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Zooming Out on Bargaining Tables: Exploring Which Conversation Dynamics Predict Negotiation Outcomes

Matteo Di Stasi[1], Emma Templeton[2], and Jordi Quoidbach[1]

[1] Department of People Management and Organisation, ESADE Business School, Universitat Ramon Llull

[2] Department of Psychological and Brain Sciences, Dartmouth College

How much should you talk, pause, or interrupt your counterpart in negotiations? The present research *zooms out* on the macrostructure of negotiation conversations to examine how systematic differences in conversation dynamics—the structural and temporal patterns that arise from the presence or absence of speech between interlocutors—relate to objective and relational outcomes at the bargaining table. We examined 38,564 speech turns from 239 online negotiation recordings and derived, for each negotiator (N = 380), 16 measures pertaining to seven dimensions of conversation dynamics: speaking time, turn length, pauses, speech rate, interruptions, backchannels, and response time. Network analyses reveal that many of these measures are interconnected, with clusters of variables suggesting broad differences in negotiators' propensity to "talk vs. listen" and to mimic their counterparts. Regression and Least Absolute Shrinkage and Selection Operator (LASSO) analyses further show that several measures uniquely predict objective and relational outcomes in videoconference negotiations. At the objective level, negotiators who speak more, faster, and with fewer pauses tend to get better deals. At the relational level, negotiators who refrain from interrupting and display more dynamic turn length (i.e., low similarity over successive turns) are better liked. Taken together, the results suggest that conversation dynamics could make or break deals.

Keywords: negotiation, conversation dynamics, turn-taking

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Imagine you are trying to persuade your boss to give you a raise or convince your colleagues of the best way to allocate company resources. How might the amount of time you talk, pause, backchannel, and interrupt in these conversations impact your success? Hundreds of studies have *zoomed in* on the content of negotiations to show that what we say affects what we get. Here, we go beyond the content of what was said and instead *zoom out* on the macrostructure of negotiation conversations to investigate how the simple patterns of speech and silence can predict important negotiation outcomes.

Negotiation is an integral part of our social lives. People engage in various forms of bargaining, compromise, and influence attempts with their coworkers, kids, friends, and strangers alike on a daily basis (Di Stasi et al., 2023). Negotiation conversations—social interactions aimed at reaching an agreement that enhances the status quo (Carnevale & Pruitt, 1992)—possess unique characteristics that distinguish them from other types of conversations. These distinctions include their goal-oriented nature (Galinsky & Mussweiler, 2001), the presence of divergent interests (Pruitt, 1998), and the necessity for strategic communication to achieve desired outcomes (e.g., Bowles & Babcock, 2013; Lee & Ames, 2017; Schaerer, Schweinsberg, et al., 2020; Trötschel et al., 2015). Consequently, the factors that predict successful negotiations may sometimes deviate from those that predict success in other types of conversations. For example, people who smile more frequently in casual "get-to-know-you" conversations are better liked (Reece et al., 2023), whereas people who smile more frequently in negotiations get worse deals (Kopelman et al., 2006). Similarly, adopting a warm and polite tone may boost feelings of connection (Holtgraves, 1989), but it may also result in less favorable pricing (Jeong et al., 2019). And while slow response times between strangers can be awkward (Templeton et al., 2023), prolonged gaps in negotiations can provide space for reflection that fosters value creation (Curhan et al., 2022). As these differences highlight, findings from other conversational contexts may not generalize to negotiations and vice versa.

What makes a negotiation successful? Most research investigates the *verbal* components of communication. Making first offers (e.g., Galinsky & Mussweiler, 2001), using precise prices ($1,487 instead of $1,500; e.g., Mason et al., 2013), talking about one's constraints (vs. their flaws; Lee & Ames, 2017), mentioning strong alternatives (Schaerer, Schweinsberg, et al., 2020), and framing issues in terms of losses versus gains (e.g., De Dreu et al., 1994) have all been shown to improve negotiation success. A smaller body of work focuses on *nonverbal* components of communication, such as body movements and facial expressions. Expressing anger (Van Kleef & Côté, 2007), having open and expansive body language (Carney et al., 2010; Hall et al., 2005), and maintaining eye contact (Drolet & Morris, 2000) can result in better negotiation outcomes, typically by conveying assertiveness and dominance. Finally, a handful of studies examine *paraverbal* components of communication, like

Matteo Di Stasi https://orcid.org/0000-0002-9438-9138

Emma Templeton https://orcid.org/0000-0003-1297-6150

Correspondence concerning this article should be addressed to Matteo Di Stasi, Department of People Management and Organisation, ESADE Business School, Universitat Ramon Llull, Avinguda de la Torre Blanca, 59, E-08172 Sant Cugat del Vallès, Barcelona, Spain. Email: matteo.distasi@esade.edu

prosody and intonation. Speaking with a lower pitch increases perceptions of status and authority (Buller & Burgoon, 1986; Ko et al., 2015; Ohala, 1982), improving negotiation outcomes (Klofstad et al., 2012). Having more variability in vocal pitch and volume can make people seem more persuasive and engaging, leading to more successful outcomes (Burgoon et al., 1990).

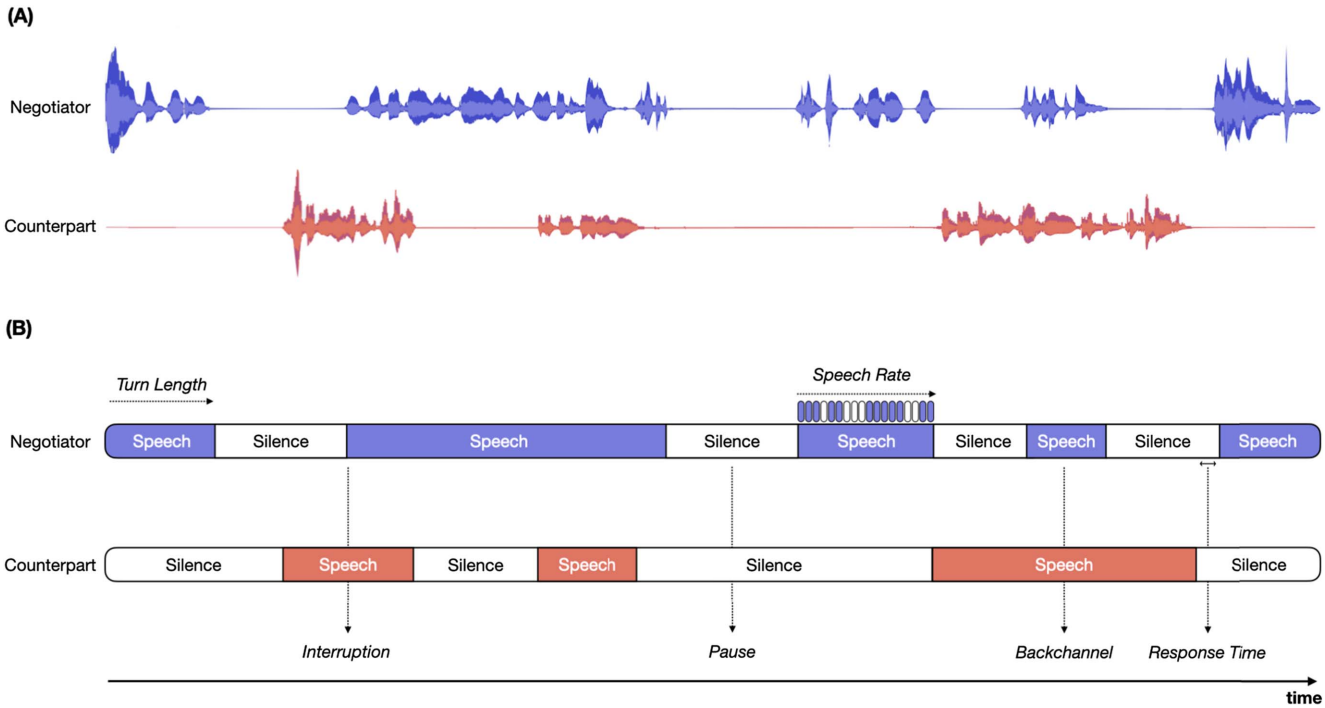
While these verbal, nonverbal, and paraverbal components of communication are certainly important, recent scholarship suggests that a deeper understanding of negotiation could be gained by examining *conversation dynamics* (Boothby et al., 2023). The term "conversation dynamics" has found varied usage across academic contexts, typically spanning behaviors such as turn length, silence, and interruptions, but also sometimes conversation topics and gaze behaviors. In an effort to enhance clarity and precision, we adopt an approach inspired by the seminal work of Heldner and Edlund (2010) and Curhan and Pentland (2007). We propose that conversation dynamics be defined as the structural and temporal patterns that originate solely from the presence or absence of speech between speakers. This operational definition distinguishes conversation dynamics from verbal components, which focus on the content of the speech. Similarly, it differentiates them from nonverbal components that revolve around body language, such as facial expressions and gestures, during periods of speaking and listening. Furthermore, it separates conversation dynamics from paraverbal components that relate to the speaker's voice characteristics, such as pitch and volume. The conversation dynamics of when people are speaking (or not) may provide important insights into how a negotiation's structure, flow, and balance influence its outcomes, irrespective of its content and context.

Conversation Dynamics

Human conversations tend to be organized by remarkably well-coordinated speech turns (ten Bosch et al., 2004) where people minimize the gaps between turns (Stivers et al., 2009) and adapt their turn lengths to each other over time (Giles et al., 1991). Recently, interest in conversation dynamics has grown among psychologists, fueled by the availability of audio and video recordings and advancements in analytical tools and natural language processing (Koenecke et al., 2020). This has allowed the exploration of individual differences in conversation dynamics, revealing how simple turn-taking patterns contribute to effective communication (Chowdhury et al., 2016; Curhan et al., 2022; Masumura et al., 2019; Reece et al., 2023; Templeton et al., 2022).

Building on classic and emerging work in the field, we propose that conversation dynamics can be described by seven core dimensions, all derived from the basic succession of speech and silence between people (Figure 1). Moments of speech can be used to measure a negotiator's overall *speaking time* as well as the length of individual *speech turns* (e.g., short utterances vs. long monologues). The timing of speech can be used to measure a negotiator's propensity to speak over their counterpart either to briefly signal attention, understanding,

Figure 1
Dimensions of Conversation Dynamics



Note. (A) Moments of speech and silence. Waveforms represent voice amplitude for the negotiator (in blue) and the counterpart (in red). (B) Dimensions of conversation dynamics. Each colored segment represents moments of speech. White segments represent moments of silence. The horizontal axis represents time. The seven core dimensions of conversation dynamics are annotated on the schematic. See the online article for the color version of this figure.

and agreement (i.e., *backchannels*; e.g., "yeah," "uh-huh," "hmm") or to seize the floor (i.e., *interruptions*). Moments of silence can be used to measure the time it takes negotiators to respond to something the counterpart said (i.e., *response time*) and their propensity to use *pauses* within their own turn. Finally, comparing the ratio of speech and silence within a negotiator's speech turn makes it possible to compute *speech rate*.

People do not speak, interrupt, or pause in a vacuum, but rather in response to another person. Communication accommodation theory (Giles et al., 1973, 1991) describes how people regularly adjust their communication styles in reaction to others. Specifically, people may converge or diverge their speech patterns, accents, gestures, and other behaviors to accommodate or resist the communication styles of their interaction partners. Indeed, work by Myers-Scotton and Bolonyai (2001) shows that individuals often make convergent or divergent linguistic choices intentionally as rational tactics to influence others. Outside of the negotiation realm, a large body of work shows that when people use more similar gestures (Nowicki et al., 2013), postures (Chartrand & Bargh, 1999; Hatfield et al., 1992), language (Gonzales et al., 2010), and vocal intensity (Natale, 1975), they tend to report better interactions. Inside the negotiation realm, the balance of rapport building and assertiveness is critical to negotiation success (Hart & Schweitzer, 2022). By converging on core dimensions of conversation dynamics, negotiators may be able to create a sense of similarity and shared understanding, potentially increasing relational outcomes. By diverging on these core dimensions, negotiators may assert more status or dominance, potentially impacting objective outcomes.

Drawing from the communication accommodation theory and related work on rhythmic synchrony (e.g., Bernieri, 1988; Nowicki et al., 2013), behavioral matching (e.g., Abney et al., 2014; Chartrand & Bargh, 1999), and codeswitching (e.g., Scotton & Ury, 1977), we emphasize the importance of quantifying how individual dyad members influence each other along each core dimension of conversation dynamics, in addition to quantifying behavior for each dyad member individually. Combining individual-level measures with dyad-level measures is needed to gain a fuller understanding of how these conversation dynamics impact negotiation outcomes.

Seven Dimensions of Conversation Dynamics and Negotiation Outcomes

People are generally interested in maximizing two types of outcomes when they negotiate: objective outcomes (e.g., more money, faster production, better terms) and relational outcomes (e.g., building trust with the other side, strengthening one's reputation; Carnevale & Pruitt, 1992; Gunia et al., 2011; Pruitt, 1998). Though these two dimensions of success are not orthogonal, they typically imply different negotiation tactics (Hart & Schweitzer, 2022). Maximizing objective outcomes entails balancing value creation (e.g., asking questions to uncover interests, joint creative problem solving) and value-claiming behaviors (e.g., firm offers and counteroffers, strategically using silence). Maximizing relational outcomes largely depends on building trust, establishing rapport, and demonstrating empathy (Magee et al., 2007; Ten Velden et al., 2009). In this section, we review the existing and relevant literature for each core dimension of conversation dynamics and reason through how each dimension may relate to objective and relational negotiation outcomes.

Speaking Time

Some negotiators like to talk a lot by telling stories, sharing information, or simply entertaining their counterparts. Others prefer to talk a little, by opting to be concise and to the point. Greater speaking time (i.e., a person's proportion of voiced utterance relative to the entire conversation) often correlates with dominance (Cheng et al., 2013; Mast, 2002), a trait that predicts better outcomes in negotiation (e.g., Belkin et al., 2013; Curhan & Pentland, 2007; Sinaceur & Tiedens, 2006; Van Kleef et al., 2010). Providing partial evidence for this idea, Curhan and Pentland (2007) found that speaking time during the first 5 min of negotiation positively relates to individual gains in an employment simulation, but only for participants playing the high-status role (i.e., manager vs. employee). Outside of the negotiation domain, higher speaking time relates to greater team member effectiveness ratings (O'Bryan et al., 2022) and favorable hiring decisions (Frauendorfer et al., 2014).

However, speaking too much may hurt a negotiator's ability to create a strong relationship. For example, research on work teams shows that an imbalance of speaking time among members predicts less group satisfaction (Lai & Murray, 2018). Likewise, research on how businesses can recover after failing to meet customers' expectations suggests that speaking less and instead giving people more time to complain (vs. apologizing right away) enhances service satisfaction (Min et al., 2021).

Together, this research suggests that more speaking time may be associated with higher objective outcomes (i.e., how much value negotiators gain) but lower relational outcomes (i.e., how much their counterpart likes them).

Turn Length

Turn length can vary widely between and within speakers (Sacks et al., 1974). Two people with the same overall speaking time can have vastly different turn-taking strategies (e.g., speaking with a few lengthy turns vs. many short ones). Prior work shows that extraverts often speak with longer turns compared to introverts (Batrinca et al., 2011). People also tend to use longer turns when talking with strangers than with friends and family and when discussing topics that are important to them (Yuan et al., 2006).

To our knowledge, no research has directly examined the consequences of turn length on negotiation success. On the one hand, using long turns might help negotiators frame the conversation, more effectively fostering individual gains (Loschelder et al., 2014; Schaerer, Teo, et al., 2020). On the other hand, excessively long speech turns may hinder the smoothness and balance of information exchanges necessary to reach a successful agreement (e.g., Loschelder et al., 2016; Trötschel et al., 2011). The link between turn length and relational success is similarly unclear. Dong et al. (2012) showed that short turns in group conversations are associated with higher cooperation in a social dilemma task. Similarly, analyses of call-center conversations suggest that customers are more satisfied when agents take shorter turns (Chowdhury et al., 2016). However, research on divorcing couples demonstrates that short turns are also typical of conflict escalation (Donohue, 1991). Due to these mixed findings, the existing

literature does not provide clear predictions about the direction of the relationship between turn length and objective and relational negotiation outcomes.

Pauses

Speech turns are not formed by continuous, uninterrupted utterances. People pause within their turn to emphasize a certain point, reflect on how to carry on, or simply take a deep breath. Such pauses are frequent across languages and typically last longer than 180 ms (Heldner & Edlund, 2010). Pauses differ from response times (discussed below) in that pauses occur *within* a speaker's turn, whereas response times are measured *between* turns. During pauses, speakers are often planning what to say next (Kircher et al., 2004). It is an open question of how these pauses are perceived in the context of a negotiation. They may be taken as signs that someone is hesitant and unsure, or could be taken as evidence that someone is thoughtful and reflective.

Research suggests that people who speak with few pauses are often perceived as being more extraverted (Mallory & Miller, 1958), confident (Jiang & Pell, 2017), and competent (Mohammadi & Vinciarelli, 2015) compared to people who pause more often while speaking. Given that extraversion, confidence, and competence are all positively related to negotiators' ability to claim value (e.g., Sharma et al., 2013; Sinaceur et al., 2011; L. Thompson, 1990), it is possible that fewer pauses within turns relate to greater objective gains. Moreover, studies suggest that convergence of pauses within turns is common over the course of a conversation (Edlund et al., 2009) and can signal social connection (Street & Buller, 1988). This research suggests that pause convergence between negotiation partners may be associated with higher relational outcomes.

Speech Rate

Speech rate—how fast people talk—can vary for many reasons. The pronunciation of utterances themselves varies greatly among people (J. L. Miller et al., 1984). For example, older people tend to have a slower speech rate, and men tend to have a slightly faster speech rate than women (Yuan et al., 2006).

Faster speech rates increase perceptions of extraversion (Nass & Lee, 2001), persuasiveness (Smith & Shaffer, 1991), confidence (Guyer et al., 2019; N. Miller et al., 1976), competence (Ray, 1986), enthusiasm, and overall "energy" (MacLachlan, 1982). Many of these perceptions may positively influence negotiation outcomes. For example, research suggests that negotiators who display confidence (Adair & Semnani-Azad, 2011; Guyer et al., 2019) and high energy levels (MacLachlan, 1982) are more likely to achieve their desired outcomes. People also have a tendency to spontaneously converge their speech rates over the course of a conversation (Cohen Priva et al., 2017), and more convergence predicts greater cooperation (Manson et al., 2013). Moreover, a lab study on the effect of speech rate similarity on compliance showed that listeners were more likely to volunteer their time for a research project when the requester's speech rate was similar to theirs (Buller et al., 1992). Therefore, we expect both faster speech rate and speech rate convergence to be associated with higher objective gains. However, it is unclear how speech rate might impact relational outcomes, as faster speech rates are associated with high arousal states for both positive and negative emotions, like happiness and anger (Juslin & Laukka, 2003).

Interruptions

Most dyadic conversations are not perfectly coordinated ballets where speakers patiently wait for the end of their interlocutor's turn to start theirs. Instead, they may be better described as jazz sessions where speech turns frequently overlap (Heldner & Edlund, 2010). Overlapping speech can sometimes be a good sign. It indicates that people are excited to jump into the conversation and are so in sync that they can almost finish each other's sentences (Tannen, 1981). Here, we focus on a specific case of overlapping speech: interruptions. Interruptions occur when someone takes over another person's turn before they have had the opportunity to finish making their point (Hilton, 2018, p. 6). Interruptions can disrupt the flow of the negotiation, making it harder to establish rapport. In regular conversations, interrupters are often perceived as higher in status but less liked (Farley, 2008; Goldberg, 1990). Furthermore, interruptions are associated with dominance (Hall et al., 2005), which in turn predicts better outcomes in negotiation (e.g., Belkin et al., 2013; Curhan & Pentland, 2007). Interruptions are also more likely to occur in distributive versus integrative negotiations (Olekalns et al., 2003). Taken together, this literature suggests that negotiators who interrupt frequently may exhibit higher objective gains but poorer relational outcomes.

Backchannels

People often produce short utterances used as "continuers" (e.g., *mhm*, *yes*, *ok*; ten Bosch et al., 2004) to signal attention while another person is speaking. These are called backchannels. Unlike interruptions, backchannels are short and typically last less than 1 s (Dong et al., 2012). Backchannels are effective ways to demonstrate high-quality listening (Bavelas et al., 2000; Kluger & Itzchakov, 2022), which can increase perceptions of partner responsiveness (Itzchakov et al., 2022). In a meta-analysis, Hall et al. (2005) showed that the frequency of backchannels was unrelated to perceptions of dominance. Thus, existing literature provides no basis to associate a negotiator's propensity to use backchannels with objective outcomes. However, because backchannels may signal involvement with the counterpart's message (Weger et al., 2014), one could expect a positive association with relational outcomes.

Response Time

Response time is the duration between the end of a speaker's turn and the first voiced utterance from their partner's reply. The modal response time in conversation is about 200 ms (Heldner & Edlund, 2010; Stivers et al., 2009). Collaborative discussions are characterized by longer response times, whereas competitive conversations and arguments are characterized by shorter response times (Trimboli & Walker, 1984). Speakers engaged in cognitively complex discussions tend to exhibit longer response time, whereas the opposite happens when people feel anxious (Cappella, 1979). Short response times are related to increased social connection (Templeton et al., 2022) and can facilitate coordination, improving rapport in creative problem-solving discussions (Yokozuka et al., 2021).

Research by Curhan et al. (2022) finds that negotiators with long response times (3–17 s) achieve higher joint gains (i.e., the sum of their individual objective outcomes). These authors suggest that longer response times may facilitate a more deliberative mindset, helping negotiators uncover solutions that make both parties better off. In contrast with this view, research in linguistics shows that in many cultures, longer response times are more likely to be perceived as problematic by listeners (e.g., a sign of disagreement or unwillingness to comply; Roberts et al., 2006, 2011). Moreover, the more confident people are in their answers, the faster they respond (Hall et al., 2005; Kimble & Seidel, 1991), a factor that might help a negotiator claim more value.

Overall, past research does not suggest precise predictions on the relationship between response time and objective negotiation outcomes. Whereas longer response times may facilitate joint problem solving (which helps increase the size of the pie), shorter response times may signal assertiveness (which helps claim a bigger slice of the pie). However, research suggests that negotiators who respond faster may build stronger social connections and enjoy higher relational outcomes.

The Present Research

We set out to explore how the seven core dimensions of conversation dynamics relate to objective and relational outcomes in negotiation. Our work builds upon previous research in five important ways.

First, only four of these dimensions (speaking time, turn length, response time, and backchannels) have been studied in a negotiation context (Curhan & Pentland, 2007; Curhan et al., 2022). As mentioned previously, negotiations differ from other types of conversations, making it difficult to extrapolate findings from one domain to another. Here, we consider all seven conversation dynamics within a negotiation context.

Second, when previous research does examine conversation dynamics in negotiation, they do so in isolation, measuring only a single variable at a time. However, it is reasonable to expect these measures to impact each other. For example, the more people speak, the more opportunities they have to engage in backchanneling or interruptions (see MacLaren et al., 2020). Likewise, speech rate has been found to relate to speech turns' length in a nonlinear way (Yuan et al., 2006). Here, we examine how different dimensions of conversation dynamics relate to *each other* and further investigate which ones *uniquely* predict negotiation outcomes.

Third, most research has focused on central tendency measures of conversation metrics (e.g., average turn length). But crucial communicative information is likely to lie beyond averages. For example, analyses of conversations during emergency response calls find that *variability* in turn-taking relates to a caller's degree of medical risk (Young et al., 2016). As previously discussed, decades of research on communication adaptation theory suggest that a negotiator's *adaptability* to their counterpart may be another important factor in predicting negotiation outcomes (see also Muir et al., 2020). Individuals may also vary in how unpredictable their behaviors are (Ybarra et al., 2010). Thus, the *predictability* of a negotiator's behavior over time may also be related to negotiation outcomes. Here, we characterize each conversation metric in terms of variability, adaptability, and predictability, in addition to their average values across the negotiation.

Fourth, previous studies focus on objective outcomes (e.g., Curhan & Pentland, 2007), measured either in terms of individual or joint gains. However, in negotiation, it is common and advantageous to have a long-standing relationship with a particular counterpart (Schweinsberg et al., 2022). Most negotiators not only aim to leave the negotiation table with their pockets full but also with improved relationships (Tuncel et al., 2016). Here, we consider both objective and relational negotiation outcomes.

Finally, in this project, we analyze negotiations that took place over the video conferencing platform, Zoom. Virtual negotiations have become more common since the COVID-19 pandemic as people increasingly prefer to work from home (Standaert et al., 2022). Recent work by O'Bryan et al. (2022) highlights the relevance of conversation dynamics measures such as speaking time and turn-taking to predict team member effectiveness in virtual project-based teams. Our research capitalizes on this growing trend and sheds light on the nuances of conversation dynamics in the context of virtual negotiations. Virtual conversations differ from face-to-face conversations in several meaningful ways, such as the exclusive reliance on voice and facial expressions, and the potential for increased lags in communication (Boland et al., 2022; Purdy et al., 2000). Given the prevalence of virtual communication in today's world, understanding how conversation dynamics may shape online deals is essential for effective negotiation practice.

In this work, we examined 38,564 speech turns from 239 online negotiations and derived the most comprehensive set of conversation dynamics measures to date (see Table 1) for each negotiator. We first investigated how these measures relate to each other. We then investigated how these measures relate to objective and relational outcomes.

Method

Transparency and Openness

We describe our sampling plan and all measures in the study, and we adhered to the *Journal of Applied Psychology* methodological checklist. All data, analysis code, and research materials are available at https://osf.io/as8nu/?view_only=b6dd2e6b5b514bab9d1ea0db3ad167b1 and in the Supplemental Materials. Data were analyzed using R, Version 4.1.0 (R Core Team, 2021). We obtained institutional review board (IRB) approval from Escuela Superior de Administración y Dirección de Empresas Business School (IRB No. 004/2020) as part of a larger project titled "Emotions & Negotiation." This is the first publication from this data set. This study's design and its analysis were not preregistered.

Participants

We recorded 239 negotiation simulations from 380 Master of Business Administrations (118 women and 262 men) across three European business schools. Students negotiated the Pacific Sentinel (N = 185) and the McConsult (N = 54) cases. About 75% of participants engaged in one negotiation (N = 282), and 25% of participants (N = 98) engaged in two negotiations (see Supplemental Materials, Note 1). Participants never negotiated with the same person more than once. Individual outcomes in these simulations were tied to students' final grades to incentivize performance.

Table 1
Measures of Conversation Dynamics

Category	Definition	Measures	Mathematical description	Mathematical equation
Speaking time	Proportion of a negotiator's speaking time relative to the entire negotiation.	Percentage	Ratio between the total amount of time a speaker produces utterances over the total length of the conversation, multiplied by 100.	$pp_{STi} = \frac{\sum_{t=1}^{T_i} \mathrm{TL}_i}{\mathrm{NL}} \times 100$
Turn length	Duration of a negotiator's speech turns.	Median	Midpoint of the distribution of a negotiator's speech turns' length.	if NT_ieven: $\mathrm{Med}_{\mathrm{TL}i} = \frac{L_{\mathrm{NT}_i/2} + (L_{\mathrm{NT}_i/2} + 1)}{2}$ if NT_iodd: $\mathrm{Med}_{\mathrm{TL}i} = L_{(\mathrm{NT}_i+1)/2}$
		Coefficient of variation	Ratio between the standard deviation of a negotiator's turn length and her average speech turn' length.	$\mathrm{CV}_{\mathrm{TL}i} = \frac{SD_{\mathrm{TL}i}}{M_{\mathrm{TL}i}}$
		Adaptability	Spearman correlation between the vector of values for the negotiator's turn length at time t and the counterpart's turn length at time $t-1$.	$rc_{xy} = \frac{s_{xy}}{s_x s_y}$
		Predictability	Spearman correlation between the negotiator's turn length at time t and her turn length at time $t-1$.	$rc_{xy} = \frac{s_{xy}}{s_x s_y}$
Pauses	Instances of silence within a negotiator's speech turns that last at least 180 ms (Heldner & Edlund, 2010), weighted by total speaking time.	Percentage	Total number of pauses divided by the total amount of time a speaker produces utterances, multiplied by 100.	$pp_{Pi} = \frac{\sum_{t=1}^{T_i} \mathrm{TP}_i}{\sum_{t=1}^{T_i} \mathrm{TL}_i} \times 100$
Speech rate	Speed at which a negotiator talks in words per minute (WPM), excluding within-turn pauses.	Median	Midpoint of the distribution of speech rates across all speech turns of a negotiator.	if NT_ieven: $\mathrm{Med}_{\mathrm{WPM}i} = \frac{\mathrm{WPM}_{T_i/2} + (\mathrm{WPM}_{T_i/2}+1)}{2}$ if NT_iodd: $\mathrm{Med}_{\mathrm{WPM}i} = \mathrm{WPM}_{(T_i+1)/2}$
		Coefficient of variation	Ratio between the standard deviation of a negotiator's speech rate and the average speech rate across her speech turns.	$\mathrm{CV}_{\mathrm{WPM}i} = \frac{SD_{\mathrm{WPM}i}}{M_{\mathrm{WPM}i}}$
		Adaptability	Spearman correlation between the negotiator's speech rate at time t and counterpart's speech rate at time $t-1$.	$rc_{xy} = \frac{s_{xy}}{s_x s_y}$
		Predictability	Spearman correlation between the negotiator's speech rate at time t and speech rate at time $t-1$.	$rc_{xy} = \frac{s_{xy}}{s_x s_y}$
Interruptions	Instances when a negotiator disrupts the counterpart's turn and takes over the speech turn.	Percentage	Percentage of the counterpart's turn that a negotiator interrupts.	$pp_{Ii} = \frac{\sum_{t=1}^{T_i} I_i}{T_i} \times 100$
Backchannels	Instances of sub-1-s utterances during the counterpart's turn.	Percentage	Percentage of the counterpart's turn that negotiator backchannel (utterances < 1 s).	$pp_{Bi} = \frac{\sum_{t=1}^{T_i} n_{(\mathrm{TL}\leq 1)ti}}{T_i} \times 100$
Response time	Duration of silence between the end of the counterpart's turn and the first voiced utterance from the negotiator.	Median	Midpoint of the distribution of response time of a negotiator.	if $T_i$even: $\mathrm{Med}_{RTi} = \frac{\mathrm{RT}_{T_i/2} + (\mathrm{RT}_{T_i/2}+1)}{2}$ if $T_i$odd: $\mathrm{Med}_{RTi} = \mathrm{RT}_{(T_i+1)/2}$
		Coefficient of variation	Ratio between the standard deviation of a negotiator's response time and her average response time.	$\mathrm{CV}_{\mathrm{RT}i} = \frac{SD_{\mathrm{RT}i}}{M_{\mathrm{RT}i}}$
		Adaptability	Spearman correlation between the negotiator's response time at time t and the counterpart's response time at time $t-1$.	$rc_{xy} = \frac{s_{xy}}{s_x s_y}$
		Predictability	Spearman correlation between the negotiator's response time at time t and the counterpart's response time at time $t-1$.	$rc_{xy} = \frac{s_{xy}}{s_x s_y}$

Note. T = turn; TL = turn length; NL = total negotiation length; NT = total number of turns; CV = coefficient of variation; TP = number of pauses in a turn; I = an interruption; RT = response time.

Overview of the Procedure

Participants were instructed to negotiate using the video conferencing system "Zoom" set on gallery view (i.e., with both negotiators always visible on screen). The negotiation simulations had no time limit ($M = 32$ min; $SD = 17$ min; range = 7–87 min). Participants were asked to stop the recording immediately after the negotiation to prevent non-negotiation-related conversations from being included in the analyses (e.g., postdeal debriefing, practical discussion about uploading the recording). Next, participants jointly completed an online "contract," where they entered the specific terms of their deal. We used this information to compute the *objective outcome* for each negotiator. Finally, participants privately reported their feelings about the negotiation process and their counterparts. We used this information to compute the *relational outcome* for each negotiator.

Data Preprocessing

Data were collected using two audio processing methods. The first audio processing method recorded a *single audio file* per negotiation. A total of 121 negotiations from 242 Master of Business Administration students collected in 2020–2021 were recorded using this method. For these recordings, we first performed automated voice activity detection from the Trint transcription platform (https://trint.com), which uses a mix of automated speech recognition and natural language processing algorithms to match human utterances to written words that are hyperlinked, time-stamped at the centisecond level, and displayed in an online text editor. Trained research assistants then manually reviewed each recording to check and correct the transcripts, time stamps, and speaker identifiers. They also annotated moments of interruption (see Supplemental Materials, Notes 1 and 2).

The second audio processing method recorded *separate audio files* for each speaker. A total of 118 negotiations from 138 Master of Business Administration students collected in 2021 were recorded using this method. For these recordings, automated voice activity detection was performed separately for each file using Trint. Following Heldner and Edlund's (2010) guidelines, we then reconstructed the turn-by-turn structure of dyadic conversations by juxtaposing the communicative states' time series (i.e., a binary variable indicating whether a person is speaking (=1) or not speaking (=0) every 10 ms). This processing method allowed us to build conversation records in a fully automated way with the same level of precision as the manually edited transcripts (e.g., no speaker identification error, no missing overlapping speech segment). In fact, except for estimating the number of interruption events, the two methods yielded remarkably similar conversation dynamics measures (median r across metrics >.91; see Supplemental Materials, Note 3).

Measures of Conversation Dynamics

The formal definition of the seven dimensions of conversation dynamics and their associated measures (median, variability, autocorrelation, and cross-speaker correlation) are presented in Table 1. We drew these operationalizations from previous research on conversation dynamics, phonetics, and linguistics (e.g., Curhan et al., 2022; Dong et al., 2012; Heldner & Edlund, 2010; Reece et al., 2023; Stivers et al., 2009; Yngve, 1970).

Speaking time is the sum of the turn length for each speaker divided by the sum of the turn length for both speakers. It represents the proportion of time that each speaker spoke relative to the total amount of speaking time. Because speaking time does not include moments of silence between speakers' turns and/or turn overlaps, these proportions do not always sum to 1 (Curhan & Pentland, 2007).

Turn length is the duration of a speaker's uninterrupted speech during a conversation. It refers to the time a speaker holds the conversational floor before yielding it to their counterpart, and it is typically measured in seconds. In line with previous work, turn length measures excluded backchannel turns (see Dong et al., 2012).

Pauses are periods of silence within a negotiator's speech turn that last at least 180 ms (Heldner & Edlund, 2010). This threshold helps to differentiate pauses from stop closures, which are brief airflow blockages essential for producing specific consonant sounds. Heldner and Megyesi (2003) discovered that 99.2% of stop closures lasted less than 180 ms.

Speech rate is the number of words per minute (wpm). Although alternative methods for measuring speech rate exist, such as syllables or phones per second (see Tilsen & Tiede, 2023, for review), we selected the wpm metric for its simplicity and practicality. The widespread use of wpm in psychological research promotes consistency and comparability across studies (e.g., Guyer et al., 2019).

Interruptions are defined as instances in a conversation where the right to make a point within a speech turn is not satisfied (Goldberg, 1990; Murray, 1985). Identifying interruptions can be challenging, as overlapping speech may also represent cooperative engagement (Dong et al., 2012; Hilton, 2018; Lai & Murray, 2018) or coordination problems, such as simultaneous turn startups (Clark, 1994; Gervits & Scheutz, 2018), rather than an attempt to take control of the conversation. To address this complexity, we manually coded 120 negotiations (11,599 turns) and employed a random forest machine learning approach to predict interruptions (Mayer, 2019). This method allowed us to use all our other turn level measures as predictors (i.e., turn length, turn speech rate, response time, and backchannels) to differentiate interruptions from other types of overlapping speech. We chose this approach over a more traditional cutoff method based solely on the duration of overlapping speech (see, e.g., Okamoto et al., 2002; Seré, 2023; Zimmerman & West, 1975) because it can detect interruptions that do not meet predefined thresholds that are subject to "researchers' degrees of freedom." Analyses using different rule-based approaches as well as only the subset of manually coded interruptions yield similar results (see Supplemental Materials, Note 5), suggesting that our results are robust to this choice.

Backchannels are operationalized as instances of overlapping speech where a speaker produces an utterance lasting less than 1 s (Dong et al., 2012). We manually coded a subset of negotiations for backchannels to validate this threshold for our particular data set. Providing support for the 1-s cutoff used in previous research, we found that over 95% of our human-coded backchannels involved overlapping speech lasting less than 1 s (see Supplemental Materials, Note 6).

Response time is defined as the amount of time it takes for one speaker to respond after the other has finished speaking. In line with Curhan et al. (2022), when computing response time measurements, we set negative response times (which occur when speakers overlap in their speech turns) to a value of 0.

For each core dimension, we elected to focus on the median as a principal measure of central tendency as previous studies demonstrated it is better suited to describe the distribution of speech turn data (e.g., Heldner & Edlund, 2010; Stivers et al., 2009). Results using alternative specifications (e.g., mean) yield similar results (see Supplemental Materials, Note 8). In addition, for conversation measures bounded by zero (e.g., turn length, speech rate, and response time) standard variability measures (e.g., variance or standard deviation) are confounded with the mean (Mestdagh et al., 2018). For this reason, we used the coefficient of variation as a measure of variability.

Negotiation Tasks

We used two different scorable multi-issue negotiation simulations with integrative potential (i.e., opportunities to realize mutual gains through trades across multiple issues). Because these simulations use different success metrics (e.g., money vs. points), we standardized negotiators' objective outcomes across roles and simulations ($M = 0$, $SD = 1$) to make them comparable to each other.

The Pacific Sentinel Negotiation

This two-party simulation features a negotiation between the executive editor and the advertising manager of a mid-sized newspaper (Valley & Witter, 2004). The two managers need to determine how to spend a 1 million dollar investment. The executive editor is primarily concerned with improving the article's quality, whereas the advertising manager wants to increase advertising revenue. The managers must agree on five issues: two distributive issues (which involve haggling over a fixed amount of value), two integrative issues (which involve making mutually beneficial trade-offs to create value), and one compatible issue (for which both parties have the same preferences). The executive editor's potential outcomes range from 90 to 160 quality points. The advertising manager's outcomes range from $800,000 to $1,500,000 in revenue. The basic structure of this negotiation simulates typical budgeting negotiations.

The McConsult Negotiation

This two-party simulation was designed for this project and features a negotiation between the recruiter of a top consulting firm and a job candidate who was recently given an offer to join the firm (see Supplemental Materials, Note 4). The recruiter and the candidate must agree on five issues (one distributive and four integrative). The recruiter's potential outcomes range from 0 to 240 points. The candidate's outcomes range from 0 to 260 points. The basic structure of the negotiation simulates typical employment contract negotiations.

Relational Outcomes

Although objective value is indisputably a more concrete indicator of performance in negotiation, subjective value—how people feel about their counterpart—has been shown to matter more than objective value in predicting the desire for future relationships (Schweinsberg et al., 2022). Therefore, we measured relational outcomes in the two negotiation simulations by examining how a negotiator's counterpart felt using four items of the Subjective Value Inventory (Curhan et al., 2006): (a) What kind of "overall" impression did your counterpart make on you? (from 1 = *extremely bad* to 5 = *extremely good*). (b) Did the negotiation make you trust your counterpart? (from 1 = *definitely not* to 5 = *definitely yes*). (c) Did your counterpart consider your wishes, opinions, or needs? (from 1 = *definitely not* to 5 = *definitely yes*). (d) Do you feel your counterpart listened to your concerns? (from 1 = *definitely not* to 5 = *definitely yes*). Our relational outcome score was computed by averaging responses across these four items. The composite average score showed excellent reliability ($\alpha = 0.91$).

Analytical Strategy

Examining the Interrelationships Between Measures of Conversation Dynamics

We first explored how different conversation measures related to one another using a partial correlation network. This network depicts how our set of conversation measures (the "nodes") are connected (through "links"). Following standard practice, we estimated our network using the LASSO (Least Absolute Shrinkage and Selection Operator) regularization technique to maximize the chances of retrieving an accurate structure (Epskamp & Fried, 2018; Foygel & Drton, 2010; Friedman et al., 2008; Meinshausen & Bühlmann, 2006). Relationships that are likely to be spurious are removed from the model, resulting in networks that are simpler to interpret. We chose this approach over factor analysis because the different dimensions of conversation dynamics are likely to influence one another causally (e.g., increasing the length of a person's speech turns should affect their overall speaking time and vice versa) rather than being caused by an unobserved latent entity (see Epskamp & Fried, 2018).

Predicting Negotiation Outcomes From Conversation Dynamics

We next investigated which conversation measures uniquely predicted objective and relational negotiation outcomes using multilevel linear models (R package: *lme4* v.1.1.27.1). Because some participants engaged in two negotiations, it is crucial to account for the nested structure of the data to avoid violating the independence assumption and to ensure accurate parameter estimates and standard errors. Multilevel modeling addresses these concerns by estimating both within-group and between-group effects while accounting for dependencies in the data. Our analysis included random intercepts for negotiators, case, role, and dyad. To account for the fact that negotiators may adapt to each other's styles, we also analyzed the data controlling for counterparts' conversation measures. Results from these analyses, as well as models that controlled for gender and negotiation length, yielded virtually identical results to the simpler models (see Supplemental Materials, Note 8). For simplicity, we report results from the models without these covariates in the main text.

Our large number of predictors and the high level of interdependence among them can create a risk of collinearity and overfitting (Lai & Murray, 2018). Therefore, we complemented our multilevel linear analyses with a separate set of models based on the LASSO regularization technique to determine the optimal combination of conversation measures in predicting negotiation

outcomes. Specifically, we first applied LASSO to perform variable selection by imposing a penalty on regressors, which forces some coefficients to equal 0 (Helwig, 2017; Jacobucci et al., 2019; Tibshirani, 1996). This was done through a λ-parameter that weighted the importance of the least-squares fit versus the importance of the LASSO penalty. Here, we selected λ by performing a *k*-fold cross-validation to find the value that minimizes average error. Given that LASSO models' estimates tend to be biased toward 0 (Jacobucci et al., 2019) and to facilitate the interpretation and stability of the estimators (Helwig, 2017; Tibshirani, 1996), we then regressed the variables retained from the LASSO models in hierarchical regressions (with random intercepts for each negotiator, case, role, and dyad) predicting objective and relational outcomes, respectively.

Results

Examining the Interrelationships Between Measures of Conversation Dynamics

As depicted in Figure 2, the LASSO estimated partial correlation network shows that many conversation measures are related (see Supplemental Materials, Note 7 for the complete correlation matrix). Negotiators who used long speech turns tended to do this consistently (displaying lower turn length variability, $r_{partial} = -.50$, $p < .001$), speaking more overall ($r_{partial} = .37$, $p < .001$), and using fewer backchannels ($r_{partial} = -.19$, $p < .001$)—suggesting a broader individual difference in the propensity to "talk vs. listen." We also observe, somewhat counterintuitively, that fast talkers also tend to have more pauses ($r_{partial} = .22$, $p < .001$).

In many cases, measures of adaptability and predictability are also intertwined. For instance, negotiators who adapt the duration of their turns to those of their counterparts also tend to adapt their speech rate ($r_{partial} = .14$, $p < .01$) and display more predictable turn duration ($r_{partial} = .24$, $p < .001$). And more predictable turn duration relates to predictable speech rate ($r_{partial} = .19$, $p < .001$). This suggests that mimicking the counterpart's speech patterns may affect the rhythm and consistency of conversations across several dimensions.

Finally, response time is relatively isolated in this network, suggesting that propensities to respond quickly may be independent from the tendency to dominate conversations (speaking time) or signal interest by using backchannels.

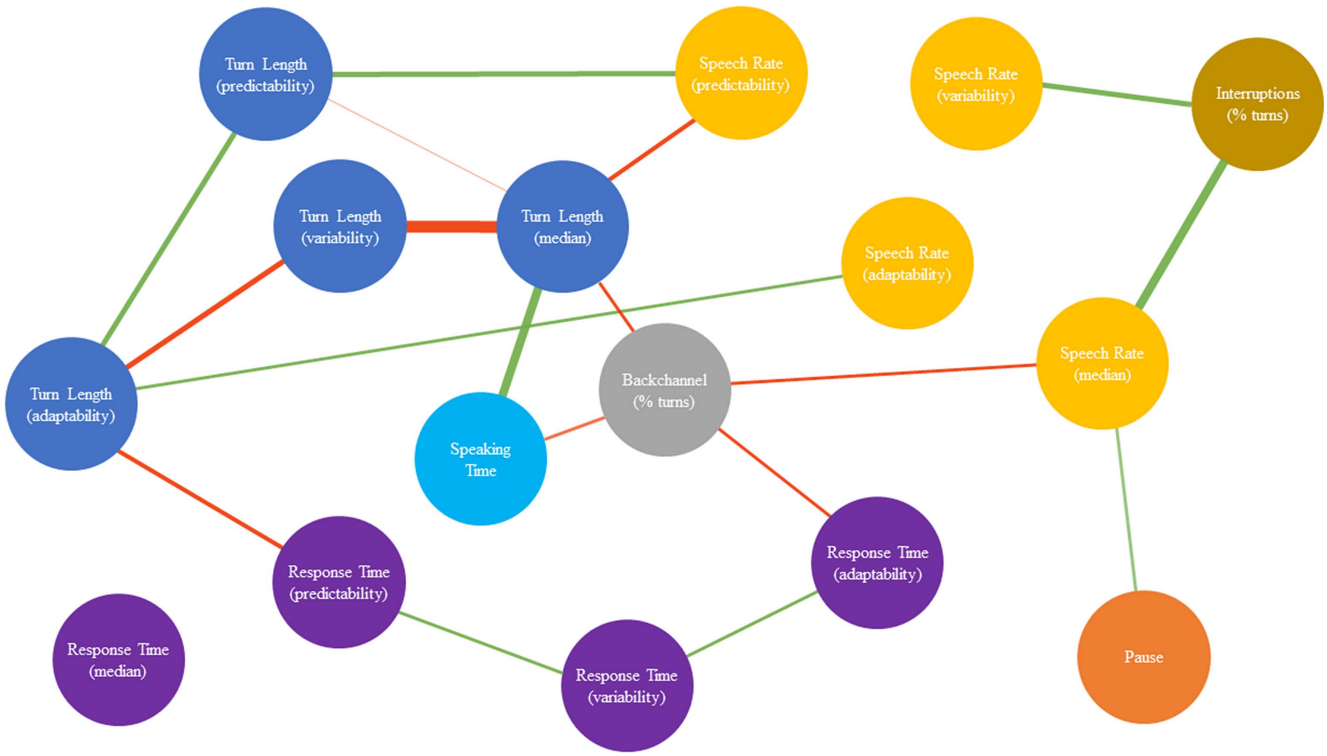
Predicting Negotiation Outcomes From Conversation Dynamics

Main Results

As shown in Table 2, conversation measures explained 9% of the variance in objective negotiation outcomes. Three significant predictors emerged from mixed-effects linear regression analyses. Negotiators with more speaking time ($p = .013$), faster speech rates ($p = .01$), and fewer pauses ($p = .004$) tended to obtain more favorable deals. Results were similar using the LASSO approach.

Figure 2

Evaluating the Relationship Between All Conversation Dynamics Measures



Note. Regularized partial correlations ($N = 478$). All variables are *z*-transformed. Green lines represent positive relations, and red lines indicate negative relations. Edge thickness and transparency correspond with the degree of association. Nodes with the same color pertaining to the same underlying dimension. See the online article for the color version of this figure.

Table 2
Conversation Dynamics Measures and Objective Outcomes

Conversation dynamics measures	Correlation r	Hierarchical regression: β (all variables)	Hierarchical regression: β LASSO selected variables
Speaking time	.16***	.13*	.13**
Turn length (median)	.08+	.09	.07
Turn length (variability)	.00	.04	
Turn length (adaptability)	−.06	−.08+	−.08+
Turn length (predictability)	.05	.07	.07
Pauses	−.12*	−.14**	−.13**
Speech rate (median)	.09*	.13**	.11*
Speech rate (variability)	−.02	−.02	
Speech rate (adaptability)	.02	.04	
Speech rate (predictability)	.10*	.09+	.09+
Interruptions (% turns)	.06	−.02	
Backchannel (% turns)	−.10*	−.02	−.01
Response time (median)	.02	.04	
Response time (variability)	−.04	.04	
Response time (adaptability)	−.02	−.04	
Response time (predictability)	.09+	.04	.04
Observations (N)	478	478	478
Marginal R^2		.09	.08

Note. LASSO = Least Absolute Shrinkage and Selection Operator.
* .05. ** .01. *** .001. + .1.

The optimal solution was observed with a λ value of 0.04. This penalty regularized the paths of seven of the 16 variables to zero, yielding the most parsimonious model representation. Of the remaining nine variables, only speaking time, pauses, and median speech rate significantly predicted objective outcomes.

As shown in Table 3, conversation measures explained 8% of the variance in relational negotiation outcomes. Mixed-effect linear regressions revealed that the predictability of negotiators' turn length ($p = .03$) and the propensity to interrupt the counterpart ($p = .009$) were negatively related to relational outcomes. The LASSO approach corroborated these results. The optimal solution was observed with $\lambda = 0.02$, a penalty that regularized the paths of seven of the 16 variables to zero. Of the remaining nine variables, only the predictability of turn length and the frequency of interruptions emerged as significant predictors of relational outcomes.

Robustness Checks

Results from the models above were robust to the inclusion of negotiation length, participant gender, and the role they played in the negotiations (e.g., candidate vs. recruiter) as control variables. Results were also virtually identical when controlling for the counterpart's conversation dynamics metrics and when Winsorizing outliers. In total, we performed 11 models, including the two described in the present article and nine additional models reported in the Supplemental Materials, Note 8. The results from these models are virtually identical to the ones we report here.

Next, we performed additional analyses to ensure that our results could not be explained by some participants participating in two different negotiations. Following a standard approach in economics (Wooldridge, 2010), we regressed the metrics with clustered standard errors at the individual level. We also ran versions of the models where we only kept the first negotiation participants' engaged (removing the nested data structure altogether). These additional models are described in more detail in Supplemental Tables S10 and S11 and show virtually identical results to the multilevel models we report in the main article.

We also tested whether our results significantly differed between (a) negotiation tasks and (b) audio processing methods. To do this, we included these two factors as interaction terms in our regression analyses. Results from these analyses are presented in Supplemental Tables S12a/S12b. The main results remain robust when accounting for these differences. None of the significant conversation dynamics predictors of negotiation outcomes reported above significantly differ between audio processing methods (all ps > .12). With the exception of speaking time, which is more strongly related to objective outcomes in the Pacific Sentinel case than in the McConsult case (interaction term: $b = .23$, $p = .02$), none of the predictors differed by negotiation case (all other ps > .37).

Finally, in an effort to hold the context as constant as possible, we present results focusing only on our largest subsample (the Pacific Sentinel negotiation with single audio processing; $N = 121$) in the Supplemental Materials (Note 10). Except for speech rate (median), these analyses show that the effect sizes align closely with our main analyses for both objective and subjective outcomes.

Discussion

In any given week, most of us are involved in conversations that require negotiation—and yet our scientific understanding of how people can navigate these conversations more effectively is still in its infancy. Building on pioneer work by Curhan and colleagues (Curhan & Pentland, 2007; Curhan et al., 2022), we report the most comprehensive investigation of conversation dynamics and turn-taking behaviors in negotiation to date. We recorded a corpus of

Table 3
Conversation Dynamics Measures and Relational Outcomes

Conversation dynamics measures	Correlation r	Hierarchical regression: β (all variables)	Hierarchical regression: β LASSO selected variables
Speaking time	.00	.01	
Turn length (median)	.00	−.02	
Turn length (variability)	−.06	−.04	−.04
Turn length (adaptability)	.02	.03	
Turn length (predictability)	−.12*	−.09*	−.08*
Pauses	.03	−.01	
Speech rate (median)	−.03	.02	
Speech rate (variability)	.01	.03	
Speech rate (adaptability)	−.02	−.01	
Speech rate (predictability)	−.08	−.03	−.03
Interruptions (% turns)	−.14**	−.11**	−.10*
Backchannel (% turns)	.09+	.07+	.07+
Response time (median)	−.05	−.02	−.02
Response time (variability)	.05	.05	.05
Response time (adaptability)	−.07	−.00	−.00
Response time (predictability)	−.10*	−.05	−.07+
Observations	424	424	424
Marginal R^2		.09	.08

Note. LASSO = Least Absolute Shrinkage and Selection Operator.
* .05. ** .01. + .1.

over 38,564 conversation turns from 239 online negotiations and derived 16 conversation metrics for each speaker.

By examining the interrelationships between a large set of measures, our work highlights for the first time the high level of dependency between the different conversation measures. Some associations are intuitive. For example, we find a strong relationship between turn length and overall speaking time. Other associations are unexpected and open the door to new research questions. For example, we find a positive relationship between the average number of pauses people make and how fast they talk. Do fast talkers tend to use more "dramatic pauses"? Or might they need to catch their breath more often? More broadly, there is currently an explosion of research on individual dimensions of conversation and turn-taking behaviors (e.g., *response time*: Corps et al., 2022; Templeton et al., 2022; *interruptions*: Lestary et al., 2018; M. G. Miller & Sutherland, 2022; *pauses*: Liu et al., 2022). Our findings stress the importance of examining multiple dimensions of conversation dynamics simultaneously. For instance, in our study, the significant correlation between backchannels and objective outcomes completely disappears once other dimensions of conversation dynamics are included in the model.

Even when considering the interplay of various conversation dynamics, several behaviors uniquely predict objective and relational negotiation outcomes. At the objective level, negotiators who speak more, faster, and with fewer pauses get better deals. At the relational level, negotiators who interrupt less often and exhibit more variable turn lengths get better evaluations from their counterparts.

Our results dovetail with a large body of research showing that effective communication goes beyond verbal cues (see J. Thompson et al., 2017, for review) and suggest that conversation dynamics offer important insight into successful negotiation. In line with recent research on turn-taking behaviors and virtual team effectiveness (O'Bryan et al., 2022), speaking time was the strongest predictor of objective outcome, suggesting that asserting oneself in negotiation might be beneficial. To provide an intuitive figure for the size of this effect, an increase of 1 *SD* in speaking time (e.g., talking 60% vs. 50% of the time in the negotiation) is associated with a .13 *SD* increase in objective personal outcomes. This effect may occur because people who talk more convey dominance (Bottger, 1984; Mast, 2002; Sinaceur & Tiedens, 2006) or because they are in a better position to control the way negotiation issues are framed, linked, and ordered (Druckman & Wagner, 2021). By the same token, two other predictors—faster speech rate and fewer pauses—may signal more confidence (Kimble & Seidel, 1991), which in turn improves one's position in the negotiation. For relational outcomes, the strongest (negative) predictor was negotiators' propensity to interrupt their counterpart. This result is consistent with previous research showing that people who are frequently interrupted by their conversation partners report experiencing a loss of status (Farley, 2008). To provide an intuitive figure for the size of this effect, an increase of 1 *SD* in the number of turns negotiators interrupt (e.g., interrupting the counterpart on 15% vs. 10% of turns) is associated with a .11 *SD* decrease in relational outcomes. People also seem to dislike individuals with recurrent turn length. In smooth conversations, individuals tend to adapt to each other's behavior (Abney et al., 2014; Chartrand & Bargh, 1999; Chartrand & Lakin, 2013; Gonzales et al., 2010; Nowicki et al., 2013). Monotonous conversation patterns may be perceived as a sign of low engagement, hurting the relationship with the counterpart.

In our study, conversation measures explained 9% and 8% of the variance in objective and relational outcomes, respectively. These effect sizes are nontrivial, especially when compared to other negotiation findings. For example, Stuhlmacher and Walters (1999) found that gender explains a bit less than 1% of the variance in objective individual outcomes, which has been argued to be not only statistically significant but also a relevant component of gender wage inequity. Similarly, Sharma et al. (2013) reported that general cognitive ability and emotional intelligence explain 0.5% and 2% of variance, respectively. In terms of negotiation strategies, expressing negative (vs. positive) emotions in negotiations accounts for 2% of variance (Sharma et al., 2020), and having a goal (vs. not) when walking into a negotiation accounts for 8% (Zetik & Stuhlmacher, 2002). The most famous and robust effect, the magnitude of the first offer in distributive negotiation, accounts for 25% (Orr & Guthrie, 2006), though this comparison may be unfair given that our study focuses on more complex integrative tasks. In light of these benchmarks, the magnitude of the relationship between conversation dynamics and negotiation outcomes reported here seems to be both statistically and practically meaningful.

Our results also suggest that objective and relational outcomes are not orthogonal indicators of negotiation success. For example, being more talkative may benefit negotiators' ability to obtain value without compromising the relationship. These results align with recent findings by Hirschi et al. (2022), showing that contrary to people's intuition, speaking more is not detrimental to liking in conversation. Conversely, interrupting one's counterpart seems to hurt the relational outcomes but does not improve negotiators' objective outcomes. These findings suggest that conversational turn-taking strategies that may help negotiators claim more value do not necessarily come at the expense of the quality of the relationship. This contrasts with previous research showing that many verbal strategies like expressing anger (Côté et al., 2013; Van Kleef & Côté, 2007) or using tough language (Jeong et al., 2019; O'Hara, 2015) may have a beneficial effect on objective outcomes but hurt relational outcomes.

Because our data are observational, we cannot rule out that confounding factors (e.g., negotiators who talk more may also be better prepared) and reverse-causal mechanisms (e.g., getting great deal terms may lead negotiators to feel at ease and talk more) may have driven the associations we observed. Future research should manipulate aspects of conversation highlighted in this research to examine which—if any—have a causal impact on negotiation outcomes. Beyond causality, our findings also raise the question of awareness and control. For instance, previous verbal-level research has shown that individuals often employ intentional linguistic choices to influence others (Gumperz, 1982; Myers-Scotton & Bolonyai, 2001; Wei, 2005). The degree to which people strategically align (or misalign) their messages with their counterparts has been found to predict cooperative behavior in social dilemmas (Adams et al., 2022). Given this, it is pertinent to question whether individuals are conscious of the length or speed of their speech. And could they strategically modify these behaviors to enhance their negotiation outcomes? Further research is needed to explore these intriguing possibilities.

The conversation measures detailed in our work likely interact with the content of these conversations, the context in which they

are happening, and the characteristics of the actors involved. To take one example, our findings indicate a negative correlation between interruptions and relational outcomes. The *content* of these interruptions could play a pivotal role in how they are received. Negotiators who tend to make respectful, constructive interruptions, framed as attempts to clarify or enhance the discussion, may not experience the same backlash as those who interrupt in an abrasive or dismissive manner (Li et al., 2004). Likewise, interrupting minor points may not have the same impact as interrupting key arguments. Interruptions are also situated within the context of the negotiation itself. For instance, interruptions in a high-stress interpersonal conflict might amplify tensions, whereas in a collaborative, win–win-oriented conversation, they might be perceived more positively. Evidence from our study underscores this point, as speaking time correlated more strongly with objective outcomes in the Pacific Sentinel case than in the McConsult case, suggesting that context indeed influences conversation dynamics. Finally, *characteristics of the actors* (individuals and dyads) could also play a fundamental role. For example, individuals with high agreeableness might be more open to interruptions than their less agreeable counterparts. Cultural backgrounds, which dictate norms and expectations around conversation etiquette, may also moderate the link between conversation dynamics and outcomes. At the dyadic level, longstanding friends may show more tolerance toward interruption, and other contentious behaviors than those talking for the first time. Given the complexity of conversation dynamics in negotiation underscored by these potential moderating factors, future research should "zoom back in" to examine how these conversation measures relate to the specifics of what people say, when they say it, and with whom they are conversing.

Finally, our results may be specific to the online context. Conversation dynamics in virtual negotiations may be meaningfully different from face-to-face conversations. For instance, research indicates that transmission delays over platforms like Zoom disrupt conversation rhythms, leading to longer response times (Boland et al., 2022). Additionally, people have access to different information channels depending on the mode of communication. While video conferencing typically focuses on voice and facial expressions, face-to-face conversations allow for communication using one's entire body and direct eye contact. These differences have been shown to impact negotiation strategies and even outcomes. For example, people in face-to-face negotiations tend to collaborate more than those using less rich media (Purdy et al., 2000). Face-to-face help requests have also been shown to be more effective than those made over videoconference (Roghanizad & Bohns, 2022). It is possible that some relationships we report here may be magnified in a videoconference context. For example, speech rate may become more crucial in delivering persuasive arguments when counterparts lack access to other communication cues like gestures. Other relationships may be dampened in virtual settings. For example, the weak association between backchannels and relational outcomes that we observed in our data may be due to small lags introduced by video conferencing. These delays may reduce the effectiveness of backchannel responses like "yeah," "ok," "uh-huh," and "mhmm" compared to perfectly timed ones. Future work should investigate how the relationships we observed between these conversation measures as well as their impact on negotiation outcomes compare to face-to-face negotiations.

Video calls have become an essential part of daily life. From an applied perspective, the 16 measures of conversation dynamics we describe here can be derived from the physical property of an audio signal—with almost instantaneous calculations. Our approach could be used to provide people with live conversation analytics and recommendations. This type of feedback may allow negotiators to make adjustments to deliver more productive and satisfying conversations in real time.

Negotiations—like any conversation—involve thousands of repeated decisions about how and when to speak, listen, and produce timely responses. These processes are so finely coordinated in human communication that negotiators rarely stop to think about the impact of conversation dynamics on their prospect of success. In line with recent research showing that communication style is an important element in negotiation (Jeong et al., 2019; Minson et al., 2018), our study suggests that the way negotiators talk, pause, and coordinate their speech turns can make or break a deal.

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