality, we must

understand conversational memory. In other words, we must consider what

individuals are recalling when determining whether or not a conversation was good or

bad. In such instances, it has been argued that individuals consider whether they have achieved their desired conversational outcomes as well as their *subjective conversational experience* (how the conversation developed and how it was conducted; Guydish & Fox Tree, 2021). More specifically, Guydish & Fox Tree (2021) describe subjective conversation experience as encompassing the psycholinguistic characteristics of a conversation (e.g., common ground, turn behaviors, discourse markers, backchannels), and how these characteristics influence the overall experience of the interlocutor. While content certainly influences conversational memory, these smaller psycholinguistic features also influence the ability to determine whether a conversation was good or bad.

Guydish and Fox Tree (2023) examined how memory interacts with an individual's subjective conversational experience. In other words, what information is being used when an individual makes a determination as to whether a conversation should be considered good or bad? Guydish and Fox Tree (2023) examined how participants perceive and recall previously transcribed conversational snippets displaying contributional balance, common ground, and conversational closings, three attributes of conversation that have been hypothesized to influence subjective conversational experience (Guydish et al., 2021; Guydish & Fox Tree, 2022; Guydish & Fox Tree, 2021).

In what Guydish and Fox Tree (2023) referred to as the *good-things-stick* hypothesis, they argued that conversational snippets that are characteristic of well-formed contribution balance (i.e., participants are balanced in their

contributions, talking at somewhat equal amounts), well-formed common ground (i.e., the participants display evidence of common ground), or well-formed closings (i.e., participants have little trouble closing out the interaction), would be remembered more so than their ill-formed counterparts.

Alternatively, in what they referred to as the *bad-things-stick* hypothesis, they argued that the opposite may be true, in which the ill-formed examples of these conversational characteristics may be remembered better than their well-formed counterparts.

In addition, they hypothesized that individuals may choose to recall contributional balance characteristics more so than the other two types of conversational phenomena evaluated, as previous work had found a relationship between contribution balance and conversational enjoyment. More specifically, Guydish and Fox Tree (2023) made this last hypothesis as previous work had shown that balance had a clear influence on subjective conversational experience: As the conversation becomes more balanced with contributions, individuals reported higher levels of conversational enjoyment (Guydish et al., 2021; Guydish & Fox Tree, 2022). Because of this, they believed that individuals should use this information more readily than common ground or closings to make distinctions between good and bad conversations.

Before completing the study, Guydish and Fox Tree (2023) selected stimuli that represented contribution balance, common ground, and closings from the Artwalk corpus (Liu et al., 2016). For each conversational phenomenon, a total of

eight stimuli were selected. Four of the eight stimuli were representative of a well-formed instance of that conversational phenomenon (e.g., contributions by each participant were balanced) whereas four of the eight stimuli were representative of an ill-formed instance of that phenomenon (e.g., contributions were not balanced by participants). In total, 24 stimuli were used in this study.

Guydish and Fox Tree (2023) selected contribution balance stimuli by calculating balance scores for the snippets. When calculated, these scores fall between 0 and 1, with a score closer to 1 being indicative of a more balanced interaction (see Guydish & Fox Tree, 2023 for calculation). For example (1) had a balance score of .95, indicating a high level of balance.

(1)   D: [laugh] well for example my parents were really into like my dad would he would get out of finals and like the same day hop on a plane for Europe and like backpack around all summer
F: wow it's amazing that um he had that opportunity
D: yeah yeah I guess he was saving *up* all year
F: *I know* yeah I mean my dad just like he went to work after high school and that's all he's done with his life so *I dunno* was that a good decision? I dunno
D: *and that's* [laugh] I mean I would love to ask him I guess but I guess it's not you responsibility to know for him cool
F: I mean people are different it's what they view is a good decision for themselves won't necessarily be the same thing that you think would be a good decision for them or for yourself so

Ill-formed balance stimuli had lower balance scores such as (2), which had a balance score of .43 suggesting more imbalance between the contributions of interlocutors.

(2)   F: uh sociology 15 and then this ridiculous multi-variable math class that I'm tryin ta keep up in
D: w-for what reason you need it or
F: u:h yeah well I-b-because I was u:h thinking about majoring in biology when I first came here
D: uh-huh

F: I took the wrong math series
D: oh
F: and so to make up for that for econ I have ta uh get my own I have to take this math class to catch up
D: o:h okay
F: and it's normally split across two quarters
D: mhm
F: but um because it's summer they put it into one class and then in 5 weeks so [laughs]
D: that sounds brutal [laughs]
F: yeah but I-the professors pretty cool like I-I I had go for some reason and
D: mhm
F: I missed my mid-term
D: mhm
F: and so he's just putting all my grade on my final pretty much [laughs]
D: oh wow
F: yeah *so hm*

For common ground stimuli, Guydish and Fox Tree (2023) selected snippets if interlocutors showed evidence of understanding "well enough for current purposes" (Clark & Schafer, 1987, p. 19). For example in (3), the interlocutor expresses the distance between objects is far. Their fellow interlocutor recognizes that they are saying this to communicate that they are tired of walking.

(3)   F: [sigh] they're picking like the ones that are [laugh] the farthest from each other [laugh]
        D: [laugh] you must be tired doing all that walking *[laugh]*
        F: yeah I'm walking pretty fast *[laugh]* ah it's okay it's nice out

Alternatively, Guydish and Fox Tree (2023) selected ill-formed common ground stimuli if understanding was not indicated, such as in (4). Here, after interlocutor D asks a question, interlocutor F needs further clarification, suggesting that they did not understand what was asked.

(4)   D: uh huh do you know any really cool people that are not going to any more school after gra- after graduation?
F: do I know people that aren't doing any more school?
D: yeah but who are also really cool
F: uh I don't I'm I'm not thinking I most people I know at least want to do like Master's even like my friends that don't go to Santa Cruz they pretty much

Finally, Guydish and Fox Tree (2023) selected closing stimuli based on various criteria. As described by Lakoff (1982), closings are ritualistic. This means they often consist of the same characteristics such as promise of future interaction and thanking one for their time. Thus, well-formed closings were ones that exhibited these characteristics. For example, (5) exhibited such characteristics.

(5)   F: my name's [name]
D: alright well [name] have a great day hopefully you don't have to do *too much work*
F: *what's your name?*
D: [name]
F: what?
D: [name]
F: okay nice to meet you [name] thanks for navigating me around town
D: no worries any day alright well have a good day
F: *bye*
D: talk *to you* later see ya

Finally, Guydish and Fox Tree (2023) selected snippets as ill-formed closings if they did not exhibit one or more of these characteristics or had trouble completing the closing such as in (6).

(6)   F: okay
D: alright
F: see ya later
D: bye
F: bye [silence 5s] hello?
D: I dunno how to hang up
F: I dunno how to hang up either hold on
D: [follower name] you have to hang up

Guydish and Fox Tree (2023) used Qualtrics to complete the study. Once giving their informed consent, participants were told that they would be evaluating previously transcribed interactions. The first task asked participants to rate whether or not the snippet they saw was considered a *good* interaction. Likert scales were used (with 1 being a *bad interaction* and 7 being a *good interaction*, and 4 labeled *neutral*) and no definition of a good conversation was provided. This allowed participants to use their own definition. Upon completion of the rating activity, participants completed a distraction activity in which they were asked to name as many states in the United States as they could. After the distraction task, participants completed a recall task in which they recalled the best and worst interaction they had just seen. After completing a second distraction task (naming as many cities in the United States as they could), participants then completed a recognition task. This recognition task involved participants determining whether they had seen the presented snippet previously (i.e., whether they had seen the snippet during the rating task). Target snippets were interspersed with filler snippets that were taken from the same interaction as the target snippets were taken from.

Guydish and Fox Tree (2023) report several significant results. First, participants uniformly rated well-formed versions of stimuli as being more representative of a good conversation compared to their ill-formed counterparts. This result suggested that contribution balance, common ground, and conversational closings all influence how snippets are perceived by participants.

For the recall task, participants were accurate in recalling a well-formed stimulus when asked to recall their best interaction and recalling an ill-formed stimulus when asked to recall their worst interaction, showing that well-formed stimuli and ill-formed stimuli were perceived and remembered accurately.

When recalling their best and worst interaction, participants had a significantly greater preference for recalling balance stimuli (recalling balance stimuli at a higher rate than both common ground and closings), suggesting that balance may play an important role in memory of the snippets. Participants were also more likely to recall an ill-formed common ground stimuli for their worst interaction compared to recalling a well-formed common ground stimuli for their best interaction.

Participants varied in their recognition accuracy for the conversational phenomena. Participants had better recognition accuracy for well-formed balance stimuli compared to ill-formed balance stimuli and better recognition accuracy for ill-formed common ground stimuli compared to well-formed common ground stimuli. There was also variation in time to recognition for each of the phenomena categories. Participants were slower to recognize ill-formed balance stimuli compared to well-formed balance stimuli, slower to recognize ill-formed common ground stimuli compared to well-formed common ground stimuli, and slower to recognize well-formed closings compared to ill-formed closings.

Guydish and Fox Tree (2023) provided insight into how subjective conversational experience interacts with memory. The clear distinction in ratings of conversational snippets provides evidence that individuals are in fact able to

distinguish between well-formed and ill-formed versions of these phenomena,

supporting the theoretical account of common ground and closings provided by

Guydish & Fox Tree (2021). This work also provided support that contributional

balance has a large influence on memory of conversational stimuli, as approximately

half the participants used contributional balance information to make distinctions

between what they viewed as the best conversation as well as what they viewed as the

worst conversation.

4.2 Significance of Guydish and Fox Tree (2023)

There are three main take-aways from the Guydish and Fox Tree (2023) paper.

First, Guydish and Fox Tree (2023) demonstrated that the amount of effort

exerted influences perceptions of conversations. In the common ground literature, the

principle of least collaborative effort states that individuals use the least amount of

effort required to ground with one another (Clark & Wilkes-Gibbs, 1986). Guydish

and Fox Tree (2023) showed that when individuals showed signs of expending effort

and indicated such issues, this interaction was rated as being worse compared to their

well-formed counterparts. This observation is important because the link between the

predictions of the principle of least collaborative and the way people feel about

conversations has not been previously demonstrated; that is, Guydish and Fox Tree

(2023) are the first to show this connection.

Second, Guydish and Fox Tree (2023) showed that participants relied on

balance when determining their best and worst interactions. For both the best

interaction recall and worst interaction recall activities, participants recalled balanced

stimuli at the highest rate, followed by closing stimuli and common ground stimuli. This result supports the proposal that contribution balance is an important factor in determinations of good and bad interactions.

Third, Guydish and Fox Tree (2023)'s data spoke to the good-things-stick hypothesis and the bad-things-stick hypothesis. Participants were better at recognizing well-formed balance compared to ill-formed balance, supporting the *good-things-stick* hypothesis. At the same time, participants had better recognition accuracy for ill-formed common ground compared to well-formed common ground supporting the *bad-things-stick* hypothesis. The difference in direction between balance and common ground recognition accuracy was unexpected. Participants may be finding well-formed balance stimuli as being more enjoyable or engaging to read, which is supported by previous work that showed that individuals find more balanced conversations as being more enjoyable (Guydish et al, 2021; Guydish & Fox Tree, 2022). Alternatively, ill-formed common ground may have had increased recognition accuracy because grounding struggles are unexpected during conversation. Common ground is a key component to the collaborative nature of conversations (Clark, 1996) and thus may be expected. During conversations, unexpected characteristics may be further processed compared to expected characteristics (Samp & Humphreys, 2007). Therefore, when individuals showed signs of struggling to reach common ground, participants may have remembered these interactions more so due to deviation from what is expected, leading ultimately to better recognition accuracy.

While these results showed interesting interactions between conversational phenomena and memory, Guydish and Fox Tree (2023) describe two main limitations. First, content was not controlled for in the stimuli. Thus, participants may be remembering stimuli differently due to the content of the stimuli. Second, the participants of this study were not involved in interactions themselves. However, the hypotheses that were made were based on previous literature that did involve conversational participants. Therefore, Guydish and Fox Tree (2023) believe future work will show similar results.

5 General Discussion

The process in which we make distinctions between good and bad conversations is currently unclear. When an individual is asked whether a conversation was good or bad, they are usually able to provide an answer fairly quickly. However, how people reach that answer remains a mystery. What information do they rely on?

On first thought, getting an answer to this question seems as simple as asking individuals what they think is a good conversation. However when this is done, individuals provide a variety of answers. As part of a project not reported here, I asked 107 participants this very question. While a full qualitative analysis is beyond the scope of the studies reported here, some insight can be gleaned from these responses. Using some of the characteristics discussed in the above studies, I found that a total of 31 (28.97%) participants mentioned conversational topic, 29 (27.10%) mentioned engagement, 22 mentioned contribution balance (20.56%), 15 mentioned

aspects of visual communication (14.01%; e.g., hand gestures, body language), and 8 mentioned grounding (7.47%). Surprisingly, 49 (45.79%) participants mentioned conversational qualities that do not fall within these categories (e.g., acceptable silences, little to no silences, the dress of the interlocutors, conversation length).

While informative, such results simply provide us with more questions than answers. For example, how does one perceive conversational engagement and what evidence is used to decide an interaction was engaging? With grounding playing such an important role in the conversational experience, why do so few participants report it? Importantly, how can conclusions be drawn from such results when so much variability exists in the responses received? And finally, with fewer than a third of participants reporting topic as being an important factor, what else could participants be considering? Said another way, while the topic of conversation is clearly a factor as to whether or not a conversation is perceived as being good (a disagreement might be rated as a less good conversation just because it was a disagreement), topic alone isn't driving assessments. The comparison between the survey results and our research shows that people may not have complete access to what they are considering in assessing conversations (because, for example, a minority mentioned balance, fewer mentioned common ground, and no one mentioned closings in the survey).

For these reasons it becomes clear why understanding how we make distinctions between good and bad conversations is important. While answers to the question of what makes for a good conversation usually comes quickly (individuals

are usually able to provide an answer quickly and easily), it is difficult to draw generalizable conclusions from simple introspective techniques, as my 107-person sample showed. Additionally, as is the case with all introspective data, it is possible that individuals simply do not have conscious access to how they are being influenced by certain behaviors during interactions.

In the three studies reported here, I focus on the last question posed above: What makes for a good conversation beyond the topic being discussed? In Study 1 I explored a possible answer being contribution balance as well as conversational development. Study 2 focused on smaller words that aid in coordinating and navigating within and between conversational topics. In Study 3 I focused on memory, exploring how psycholinguistic characteristics of conversations are remembered and considered differently when answering the question of what makes for a good conversation.

In Study 1, we found that having the opportunity to engage in off-task conversation causes both higher conversational enjoyment and willingness to work with the conversational partner again in the future. Alternatively, the reciprocity in conversation result failed to replicate in the videoconferencing medium. While unexpected, this result opens new and interesting questions about the nature of the effect. These findings support the concept of subjective conversational experience outlined by Guydish and Fox Tree (2021) because the mere presence of an off-task conversation session improved perceptions of the conversation. As discussed, subjective conversational experience relates to how the conversation developed and

how it was conducted (Guydish & Fox Tree, 2021). By manipulating how the conversation developed (by allowing for off-task conversation) participants had subjectively better experiences during the conversation compared to those who did not (in the silence condition). They also have several implications for how we videoconference with one another moving forward, namely making such interactions more enjoyable experiences and supporting teambuilding (as measured here by willingness to work with partners again in the future).

Study 2 explored discourse marker usage and what influence this usage has on subjective conversational experience and contribution balance. While no significant relationships were observed, we did observe a strong trending relationship between discourse marker usage and conversational enjoyment in the instant messaging reciprocity corpus. It is possible that in conversational mediums that have low amounts of communicative information (such as instant messaging), participants rely on discourse markers to organize communication and better understand one another, ultimately resulting in a better overall subjective conversational experience. In addition, discourse marker usage was found to vary in on-task and off-task usage across corpora. In particular, more discourse markers were used in on-task conversation in the Artwalk corpus, but more discourse markers were used in off-task conversation in the instant messaging reciprocity corpus and Zoom reciprocity corpus. As discussed, these results tell us how discourse markers are used when increased coordination is needed. In the difficult Artwalk task, as the follower was navigating a busy downtown area, the interlocutors used more discourse markers to

achieve their goals. Alternatively, when the task was somewhat easier in the laboratory as with the instant messaging reciprocity and Zoom reciprocity corpora, interlocutors used more discourse markers as they coordinated getting to know one another in extended periods of off-task conversation.

Finally, in Study 3 we examined how these factors interact with memory. If we are to understand how we are making these types of distinctions, we need to understand how we remember our conversational experiences. Our previously published work showed the direct impact contributional balance has on making these types of distinctions, and also provided some more nuanced findings (Guydish & Fox Tree, 2023). Not only did approximately half the participants use balance information to distinguish between their best and worst observed interaction, but when recalling details about the balance stimuli they rated as being their best or worst interaction they saw, they reported details that reflected the presence of or lack of balance. These analyses show that questions of how we remember and use the information from contributional balance, common ground, and conversational closings is not clear cut.

Together, these studies provide a starting point for a better understanding of how we make determinations between good and bad conversations. While Study 1 examined conversational behaviors, Study 2 examined the words used to coordinate the conversation, and Study 3 examined how information (like balance) is used later on to make judgements about the conversation. Understanding how we perceive conversations is a complex task. Interactions are influenced by numerous factors (cognitive, social, and developmental). However, by approaching this question from a

psycholinguistic view, we can hope to uncover some underlying characteristics of a "good" conversation.

By conducting this work, we can learn to better identify what makes for a better and more engaging conversation, effectively learning what is needed to be better communicators with one another. In a world that is increasingly polarized, learning what and why our behaviors influence our subjective conversational experiences becomes increasingly important.

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