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Suspending and Reinstating Joint Activities With Dialogue

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Interruptions are common in joint activities like conversations. Typically, interrupted participants suspend the activity, address the interruption, and then reinstate the activity. In conversation, people jointly commit to interact and to talk about a topic, establishing these commitments sequentially. When a commitment is suspended, face is threatened and grounding disrupted. This article proposes and tests a model for suspending and reinstating joint activities, using evidence from naturally occurring suspensions in the Switchboard corpus (Study 1) and from a laboratory experiment (Study 2). Results showed that long suspensions led to more politeness and more collaborative effort in reinstatement than short suspensions. Also, listeners were more polite than speakers in suspending joint activities. Overall, suspending and reinstating a joint activity was shown to be a collaborative task that requires coordination of both the topic and the participants' face needs.

Imagine that Bob and Camilla are talking on the phone about their work. Bob is telling Camilla a story when Diane enters Camilla's office to ask her a question. After waiting for an opportune moment, Camilla interrupts Bob to ask him to hold on, then answers Diane's question. She then apologizes to Bob for interrupting him and invites him to continue. In this example, Bob and Camilla have been interrupted in a collaborative task. Such interruptions are commonplace in everyday life. How can they be described, what processes do they involve, what factors influence them, and how do they affect collaboration? In this article, we present and test a model of interruptions of collaborative

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tasks or, more generally, how people coordinate suspending and reinstating joint activities.

Cognitive science researchers have studied parallel activities (Miyata & Norman, 1986) and task interruptions (e.g., McFarlane & Latorella, 2002; Trafton, Altmann, Brock, & Mintz, 2003), but with a focus on individuals being interrupted while performing solitary tasks. Hardly any work has been done on interruptions affecting individuals in collaborative activities (however, see Swets, 2006, who used confederates to study the effects of different kinds of partner interruptions on resumption of speech production). Moreover, collaborative interruptions cannot be explained by current generic models of interruptions (e.g., McFarlane & Latorella, 2002) because these models lack sufficient granularity to capture the specific features of collaborative activities. Prominent theories of discourse structure have been applied to interruptions (e.g., Grosz & Sidner, 1986), but they suffer from similar problems. Collaborative activities are special in that they involve commitments to interact with another person at multiple levels. Suspending activities requires participants to suspend those commitments. Suspensions and reinstatements reveal the nature of collaboration particularly well. Thus, our results have theoretical implications for understanding dialogue coordination, but also practical implications (e.g., design implications for collaborative interruption management in human–computer interaction (HCI; McFarlane & Latorella, 2002).

In what follows, we discuss how collaborative activity is coordinated, focusing on the joint commitments people make during interaction (Clark, 1996, 2006). We then present an account of suspending and reinstating interactions, which we subsequently explore in two empirical studies.

JOINT PROJECTS AND JOINT COMMITMENTS

Dialogue is a species of collaborative activity (Clark, 1996). It is sequentially organized because utterances are contingent on preceding contributions to the dialogue (Sacks, Schegloff, & Jefferson, 1974). It is also hierarchically organized because, like all forms of activity, it is constituted of nested topics and subtopics (Grosz & Sidner, 1986) connected by links of coherence (Reichman, 1978).

People use dialogue to coordinate collaborative activities. They accomplish these activities by dividing them into parts and subparts, or joint projects and subprojects (Bangerter & Clark, 2003; Bangerter, Clark, & Katz, 2004). Imagine that Bob asks Camilla to help her move a heavy bench. This simple joint project can be divided into at least three subprojects: (a) picking up the bench, (b) moving it, and (c) putting it down. If Camilla agrees to help, they first have to coordinate picking it up. This entails deciding who will pick up the left end and who will pick up the right end. It also entails exerting effort to lift it at

exactly the same time. Thus, the subproject of picking up the bench can itself be divided into subprojects. Bob and Camilla coordinate the action of moving the bench through dialogue, and they typically do so piecemeal, by first agreeing to accomplish the joint project, then to enter the first subproject, and so on.

Participants in a joint project cannot automatically know that their partners will do their part. Bob cannot know that Camilla will heft her end of the heavy bench at exactly the same time he does, and the same goes for Camilla. Therefore, they need to agree on the details of their performance of each joint project and subproject. In other words, they need to *jointly commit* to performing a particular project (Clark, 2006). Joint commitments typically specify elements such as the participants' roles in a joint project, the actions they are to perform, when they are to do them, and where.

There are at least three properties of joint commitments that are essential for understanding suspension and reinstatement of joint projects. First, joint commitments *bind resources* of participants. When committing themselves to a joint project, participants agree to use their resources (e.g., time, effort, and money) to further those projects. They agree to temporarily give up part of their freedom and to allow their actions to depend on those of others (Goffman, 1967). In agreeing to help Bob, Camilla agrees to commit her time, but also to expend physical effort in lifting a heavy object. She also agrees to suspend other projects she may have been engaged in. Bob incurs a debt toward her that must be repaid. Lifting a bench is a trivial service that can be repaid symbolically with a modicum of politeness (Brown & Levinson, 1987), but other debts may require more compensation. Second, joint commitments accumulate, or *stack up*, in the course of a joint project (Clark, 2006; Grosz & Sidner, 1986). Once Camilla has agreed to help Bob lift the bench, she may agree to pick up the left end. In doing so, she may notice that her end is cracked and likely to break. In picking it up, she commits herself to apply extra care. Joint commitments at the top of a stack must be discharged to honor commitments lower down. In Figure 1, we can see three stacked joint commitments that Bob and Camilla might make. Third, commitments made at a lower level in a stack (i.e., made earlier) *persist* even if higher-level commitments are renegotiated, suspended, or aborted. Even if Camilla is not ready to pick up the left end of the bench when Bob is, she still remains committed to doing so until further notice. Even if she notices the left end is cracked and declines to pick up that end, she still remains committed to helping Bob move the bench.

These three properties are interdependent, arising from more basic features of interaction, such as face (Goffman, 1955) and turn-taking (Sacks et al., 1974). At the same time, they reflect different perspectives on the suspension process and emerge at different moments during that process. They make joint commitments particularly hard to suspend or abort without costs. These costs can be understood as threats to a partner's face and can thus be explained in terms

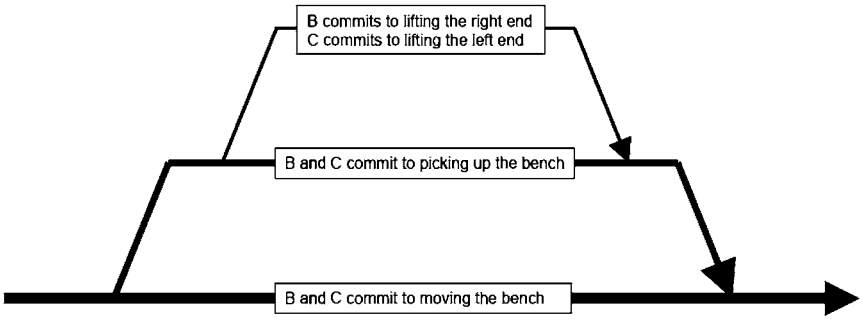

FIGURE 1 Bob and Camilla's stack of joint commitments.

of Brown and Levinson's (1987) theory of politeness. According to politeness theory, people have two kinds of face. *Positive* face designates the public self-worth and respect that people are entitled to. *Negative* face concerns the right that people have to go about their business freely, without undue restrictions on their time being imposed on them by others. Suspending a joint commitment constitutes a threat to the negative face of one's partner. Politeness explains many of the interactional costs associated with suspensions.

A MODEL OF SUSPENDING AND REINSTATING JOINT PROJECTS

Prominent models of interruptions (McFarlane & Latorella, 2002) and discourse structure (Grosz & Sidner, 1986) do not appeal to joint commitments to explain the processes inherent in collaborative suspensions. As a first step in specifying our model, we review phenomena similar to suspensions.

Similar Phenomena

Suspending and reinstating joint projects is similar to the process of suspending and restarting speaking (self-suspension). This process can be decomposed into four steps (Clark & Wasow, 1998): (a) an initial commitment to uttering a constituent, (b) a suspension of speech, (c) a hiatus in speaking (sometimes marked with fillers like *uh* or *um*), and (d) a restart of the constituent. Self-suspensions arise, in part, because speakers make premature commitments to uttering a constituent and then have to stop to plan what they want to say. They make premature commitments because of the temporal imperative in conversa-

tion that requires them to not remain silent for too long while they have the floor (Jefferson, 1989). Suspensions of joint projects should follow a similar sequence as self-suspensions.

Suspending a joint project is also similar to the process of ending a social encounter (Albert & Kessler, 1976). Conversational endings are face-threatening events (Goffman, 1955). Therefore, they must be negotiated between participants (Schegloff & Sacks, 1973). Typical phenomena around endings include justifications, summaries of the encounter, continuity statements, and well-wishing (Albert & Kessler, 1978; Clark & French, 1981). Justifications construct a socially acceptable reason to explain why an encounter must end (usually an external event impinging on the encounter; e.g., "I really must go"). Summaries of an encounter are selective repetitions of aspects of it that serve to better evaluate and remember it. Continuity statements symbolically bridge the upcoming separation by projecting future encounters between the participants (e.g., "I'll see you next week").

More generally, encounters can be divided into three phases: the entry phase, the body, and the exit phase (Clark, 1996). The entry phase arises from the need to negotiate the terms of an encounter, including defining relevant social identities and agreeing to preliminary commitments. The body arises from the participants' discussion of the main business of the interaction. It is what the interaction is "about". The exit phase (or ending) arises from the need to coordinate getting out of the encounter (Schegloff & Sacks, 1973), including when to do so, whether and when there will be a future encounter, and so on. We suggest that suspending a conversation is analogous to exiting it, with the main difference being that one keeps a partner waiting rather than releasing him or her.

Steps in Suspending and Reinstating Joint Projects

In accordance with the aforementioned phenomena and building on previous generic models (McFarlane & Latorella, 2002), our model of suspending and reinstating joint projects posits three steps: (a) suspending the joint project, (b) dealing with the interruption, and (c) reinstating the joint project. All three steps may entail sub-steps that arise from participants' efforts to coordinate constraints related to the stacking, persistence, and resource binding involved with joint commitments. Thus, the model reflects the normative conventions that govern how people discharge joint commitments or, in this case, suspend and reinstate them. To illustrate the process, we present the following excerpt of a naturally occurring suspension of a telephone conversation taken from the Switchboard corpus (Godfrey, Holliman, & McDaniel, 1992), and describe each step as it occurs in the excerpt (for transcription conventions, see Study 1, Method):

Excerpt 1: SW 4660

19_Ann Uh, I do have my radio going most of the day though, so about every hour it breaks in and gives me news too, you know.
20_Ben Okay. #Do you# --
21_Ann #But,#
22_Ben -- get wh-, like one of the talk stations, the news stations?
23_Ann No. Uh-huh. Jus-, I just have a channel that has music except for, like every hour, you know, say eight o'clock, #nine# --
24_Ben #Sure.#
25_Ann -- o'clock, they come on for just a little bit of the news.
26_Ben Right.
27_Ann But as far as the actual news, I get that from [*call waiting signal*] from the, can you hold on just for a second?
28_Ben Sure.
29_Ann Just a minute. [*Pause: 2 min 9 s*] [*to Ben*] Hello sir.
30_Ben Yes.
31_Ann Yes, I'm sorry to keep you waiting #[*laughter*].#
32_Ben #Okay.# [*laughter*]
33_Ann Uh, I was calling from work so and that was a call waiting.
34_Ben Right. So, it sounds like you, uh, like the news a lot more than I do. Me, I figure if it's something really important, somebody will tell me about it. [*continues*]

When disengaging from a joint project, the first step is negotiating the suspension. Since the beginning of the conversation, Ann and Ben have been talking about how they get the news. Between turns 19 and 27, Ann explains how she gets short news every hour on a radio music channel. In Turn 27, she starts to explain where she gets *actual news* when a call waiting[1] signal sounds on her telephone.[2] She interrupts herself to ask Ben to *hold on for just a second.* Ben agrees (Turn 28), and Ann disengages by uttering *just a minute.* The sequence in turns 27 to 29 accomplishes the suspension. This allows Ann to part and deal with the interruption, the second step. During a few minutes, she talks with a third person.

In the third step, reinstating the joint project, availability needs to be checked and face needs addressed before Ann and Ben can continue with topical talk.

[1]Hopper (1992) described how call waiting has created an urgent external summons to the subscriber that overrides rules of conversational interaction.

[2]We refer to the participant who is interrupted (e.g., Ann in this example) as the *target* because this person is intentionally interrupted. We refer to the third person who interrupts the target as the *source*. We refer to people affected by the interruption but not targeted by it as *partners*. Partners are not always included in the emerging secondary interaction; in which case, they become bystanders to that interaction (Clark, 1996).

These two sub-steps are accomplished in sequence. Ann checks Ben's availability by uttering *Hello sir* (Turn 29), and Ben signals his presence (*yes*, Turn 30). Next, she apologizes (*I'm sorry to keep you waiting*, Turn 31), and Ben expresses acceptance (*okay*, Turn 32). Then she provides a justification by uttering *I was calling from work so and that was a call waiting* (Turn 33), which he again accepts (Turn 34). These two sub-steps (turns 29–33) are jointly done by adjacency pairs (Schegloff & Sacks, 1973). They precede the continuation of the joint project, which is initiated by Ben (*So, it sounds like you*, Turn 34).

How the Model Explains the Observed Sequence

What are Ann and Ben accomplishing with these three steps? We propose that their actions result from the three properties of joint commitments discussed earlier: stacking, persistence, and bound resources. As Ann and Ben's conversation proceeded, they stacked up layers of joint commitments. To show how they did so, it is necessary to analyze their conversation from the beginning onward. Figure 2 depicts their commitments from the beginning of the conversation. The levels in the right-hand part are analogous to what Grosz and Sidner (1986) referred to as the intentional structure of the discourse (the relevant contrasts with previous topical focus are indicated in italics in the descriptions of the joint commitments). The first joint commitment they entered into is to participate in the Switchboard study and talk about *the news*—a commitment they had made prior to their interaction and honored by answering the phone. Let us call this a Level 1 joint commitment. In the opening utterance of the conversation, Ann suggests they talk about how *Ben* gets news. This is a Level 2 joint commitment (Level 2 commitments are linked to Level 1 commitments by what Grosz & Sidner (1986) called dominance relations). Ben implicitly accepts her suggestion by initiating an appropriate next contribution (Clark & Schaefer, 1989) by explaining that he gets most of his news with the radio. Later (Turn 10), Ben suggests they talk about how *Ann* gets news, thereby ending their first Level 2 commitment and beginning a new one. Ann replies (Turn 11) *well, I can hardly wait for my morning paper to come.* In doing so, she implicitly accepts and amends his suggestion (using *well* to signal this amendment; Schiffrin, 1987) by proposing they talk about how much she likes news. How much Ann *likes* news is a specification of the current Level 2 commitment (how Ann gets news) and, thus, constitutes a Level 3 joint commitment. In Turn 19, she initiates another topic: how she gets her news *on the radio*. In doing so, she suggests ending their previous Level 3 joint commitment (talking about how much she likes news). Ben goes along with this in Turn 20. In Turn 27, when Ann starts telling Ben about how she gets *actual* news, she is suggesting they end their current Level 3 joint commitment to talk about how she gets news on the radio and begin a new one. However, this suggestion never gets accepted because she interrupts

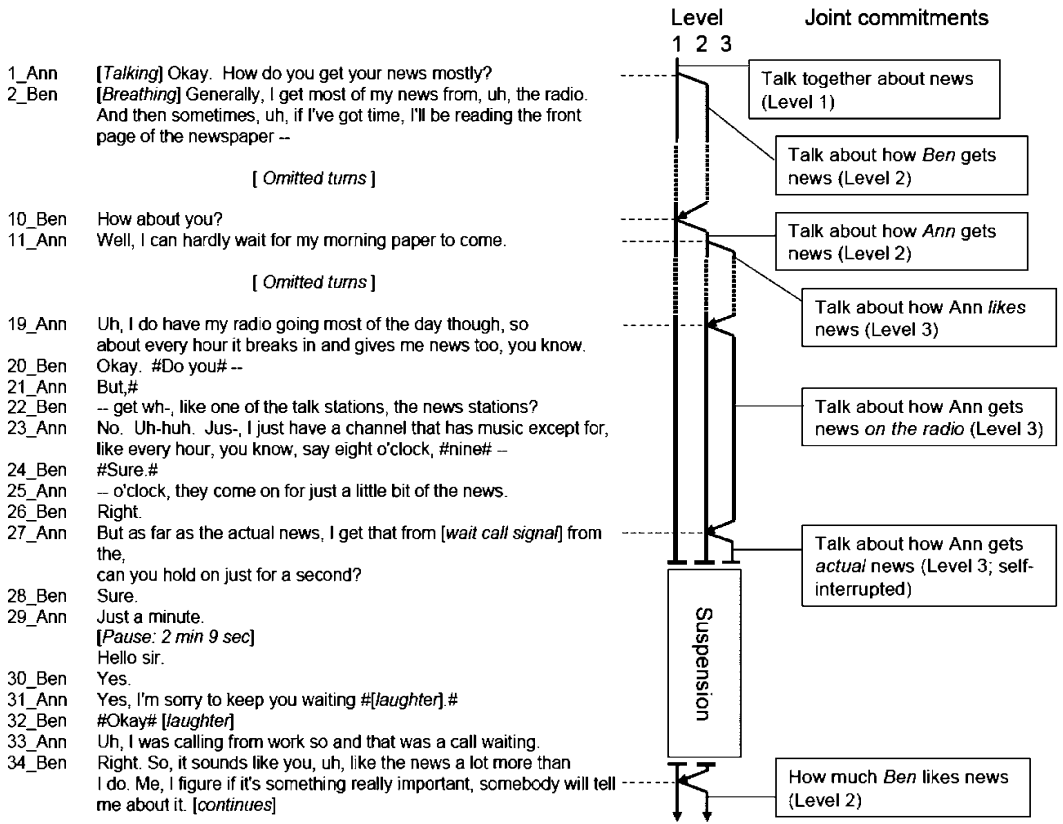

FIGURE 2 Stacks of commitments in Ann and Ben's conversation.

herself to ask Ben if he can hold on. At this point, then, Ann and Ben have two active stacks of joint commitments. At Level 1, they are committed to talking to each other about the news; at Level 2, they are committed to talking about how Ann gets the news; and at Level 3, Ann interrupted her own proposal for a new joint commitment. As we see, the two lower-level stacks *persist*, despite the temporary hiatus in the conversation, whereas the self-interrupted proposal is abandoned.

But, that is not all. In entering into these joint commitments, Ann and Ben have bound their resources (e.g., their time). In putting Ben on hold, Ann makes him wait on her and, thus, incurs a debt toward him. She must signal this appropriately, and we can see this in her initial request to suspend the conversation, *can you hold on just for a second*, which features three forms of negative politeness (Brown & Levinson, 1987): interrogative form, hedging (*just*), and understatement (*for a second*). In seeking to reinstate the conversation after dealing with the interruption, Ann also performs two redressive acts: apologizing for keeping Ben waiting and justifying her suspension. This extensive politeness is warranted by the long duration of the suspension (over 2 minutes). Once these redressive acts have been performed, Ben continues the conversation by reinstating the suspended Level 2 commitment (talking about how Ann gets the news), *so, it sounds like you, uh, like the news a lot more than I do.* (In doing so, he automatically reinstates Level 1 as well). However, in his next utterance, he suggests talking about how much *he* likes the news. In other words, he suggests they embark on a new Level 2 joint commitment.

In suspending and reinstating their conversation, Ann and Ben did not just stop talking to each other, or start talking again. They went through a series of coordinated acts to ensure that the joint commitments they had entered into were adequately discharged. We argue that the properties of joint commitments give rise to Ann and Ben's actions.

Evidence for the Model

As mentioned earlier, the model must account for possible variations in suspension phenomena. Suspensions could happen at any time during the performance of a joint project. They can be triggered by disruptive events that vary in duration, importance, urgency, or in the amount of attention required. These situational factors affect interruptions of individuals (Adamczyk & Bailey, 2004; Trafton et al., 2003). They may also affect the coordination of the joint project and facework. We explore the model with data from two sources. In Study 1, we identified naturally occurring cases of suspensions of telephone conversations by searching the Switchboard corpus (Godfrey et al., 1992). Our goal was to examine variations on the three steps outlined earlier and, thus, to derive testable hypotheses about factors influencing variation. We coded all cases in the corpus

to test the hypotheses. In Study 2, we ran an experiment as an additional test. Our studies, therefore, combine field data with experimental control, which is a desirable approach to the study of language use (Clark & Bangerter, 2004).

STUDY 1: SWITCHBOARD CORPUS

Qualitative Analyses of Suspensions and Reinstatements

We searched the Switchboard corpus (Godfrey et al., 1992) for cases of suspensions (see the following text for details about methods). This corpus contains 2,500 conversations between pairs of Texas Instruments employees discussing a pre-specified topic over the phone. Occasionally, the conversations feature naturally occurring suspensions. We analyzed each case to explore variations in suspension phenomena. Here we present three excerpts, using them to illustrate hypotheses about processes affecting suspensions and reinstatements.

Recall excerpt 1. The speaker, Ann, suspended the conversation for a long time. Reinstatement was effortful, featuring an availability check and elaborate politeness. In contrast to this prototypical long suspension, some cases were very short. Excerpt 2 shows a short suspension by the speaker that takes place entirely within her turn:

Excerpt 2: SW 2640

15_Cal	#Uh-huh.#
16_Diane	#you# know, which they thought first offence, okay, this is, they thought that that was, that was a good thing. And they sentencing him to fifteen years and, um, after it was all over, uh, the jud-, they sit down with the judge and with the other two lawyers, [*to someone in background*] let me come over in just a second, okay, [*to Cal*] and sit down with the judge and with the other two lawyers and they were told that, uh, he would probably serve three,
17_Cal	#Uh-huh.#
18_Diane	#of# the fifteen, [*continues*]

Here, Cal and Diane are discussing sentencing decisions during trials. Diane has the floor and is telling a story about her husband's experience of jury duty. She interrupts herself to speak to someone in her environment (*let me come over in just a second*, *okay*). She resumes talking to Cal with *and* followed by a verbatim repetition of the last phrase before the interruption, followed by *and* before continuing (*they were told that*). She does not warn Cal of the suspension, nor does she perform any facework. In fact, the only indication that *let me come over in just a second*, *okay* is addressed to a third person is through prosodic marking evident in the sound file.

Excerpts 1 and 2 contrast in the duration of the suspension. This contrast coincides with differences in both the suspension and reinstatement processes. In Excerpt 2, contrary to Excerpt 1, Diane does not warn Cal in any way. For a projected short suspension, Diane may believe she can get away with not warning him, especially because she has the floor. Indeed, not explicitly marking a brief suspension may cost less collaborative effort (Clark, 1996). There is elaborate politeness in Excerpt 1, whereas there is none in Excerpt 2. This seems reasonable, given that the duration of the unnecessary imposition on a person's time is directly related to the degree of threat to that person's face (Brown & Levinson, 1987). The contrast between such cases leads us to the first hypothesis:

H1: The duration of the suspension affects politeness in the suspension process. Longer suspensions lead to more politeness.

The duration relevant for testing H1 is the duration of the second step in the model—namely, dealing with the interruption. It corresponds to the amount of time the partner is kept waiting.

Now consider the differences in the reinstatement process. In Excerpt 1, Ben proposes continuing the conversation with a new topic (i.e., a new joint commitment). However, in Excerpt 2, Diane resumes her suspended commitment by simply repeating the last phrase she uttered before the suspension. Note the use of *so* in Excerpt 1 and *and* in Excerpt 2. *So* is used to mark topic shifts, whereas *and* is used to mark continuation within a topic (Schiffrin, 1987). Thus, in Excerpt 1 (a long suspension), Ben uses *so* to shift the topic from how Ann gets news to how he likes news, whereas in Excerpt 2 (a short suspension), Diane uses *and* to continue within a topic. The contrast between these two cases leads us to the second hypothesis:

H2: The duration of the suspension affects topic reinstatement. Longer suspensions lead to more collaborative effort.[3]

The duration relevant for testing H2 is the total duration during which the topic is suspended because, during this time, participants engage in verbal and nonverbal activities that may interfere with their memory for the topic and complicate topic reinstatement. This duration corresponds to the duration of the three steps in the model—namely, suspending, dealing with the interaction, and reinstating the interaction.

[3]We operationalize collaborative effort by several variables, such as the number of words participants use. For a discussion of the complex theoretical implications of the concept, see Schober (1998).

We now contrast excerpt 2 with another short suspension in excerpt 3 (both suspensions have durations identical to within a half-second). The ease with which Diane (the speaker) suspends and reinstates the conversation in Excerpt 2 contrasts with the effort expended in Excerpt 3, where Eva, the person initiating the suspension, does not have the floor:

Excerpt 3: SW 3712

6_Eva	But I like classical, jazz, uh, you know, uh, contemporary. I don't know what you call it. I just like rock, or easy listening or whatever. Uh, what about you?
7_Fiona	Uh, a lot the same. I don't like hard rock at all and I, uh, don't like, uh, rap either. I don't care too much for jazz. Sometimes, I do. A few things I have heard that I like but,
8_Eva	Hang on. Excuse me [*rattling*] [*to dog*] Rocky, no. [*to Fiona*] My dog is getting into trash. [*laughter*] Okay go ahead.
9_Fiona	[*laughter*] and, uh, I like classical, and I like, uh, a lot of different kinds of contemporary, uh, folksy type -- [*continues*]

Eva and Fiona are talking about kinds of music they like. In Turn 6, Eva is telling Fiona what kinds she likes. She hands the floor over to Fiona with, *what about you?* Fiona starts listing different kinds of music (Turn 7). Eva interrupts her (Turn 8, *hang on*) and apologizes (*excuse me*). She then attempts to cover the receiver and addresses her dog loudly. She reinstates the conversation with Fiona by explaining the reason for the suspension, laughs, and invites Fiona to continue. Fiona laughs and complies. In Excerpts 2 and 3, we can see effects of conversational role (speaker vs. listener) on the suspension and reinstatement process. As a listener, Eva must signal the suspension in a more extensive manner than Diane. This is because Diane only interrupts herself, whereas Eva interrupts someone else. Eva asks Fiona to hang on, excuses herself, deals with the suspension, justifies it, and signals to Fiona to continue, all in Turn 8. The contrast between Excerpts 2 and 3 leads us to a third hypothesis:

H3: Conversational role affects politeness. Targets in a listener role display more politeness than targets in a speaker role.

Excerpt 4. Excerpt 4 illustrates how participants sometimes tried to defer entering into parallel interactions. It also illustrates politeness not apparent in previous excerpts:

Excerpt 4: SW3045

90_Jane	Not too much. What kind of, what kind of things do you write?
91_Kate	Well, um, I was a technical writer for many years, um,

92_Jane	Oh.
93.1_Kate	#and my husband and I actually met in a computer company. Um, I was a tech writer and he was --- #
93.2_Jane	#[*A child talks in the background*]#
93.3_Kate	#-- an engineer. And, uh, so I did tech writing -- #
93.4_Jane	#[*The child starts to cry*]#
93.5_Kate	-- # for a number of years#.
94_Jane	[*Talks to the child*] #Go talk to# Daddy about it.
95_Kate	[*Laughter*].
96_Jane	Excuse me.
97_Kate	Oh, #sure#.
98_Jane	[*Talks to the child*] #Go on# and talk to Daddy about it [*The child stops crying*]. Tell Daddy I unplugged it for you. But you don't need to drag it down the hall [*The child cries again*] [*sigh*].
99_Kate	[*Laughter*] Got a problem, huh? [*Laughter*] Um,
100_Jane	[*noise*] Daddy, Daddy came home and found her playing with the telephone that I had unplugged [*Laughter*].
101_Kate	Oh. Trying to figure out what all that was about, huh? [*Laughter*].
102_Jane	Yeah.
103_Kate	But, um, I have, um, that, that was the majority of my writing although, um, I have also done oh, free lance magazine writing and some educational writing. [*continues*]

In Turn 91, Kate has started telling Jane about her activities as a technical writer. Jane's daughter starts soliciting Jane (Turn 93.2) and finally starts to cry (Turn 93.4). Only then does Jane take the floor to interact with her. Kate stops talking and laughs. Jane officially suspends the conversation (*excuse me*) and deals with her daughter.

In this excerpt, the participants do not return to the suspended topic immediately. Rather, they embark on a side topic (turns 99–102) focused on Jane's daughter. This topic is initiated and ended by Kate, who was the speaker at the moment of the suspension. Such side topics occurred occasionally in the database and were often initiated by the person interrupted. They are a way for the interrupted participant to show interest for the situation leading to the interruption, and thus to display concern for the partner's predicament. In other words, they are a way of symbolically excusing or legitimizing the imposition (by acknowledging its importance to the person suspending) and, thus, a particularly elaborate form of politeness. We can see this in the sympathetic language used by Kate in turns 99 and 101. By this process, the interruption itself can become a topic of conversation, thereby deferring and potentially complicating efforts to reinstate the original topic.

Hypotheses

The previous examples suggest that people deal with interruptions according to the model we proposed: They are sensitive to both coordination requirements and interpersonal concerns, such as avoiding face threat to their partner. Therefore, in performing the three steps we describe, they are indeed trying to accommodate the properties of joint commitments (i.e., stacking, persistence, and bound resources). However, it is desirable to obtain quantitative evidence for these observations. Our analyses were guided by the three hypotheses derived from theoretical considerations, the previous excerpts, as well as analyses of similar cases.

First, we propose that duration of the suspension, in terms of waiting time for the partner, is positively related to the amount of politeness displayed (H1). This is expected because longer waiting times directly increase threat to negative face. H1 follows from the fact that joint commitments bind resources of participants. Second, we propose that the duration of the suspension, in terms of the suspension of topical talk, is positively related to collaborative effort in reinstating the topic (H2). Longer suspensions allow both participants to get into potentially complex secondary tasks. Research on cognitive processes involved in interruptions suggests that engaging in such tasks may interfere with memory for goals related to the primary task (Altmann & Trafton, 2002; Hodgetts & Jones, 2006). If participants are unable to reconstruct where they left off exactly, they may abandon the current stack of commitments and revert to a previously grounded stack. We expect that they signal this transition with specific discourse markers. In contrast, with shorter suspensions, memory for goals should be less taxed. Thus, shorter suspensions should exhibit more coherent topic reinstatement, especially characterized by more verbatim repetition (Clark & Wasow, 1998) and more fluent discourse. H2 follows from all three properties of the model. Third, we propose that politeness varies according to conversational role (H3). Speakers have more control over the moment to initiate a suspension than listeners; and speakers who initiate a suspension are interrupting themselves, which is less face threatening than interrupting one's partner. Thus, they do not need to exhibit as much politeness in suspending as listeners.

Method

Identifying suspensions. Suspensions were located by searching for typical keywords and phrases: *hold on* (and variations, e.g., *hold on a sec*), *just a minute* (and variations, e.g., *just a moment*), and apologies (e.g., *excuse me*). We also searched for transcript annotations indicating that a third person is being addressed. To be sure that our search procedure was not biased by the keywords used, we compared it to manual identification of suspensions in a sample of

220 conversations. Twenty-three cases were found by both manual coding and the search procedure; there was disagreement on 1 case. This corresponds to a Cohen's kappa value of .98, indicating excellent agreement (Fleiss, 1981). The search of the whole corpus returned 140 cases. After excluding some cases where it was not clear that the conversation was suspended, we were left with a final sample of 107 cases.[4]

Data preparation. We corrected transcripts using the sound files. This was necessary because the corpus was not originally created to study suspensions, and transcription accuracy around suspensions was often approximate. We retained several transcription conventions from the Switchboard corpus. Speakers are identified by arbitrary first names. Speaker turns correspond to those in the original transcripts. Corrections sometimes required inserting speaker turns. To preserve the original numbering, we indicate these with decimals (e.g., Turn 20.1 is inserted after Turn 20 in the original transcript). Onset and offset of simultaneous speech is indicated by "#". Continuing speech is indicated by "--". Comments are bracketed and italicized.

Coding. Interrater agreement was assessed for variables involving subjective assessments by double-coding 22 cases (21% of the database). For ordinal variables, we computed Cohen's kappa (Fleiss, 1981), assessing whether it was acceptable (>.70) and significantly different from zero. Kappa values are reported later for each variable. For numerical variables, we computed correlation coefficients.

We used Praat 4.3.01 (Boersma & Weenink, 2007) to measure the duration of suspensions with a precision of one tenth of a second. We report two measures of duration: the suspension of the interaction (SI) and the suspension of the topic of conversation (ST). SI represents the duration of the second step in our generic model (i.e., dealing with the interruption). It begins with the offset of the last word when the person suspending stops talking with the partner. It ends with the onset of the first word when the suspender resumes talking with the partner. ST is a measure of how long the topic is suspended. It represents the duration of all three steps in our model. In other words, it begins with the offset of the last word of topical conversation and ends with the onset of the first word of reinstated topical conversation. Typically, ST encompasses SI. In other words, the difference between ST and SI is equal to the duration of negotiation of topic suspension and reinstatement. The relation between ST and

[4] In the sample, the 107 suspensions come from 96 conversations. Thus, although there were 11 conversations that featured two suspensions each, we consider the potential inflation of degrees of freedom to be negligible.

SI is shown in Figure 3, using the example of Excerpt 1. As discussed earlier, we distinguish between these measures because they may be differentially related to our dependent variables. SI, which directly translates into idle waiting time for the partner, is probably directly related to face threat. However, ST, which includes SI plus any interactional work done to get out of and back into the interaction (e.g., facework), may be a better predictor of collaborative effort in reinstating the topic because this additional work may make it more difficult for participants to remember where they were in the conversation.

We coded conversational role, distinguishing between speakers and listeners, depending on who owned the floor at the onset of the suspension. Interrater agreement was perfect ($\kappa = 1.00$, $p < .0001$).

We coded the number of politeness acts in the entire suspension process by both participants before and after the suspension. Politeness acts were defined according to Brown and Levinson (1987). The basic feature of a politeness act is its framing in what appears to be an indirect or less-than-efficient manner in the sense of Grice's (1975) maxims. Of course, these acts may also serve other purposes rather than face management. However, we did not count utterances whose main function is information giving or seeking (e.g., "where were we?") as politeness acts. In this corpus, politeness acts included *hold on*, interrogative form (*can I ask you to ... ?*), *please*, expressions of

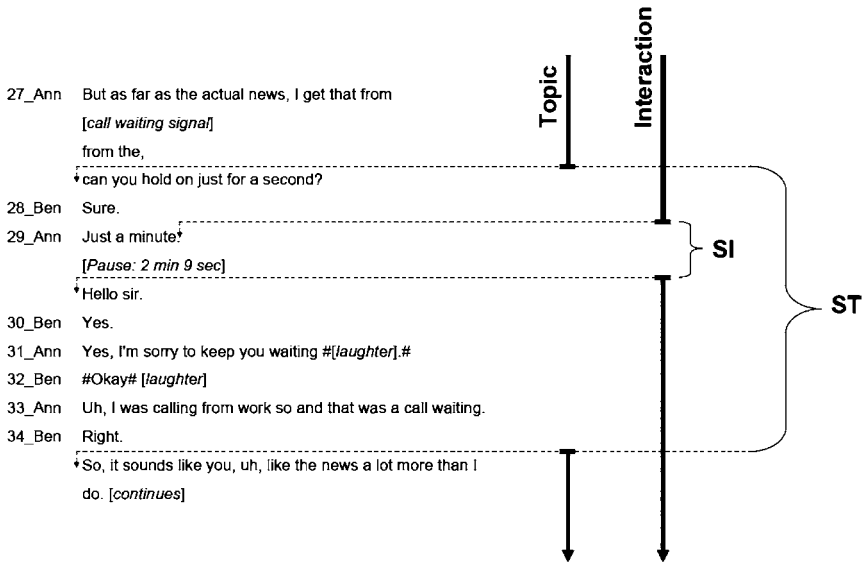

FIGURE 3 Onsets and offsets of suspension of interaction (SI) and suspension of topic (ST).

time (*just a sec* or *just a minute*), justifications, and apologies. For each suspension, we coded whether each act was present (1 or 0) and tallied them, thus creating an interval-scaled measure of the amount of politeness. Interrater agreement was high for coding presence or absence of each act (all κs $>$ .75, all ps $<$ .0001). As another indicator of politeness, we also computed the number of turns involved in politeness acts before and after suspension. Number of turns is a meaningful indicator because it measures the extent of exchanges between participants, and thus corresponds to Goffman's (1955) original perspective on facework (see also turns 31–34 in Excerpt 1). Interrater agreement was high, $r(22) = .87$, $p < .001$. We also counted the number of words used for politeness acts. Interrater agreement was excellent, $r(22) = .98$, $p < .001$.

We assessed reinstatement by analyzing the first topical utterance after the reinstatement of the interaction. We coded three variables. First, we coded each utterance as either *globally* or *locally* coherent (Crow, 1983), with the last topical utterance preceding the suspension. "Local" was coded when the utterance was directly related to the last utterance, and "global" was coded when it was not (i.e., when participants reverted to a lower-stacked commitment; $\kappa = .82$, $p <$ .0001). This variable captures whether a joint commitment is continued (local) or abandoned to revert to a previous one (global). Second, we coded whether utterances were verbatim repetitions of the last topical utterance preceding suspension. Our criterion for verbatim repetition was at least two consecutive identical words in both utterances ($\kappa = .65$, $p < .001$). Third, we coded for the use of horizontal (*yeah* or *and*) and vertical (*okay, well, so, but*, or *anyway*) markers according to Bangerter and Clark's (2003) classification. Horizontal markers are used to signal horizontal transitions (i.e., within a particular joint project). Vertical markers signal vertical transitions (i.e., starting or ending joint projects). Horizontal markers should be used more frequently with short suspensions than long ones because participants will tend to continue where they left off rather than revert to a previous joint commitment. When more than one marker was produced (e.g., *but* and *and*), we coded the last one (all κs between .65 and 1.00, all ps $< .001$).[5]

As an example of how we coded reinstatement variables, consider, in Excerpt 1, the initial topic-reinstating utterance: *So, it sounds like you, uh, like the news a lot more than I do.* It is globally coherent with the last topical utterance before the suspension, does not feature verbatim repetition, and features use of a vertical marker (*so*).

[5]Prior research (Clark & Wasow, 1998) suggests that the cognitive effort of reinstating a topical utterance could be indicated by variations in disfluencies. We analyzed this in both studies, but did not find any significant differences according to the main independent variables.

Results

Descriptive analyses are shown in Table 1. In what follows, we present analyses of the relation among duration, conversational role, and our dependent variables—politeness and collaborative effort to reinstate the topic.

H1, H2, and H3. Because all three hypotheses are directional, we report one-tailed p values in what follows, accompanied by measures of effect size (ϕ coefficients for chi-square tests and Cohen's d for t tests). For H1, the duration of SI correlated with the amount of politeness acts, $r(107) = .47$, $p < .0001$; as well as the number of turns of politeness, $r(107) = .46$, $p < .0001$; and the number of words of politeness, $r(107) = .24$, $p = .007$.

As predicted in H2, the duration of ST affected topic reinstatement. We dichotomized duration of ST into short ($M = 3.5$ s) and long suspensions ($M = 17.2$ s) using a median split (7.1 s). Locally coherent utterances at reinstatement followed short suspensions 59% of the time, but followed long suspensions only 23% of the time, $\chi^2(1, N = 107) = 14.81$, $p < .0001$ ($\phi = .37$). Use of

TABLE 1
Descriptive Data for Main Study Variables

Variable	*%*	*M*	*SD*
Source of interruption (total = 100%)			
Children	43		
Unknown third person	20		
Incoming call	20		
Self-interruption	10		
Other (e.g., technical problem)	7		
Duration (in seconds)			
Suspension of topic		10.3	10.8
Suspension of interaction		6.0	8.1
Conversational role of initiator			
Speaker (listener)	58 (42)		
Politeness[a]			
"Hold on"	39		
Interrogative form	16		
"Please"	2		
"Just a (sec, minute, etc.)"	45		
Justification	49		
Apology	24		
Reinstatement			
Local coherence (global)	41 (59)		
Horizontal marker (vertical)	34 (66)		

Note. $N = 107$.
[a]Values indicate the percentage of cases where the feature was present.

vertical and horizontal markers also varied with duration. Topical reinstatement after short suspensions featured horizontal markers 44% of the time, compared with only 26% of the time after long suspensions. However, this difference was only marginally significant, $\chi^2(1, N = 67) = 2.54$, $p = .092$ ($\phi = .20$). Verbatim repetition followed long suspensions 4% of the time, but followed short suspensions 22% of the time, $\chi^2(1, N = 107) = 8.00$, $p = .004$ ($\phi = .27$).

For H3, we found that suspensions by listeners featured more politeness acts ($M = 2.1$, $SD = 1.6$) than those by speakers ($M = 1.5$, $SD = 1.5$), $t(105) = 1.81$, $p = .037$ ($d = .39$); as well as more turns involving politeness (Ms = 3.8 vs. 2.2 turns, SDs = 3.2 and 2.7, respectively), $t(105) = 2.73$, $p = .004$ ($d = .54$); and more words involving politeness (Ms = 20.7 vs. 11.2 words, SDs = 26.1 and 13.5, respectively), $t(61.1) = 2.20$, $p = .015$ ($d = .46$).

Discussion

We found (H1) that the longer the suspension was, the more elaborate the politeness. This was established by computing SI (i.e., the amount of time the other participant is kept waiting). This supports the proposition in our model that entering into joint commitments binds resources of participants and that suspending them creates an obligation that must be compensated in direct proportion to the degree of face threat. We also found (H2) that the longer the suspension, the more collaborative effort required to reinstate the topic. This was established by computing duration as ST (i.e., the amount of time the other participant is kept waiting plus the amount of time expended in politeness before reinstating the topic). Thus, longer suspensions lead to more politeness, which itself constitutes a supplementary interactional task that may further complicate participants' efforts to reinstate the topic, especially if they discuss the cause of the interruption, as in Excerpt 4. Finally, we found (H3) that the conversational role of the person initiating the suspension affected the process. It was more effortful for listeners to suspend than speakers because they have to deal with the delicate issue of interrupting the speaker, which constitutes a face threat in itself. This was evident in the number of politeness acts, but also in the number of turns. In other words, when listeners suspend, they tend to ask for permission, apologize, and so on. These acts get acknowledged by the other participant and emerge as adjacency pairs, thereby increasing, for example, the number of turns taken to suspend.

Although the evidence for our model is suggestive, in a field study, it is difficult to exclude extraneous variables that may be confounded with the independent variables of interest. For example, it is evident from Table 1 that several different kinds of interruptions occurred. It is desirable to obtain experimental

evidence for our findings. In Study 2, we recreated the Switchboard corpus phenomena in a controlled laboratory setting.

STUDY 2: EXPERIMENTAL MANIPULATION OF DURATION AND CONVERSATIONAL ROLE

In Study 2, we brought our phenomenon into the laboratory. Unacquainted pairs talked about a pre-specified topic over the phone. We interrupted one participant, the target, twice. We manipulated duration (short vs. long; within-subjects) and conversational role (speaker vs. listener; between-subjects) to test effects on politeness and reinstatement processes. We tested H1, H2, and H3 from Study 1.

A problem we had to solve was how to create natural, serendipitous interruptions. In an experiment, targets may not feel responsible for suspending the interaction. Thus, they might perceive less face threat and make less effort to be polite, or even explicitly attribute the responsibility for the interruption to the experimenter. Therefore, we made up a cover story to lead targets to believe they were at fault because they did not adequately complete a task that preceded the conversation. The cover story provided a reason for the experimenter to disturb targets during their conversation and a reason for targets to attribute the cause of disruption to themselves and not to the experimenter. To avoid "cancelling out" the face threat, we interrupted the same person twice. We set up the cover story by asking participants to fill out two ostensibly unrelated questionnaires before the conversation. During the conversation, the experimenter entered the target's room and pretended that it was impossible to code some answers in one of the questionnaires because of omissions or lack of clarity in the target's responses. To answer the experimenter, targets had to suspend their conversation, address the matter, and then reinstate their conversation. This way, we interrupted targets at a specified point (when they were speaking or when they were listening) and for a specific duration (long or short).

Hypotheses

We tested all three hypotheses again: Longer suspensions should lead to more politeness (H1) and more collaborative effort in reinstating the topic (H2). Conversational role should affect politeness (H3): Listeners should be more polite than speakers.

Method

Design. The design was a 2 × 2 mixed factorial plan with duration (short vs. long) as a within-subjects factor and conversational role when interrupted

(speaker vs. listener) as a between-subject factor. Thus, for all pairs, the target was interrupted twice during the conversation: once for a long time and once for a short time (order was counterbalanced). For one half of the pairs, the targets were to be interrupted only while they were speaking; and for the other half, only while they were listening.

We found out after the experiment had been completed that the procedure (see the following text) for interrupting targets in a particular conversational role was not reliable. Between the time when the experimenter had determined the speaker role and the time he entered the room, the floor had often changed. Inspections of videotapes revealed that some targets in a speaker role stopped talking when the experimenter entered the room, but before he interrupted them. This apparently was perceived by their partners as an invitation to take the floor. We take this problem as evidence of the subtlety of conversational interruptions and the difficulty of studying them in a controlled setting. As a result, then, conversational role was excluded from analyses, and we were not able to test H3.

Participants. Forty-eight unacquainted native French speakers participated in pairs in exchange for 10 Swiss Francs. Allocation to condition and to the target role was random.

Procedure and materials. We brought participants to separate rooms upon their arrival. They filled out consent forms and then were informed about the (bogus) questionnaire and the phone conversation task. For the questionnaire task, participants responded to two separate forms. First, they judged a list of 39 adjectives on a three-point scale. Then, they described an ambiguous picture from the Thematic Apperception Test (Murray, 1943) in a one-page story. After these tasks were completed, the experimenter told participants that their answers would be coded during the telephone conversation. As an aside, he said he would inform them in case of a problem. This set the stage for a credible interruption later on.

For the conversation task, participants were asked to talk about avian influenza (a salient media topic at the time) for at least 12 min. The topic was ostensibly drawn from a selection of current news topics. Participants conversed using hand-held USB (Universal Serial Bus) phones and Voice over Internet Protocol software, which automatically recorded the conversation. We also installed a video camera with a wide-angle lens in the target's room. Participants knew they were audio and video recorded but not that they were monitored in real time. After participants had reinstated topical talk after the second interruption, the experimenter stopped the experiment and debriefed the participants. None of the participants suspected that the interruptions had been staged.

We interrupted participants twice, after approximately 4 and 10 min of the conversation. To interrupt a participant in a particular conversational role, the

experimenter monitored the conversations, timing his entry into the targets' room to disrupt them while they were either speaking or listening. We manipulated the duration of the suspension by bringing up a problem related to one of the bogus questionnaires. The short interruption was based on the adjective checklist. The long interruption was based on the picture description. We pretested these interruptions so that they would last approximately 10 and 30 s, respectively. The cover story followed the same script in all conditions. The experimenter opened the door, entered the target's room, and walked up to them saying *I'm sorry, I'm coding your answers and there is a problem with* followed by either *the items* (short condition) or *the description* (long condition). For the short condition, while the participants were conversing, the experimenter copied responses from the target's checklist onto a new list that included an additional item. This led the targets to believe they had inadvertently missed that item while responding. When interrupting, the experimenter followed the aforementioned script and then added *you missed an item, here.* For the long condition, while the participants were conversing, the experimenter searched the targets' stories for an ambiguous statement. When interrupting, he followed the aforementioned script and then added, *there is a sentence I don't understand. Can you explain what you mean by* and repeated the specific phrase. The targets typically complied. The experimenter acknowledged the explanation. Once sufficient time had elapsed, the experimenter said *all right I see* and repeated what he understood. In both cases, once answers had been given, the experimenter said, *okay thank you* and left the room.

Manipulation and data checks. We computed the time of each suspension by indexing the same SI and ST durations as in Study 1. For SI, short suspensions were significantly shorter ($M = 12.1$ s, $SD = 5.7$ s) than long suspensions ($M = 35.7$, $SD = 13.3$), $t(1.20) = 9.00$, $p < .0001$ ($d = 2.31$). The same was found for ST (short: $M = 25.2$, $SD = 6.9$; long: $M = 56.3$, $SD = 23.6$), $t(1.20) = 5.90$, $p < .0001$ ($d = 1.79$).

There were four occurrences where targets did not suspend. Three persons in the short condition managed to handle the interruption without suspending. One person in the long condition included the partner into the discussion of the interruption and never came back to the topic of avian flu (see the similar case in Excerpt 4 where participants digressed at length before reinstating the topic). These behaviors can, in fact, be interpreted as politeness and are be addressed in the discussion. In the end, the sample was composed of 20 interruptions in the short condition and 23 interruptions in the long condition.

Measures. As in Study 1, we coded variables related to politeness and reinstatement. All variables involving subjective assessments were coded by two judges for all cases.

For politeness, we counted the number of acts, turns, and words as in Study 1. Interrater agreement was high (all *r*s between .80 and .98, all *p*s $< .001$).

For topic reinstatement, as in Study 1, we coded the first topical utterance after reinstatement of the conversation. First, we coded whether it featured meta-communication about where participants were in the conversation (e.g., *where was I* and *you were saying*; $\kappa = .94$, $p < .0001$). Meta-communication has a coordination purpose. It reveals uncertainty in recalling a suspended topic, but at the same time it explicitly signals the intent to continue the joint task and solicits help from the partner (Goodwin, 1987).[6] Second, as in Study 1, we coded the coherence (local or global) of the first utterance with the last one uttered before the suspension ($\kappa = .79$, $p < .0001$). Third, to measure verbatim repetition, we coded the proportion of unique words that were repeated in the first topical speaking turn compared to the last topical speaking turn preceding the suspension. This yields a ratio-level measure of verbatim repetition that is more sensitive than the dichotomic measure we used in Study 1. This additional precision is necessary because the sample size in Study 2 is smaller. We did not code discourse markers as in Study 1 because we are not aware of any systematic classification of their vertical or horizontal use for French.

Results

Again, because all three hypotheses are directional, we report one-tailed *p* values in what follows. As predicted in H1, long suspensions featured more turns involving politeness ($M = 7.8$, $SD = 5.9$) than short ones ($M = 4.2$, $SD = 2.0$), $t(19) = 2.80$, $p = .006$ ($d = .82$). Long suspensions also featured more words expended for politeness ($M = 43.6$, $SD = 39.1$) than short ones ($M = 21.4$, $SD = 11.4$), $t(19) = 2.60$, $p = .010$ ($d = .77$). Finally, long suspensions did not feature more polite acts ($M = 2.4$, $SD = 1.0$) than short ones ($M = 2.1$, $SD = 1.4$), $t(19) = 1.13$, $p = .137$ ($d = .25$).

As predicted in H2, longer suspensions led to more collaborative effort in topical reinstatement. Meta-communication occurred more often after long than short suspensions (79% vs. 47%, respectively), McNemar (1, $N = 19$) $= 3.13$, $p = .035$ ($\phi = .41$). Verbatim repetition was more pronounced in shorter suspensions than longer ones: A larger proportion of words from the last topical turn preceding the suspension were repeated in the first topical turn for short suspensions ($M = 36\%$, $SD = 23\%$) than for long ones ($M = 16\%$, $SD = 15\%$), $t(19) = 3.04$, $p = .004$ ($d = 1.03$). Topic-reinstating utterances following short

[6] We had planned to analyze meta-communication for the Switchboard corpus as well, but there were only five cases in the data.

suspensions were locally coherent 47% of the time, compared with 21% for long suspensions, McNemar ($1, N = 19$) $= 1.78$, $p = .09$ ($\phi = .31$).

Discussion

In this study, we tested results from Study 1 in an experimental setting. H1 and H2 were supported: The duration of the suspension influenced both politeness and collaborative effort in reinstatement.

Long suspensions increased verbal effort for politeness in terms of turns and words (H1). However, contrary to Study 1, we did not find a difference in terms of the number of acts. This may be because of the within-subjects design where the same participant was interrupted twice within a few minutes. Some kind of lexical entrainment (Brennan & Clark, 1996) may have occurred, causing targets to reuse similar forms of politeness between the first interruption and the second, therefore counteracting potential effects of duration.

Longer suspensions decreased the proportion of repeated words and increased the frequency of meta-communication when the topic was reinstated (H2). They also led to more globally coherent topic continuations (i.e., reverting to an earlier joint commitment).

We were unable to reliably manipulate conversational role. It was difficult to interrupt speakers because they often relinquished the floor between the moment the experimenter entered the room and the moment they were explicitly solicited. This is an indication of the subtlety of the suspension phenomenon. Thus, we were not able to replicate results relative to H3. The results found in Study 1 are, therefore, provisional.

A handful of targets managed to complete the interrupting tasks without suspending the conversation. This indicates that targets perceived the interruptions as bona fide and, more important, that they took the conversation with their partner seriously enough to refuse to suspend it. In fact, refusing to suspend corresponds to a politeness strategy that is employed when the face threat is considered too high—namely, simply not to execute the act in question (Brown & Levinson, 1987).

GENERAL DISCUSSION

Interruptions of joint activities are commonplace, but their processes and effects are not well-understood. We proposed a model that describes the contingencies involved in the suspension and reinstatement of joint activities. Our model is based on the notion that when people converse, they create joint commitments. Joint commitments have three properties: binding resources, stacking, and persistence (Clark, 2006). These properties explain why joint commitments are hard

to suspend without costly adjustments: Face is threatened and the grounding process is disrupted. These adjustments require polite acts and collaborative efforts to reinstate the joint activity. Our model accounts for these processes at suspension and reinstatement.

In Study 1, we described qualitative variations in the suspension and reinstatement processes, and derived three hypotheses about factors influencing politeness and reinstatement. H1 posited that waiting time of the partner (SI) would predict face threat and, therefore, politeness. H2 posited that the total duration of topic suspension (ST; i.e., the 3 steps in the model) would predict collaborative effort in reinstating the topic (H2). We further explored facework processes by examining effects of the conversational role of the initiator of the suspension. H3 posited that self-interruption would be less face threatening then having to interrupt while the partner has the floor (H3). Results showed that duration of the suspension increased politeness and the effort to reinstate the task. We also found that conversational role affected politeness: It was more difficult for listeners to suspend than speakers. In Study 2, results showed again that longer suspensions led to more politeness and effort at reinstatement. These results support the coordination costs portrayed in our model for suspending joint activities.

A strength of our model is that it is built on studies that combined both natural and experimental data—a desirable combination for discovery and testing of linguistic phenomena (Clark & Bangerter, 2004). On the other hand, a limitation of the experiment is that we failed to systematically interrupt targets in the speaker and listener roles. That parameter was dropped from our analyses; thus, we were not able to replicate H3. Also, we had a small sample in Study 2, and that may have resulted in insufficient power to test some hypotheses. Nevertheless, our overall results supported the model.

Although our model integrates important variables affecting suspensions, there are several other factors that we were not able to take into account. We discuss these in what follows. Future research might explore how they affect joint commitments and variables like politeness and topic reinstatement.

First, it is worth exploring how targets compute face threat to their partners in real time. Given enough time, targets may be able to prevent face threat by *anticipating* the duration of a suspension. By this view, they would roughly estimate the duration of their partners' waiting time and perform appropriate politeness acts in advance. Alternatively, time pressure to switch from the primary activity to the second activity might prevent them from properly anticipating face threat (or they may underestimate waiting time). In such cases, partners may *compensate* for face threat after the suspension. All other things being equal, it seems that people would prefer anticipation to compensation (Clark, 1994).

Second, it is worth exploring how partners on hold may engage in other activities depending on the waiting time of the suspension. The suspensions

we studied were brief, ranging from a few seconds to a few minutes. What would happen with longer suspensions? If the suspension remains brief, partners may simply wait. If so, they may have idle mental capacity and, thus, be able to keep in mind the active stack of the conversation, thereby acting as a kind of placeholder. With longer suspensions, partners may themselves engage in other activities (Miyata & Norman, 1986) and, therefore, be less able to support reinstatement. Also, with longer suspensions, at some point, initiators of the suspension may feel obliged to check back with their partners, and eventually provide them with more redressive acts. Companies are sensitive to this phenomenon; therefore, when callers are waiting to get through help lines, they regularly get automatic messages that feature polite acts, such as apologies, justifications, and information about the approximate remaining waiting time. Finally, with even longer suspensions, initiators may feel obliged to release their partners from the interaction, allowing them to return to their own business.

Third, it is worth exploring the strength of a joint commitment and its effect on reinstatement of the primary task. The strength of a commitment may depend on the amount of time accumulated in the joint activity, which could decrease partners' initial commitment level and hence decrease the need for reinstatement. For example, participants might use the opportunity afforded by an interruption to exit a conversation that has been going on for awhile (Albert & Kessler, 1976). There were cases in the Switchboard corpus where partners did not resume the topic, but ended the conversation after the interruption had been dealt with. The strength of a joint commitment to interact may also be low from the outset. Imagine two strangers chatting with each other while waiting in line at a checkout counter. When it is one participant's turn to be served, it is unlikely that the conversation will resume afterwards (we thank an anonymous reviewer for raising this point). In this case, the commitment level is low because both participants are actually passing time while waiting to commit to a more important purpose.

Fourth, it is worth investigating how varying levels of co-presence between the target, the partner, and the source of the interruption affect the suspension and reinstatement processes. We suggest that co-presence affects the participants' mutual awareness of the primary and secondary interactions. This, in turn, affects how responsibility for attending face needs is distributed among the participants. Our data are derived from phone conversations, where targets and partners lack co-presence and mutual visibility (Clark & Brennan, 1991). In this situation, mutual awareness is limited and prevents partners from knowing about the source of an interruption in the targets' environment. Thus, it is likely that the responsibility for attending to face needs will lie with the targets. However, in situations where the target, the source, and the partner are co-present, mutual awareness is not limited. Therefore, less explicit facework and justifications may be needed. However, in this case, the responsibility for facework may lie with

the source, who is directly accountable to the target, but also to the partner. Other configurations of co-presence (e.g., a co-present target and partner with a remote source or a co-present source and target with a remote partner) may lead to a different distribution of responsibility for managing face needs.

In this article, we have thus presented a model describing how people go about suspending and reinstating joint activities. The sequential steps in our model are normative conventions (i.e., rules; Schegloff, 1992) that participants orient to in discharging joint commitments and arise from the properties of those commitments. Of course, this does not mean that, empirically speaking, participants always deal with interruptions in this way. As with any set of social rules, the procedures we describe are subject to exceptions and mitigating circumstances. However, their normative character leads them to be expected by the participants, and renders deviations from them noteworthy and grounds for inference. In fact, our model of suspending and reinstating joint activities describes the procedures used when deviating from another set of procedures—namely the rules that govern collaborative activity.

Our findings have implications for theory on interruption management. McFarlane and Latorella (2002) developed a detailed and, yet, general model of interruptions in HCI, but it does not deal specifically with human–human interruptions of collaborative tasks. One of our findings is that, for interruptions of joint activities, facework constitutes a supplementary task in addition to the primary and secondary tasks that have been studied in previous work. As an additional interactional sequence that must be managed by participants, it consumes time and cognitive resources and may further complicate the reinstatement of the task. Our results also have implications for research on how people manage multiple collaborations. In everyday work situations, people flexibly interact with multiple partners, both in sequence and in parallel (Fussell, Kiesler, Setlock, Scupelli, & Weisband, 2004; Su & Mark, 2008). This makes interruptions of collaborative tasks—and, thus, suspensions and reinstatements—a commonplace, but still mysterious, phenomenon (Perlow, 1999). As of yet, little is known about how these processes impact collaborative work.

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