Article

Interactive Alignment in L2 Learning: The Link between Social Interaction and Psycholinguistic Phenomena

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Abstract: To engage successfully in conversational activities, participants need to coordinate and synchronise their talk with the talk of their interlocutors. Apart from a set of social strategies and natural routines involved in sequence organisation, a significant contributor to this goal is a psycholinguistic mechanism identified as interactive alignment. The present study set out to examine whether interactive alignment occurs in L2 speech of upper intermediate second language users who have been learning English at school for around 11 years. The participants were a group of twenty Croatian students in their second year of university study, majoring in English. They worked on two collaborative tasks: one carried out in dialogues and the other one in groups of four. Their interactions were analysed both quantitatively and qualitatively, to closely examine how interaction evolves in unscripted task-based L2 production. With a significantly larger number of alignment occurrences recorded in dialogues than in groups of four, both between speaker and within speaker, this study demonstrates that processes in L2 learning and use are interconnected and interdependent at all levels, involving cognitive, psychological, psycholinguistic, and social dimensions.

Keywords: alignment; interaction; priming; turn-taking; dialogue; conversation; unscripted tasks; foreign language; second language

1. Introduction

Levinson [1] contends that all language usage is predominantly interactive, which has important implications for language processing and language acquisition. Interaction in any spoken language is realised through conversation or dialogue as a basic form of interaction involving conversational exchanges between interlocutors. These exchanges constitute a well-established and widely researched system of turn-taking, a fundamental organisation of talk-in-interaction [2,3]. To engage successfully in such conversational activities, participants need to coordinate and synchronise their talk with the talk of their interlocutors, since a natural conversation is guided by the aim of achieving mutual understanding between the interlocutors. By adjusting individual utterances, fine-tuning, anticipating, clarifying and asking for clarification, confirming and repeating others' utterances, speakers make constant attempts to co-construct the meaning in their conversation. In this process towards a shared understanding, the projection or anticipation of what the other will say plays an important role. Achieving the goal of mutual understanding and synchronisation is considered one of the central issues in interaction analysis from social and pragmatic positions [4].

Apart from a set of social strategies and natural routines involved in a conversation sequence organisation [3], a significant contributor to this goal is a psycholinguistic mechanism identified as alignment, which is thought to be driven by an implicit psycholinguistic phenomenon known as structural or syntactic priming. Structural priming is a natural tendency in speakers to use the same syntactic structure repeatedly, either by reproducing one's own or the interlocutor's structures that were recently heard.

The interactive alignment model, according to Pickering and Garrod [5], assumes that in dialogue, production and comprehension cannot be separated: they become intertwined, which leads to the alignment at the level of linguistic representations, but also includes the context in which dialogue takes place. This process of convergence, in which mental representations are shared between the interlocutors, may take place at the level of syntactic structure, lexis, and phonology simultaneously, which makes linguistic processing in dialogue considerably easier by reducing the processing load on interactants.

The following is an example from Dao et al. [6] where two participants describe a picture, and participant B aligns with the relative clause prime heard in the utterance of participant A.

(1)
A: . . .uh the guy who wants to steal the money (prime)
B: ok I think the first one is **the man who. . .wear. . .wear glasses** (target)

The terminological distinction (i.e., "structural priming" and "interactive alignment") reflects the fine line of differentiation in the approach, namely that structural priming refers to the sharing of linguistic representations between the interlocutors, whereas alignment reflects the same, but it is based on an awareness of the social context including space, time, reasons, and intentions of interaction [5].

The field of second language (L2) acquisition (In this paper, the term *second language* (L2) is used in a broad sense, to cover both *foreign language* and *second language* in a narrow sense (where an L2 is the language of the community)) has also recognised interaction as a driving force in language development [7–11]. This line of research has resulted in a wealth of studies within the framework of the interaction hypothesis [12]. So far, research into L2 acquisition has used syntactic priming in collaborative tasks as a method to benefit L2 grammatical learning (e.g., [10,13–18]). Such tasks have usually been highly structured and scripted. Only a few studies to date have utilised unstructured tasks in which spoken interaction took place in a more spontaneous fashion [6,19,20].

The present research is also interested in interactive alignment among L2 learners in more naturalistic conditions and specifically in the manifestation of alignment as it happens, moment by moment. The aim of the present study was to examine whether interactive alignment occurs in L2 speech of upper intermediate L2 learners who have been exposed to communicative language teaching methods during their schooling. The participants were twenty Croatian students majoring in English, who worked on two collaborative tasks. Since spoken interaction can be realised in a pair and in a multi-party group, the study also looked into the possible differences between the interactive behaviour in pairs and in groups of four.

In what follows, I first refer to interactive alignment in L1 and L2 and the mechanisms involved in its realisation. This is followed by a discussion referring to interaction in L2 and interactional competence, which is the ultimate goal of becoming a fully proficient L2 speaker. Since this goal is linked to the pragmatic and socio-cultural aspects of conversation, the paper also considers the conversation analytic tradition. The study employed conversation analysis (CA) as an analytical tool which enables a close examination of spontaneous talk in collaborative tasks. In doing this, the paper makes an attempt at approaching spoken interaction in L2 from psycholinguistic, interactional, and conversation analytic perspectives.

1.1. Interactive Alignment in L1 and L2

As Garrod and Pickering [21] put it, dialogue encompasses production and comprehension happening almost simultaneously, whereby it is sometimes difficult to disentangle the two processes. At the linguistic level, this is manifested as a tendency to repeat the structures of the previously heard utterances produced by interlocutors. Costa et al. [22] contend that interactive alignment involving L2 speakers differs from alignment in L1 speakers in terms of the level of automaticity, i.e., in L2, it is not an automatic process since it involves the activation of explicit memory mechanisms. In addition, Markman

et al. [23] suggested that different mechanisms, even in L1 speakers, may trigger alignment at different linguistic levels. Specifically at the level of discourse, the synchronisation between the information shared by two partners in interaction will be driven in a different manner than the synchronisation at the level of syntax, semantics, or phonology. While for alignment to occur at these levels, neither awareness nor specific knowledge about the interlocutor's competence is needed, for alignment at the discourse level listeners must be aware of the speaker's knowledge and they must project their utterances containing the appropriate knowledge, at the right moment and in an appropriate way. Therefore, as explained, interactive alignment occurring at the level of syntax, semantics, and phonology is an implicit process involving implicit memories, but alignment occurring at the discourse level must be accessible to consciousness and explicit memories.

Explicit memory of the prime sentence, particularly in the presence of lexical repetition (i.e., lexical boost), can explain short-term priming in both L1 and L2 speakers [24]. In terms of the mechanisms involved in priming, short-term or immediate, and long-term or delayed syntactic priming differ. Long-term priming is explained as an implicit process based on error in expectation or the effect of surprise [25,26] where stronger priming is linked to inverse frequency effects. In other words, this means that priming has a larger magnitude where less frequent syntactic options are primed. On the other hand, short-term priming, particularly when it is enhanced by lexical overlap, involves a component of explicit memory [14,27,28]. In L2 learners, the role of explicit memory is also built into the developmental model of shared syntax [27] where explicit memory (of just heard sentence), rather than the activation of abstract syntactic representations, is involved in the repeated use of syntactic structures. However, changes may occur, depending on the level of proficiency [24,27,29]. At advanced levels, which imply longer experience with the target language that enables the formation of some L2 syntactic representations, the abstract combinatorial nodes of syntactic structures may be activated and strengthened due to the residual activation of recently encountered structures. Residual activation of recently heard sentences has been found in numerous priming studies, showing that what was heard does not decay immediately but stays active for several, even up to 20 s after being attended to [7]. This process in long-term (delayed) priming seems to be modulated by the inverse frequency effect on the one hand, and the closeness of L1 and L2 on the other hand.

1.2. Conversation as Social Interaction

The interactive alignment model, as suggested by Pickering and Garrod [5], does not depend only on shared psycholinguistic representations, but it also involves coordinated and aligned situational representations by interlocutors. Explicit recognition of social context is important because it defines interaction as a psychological and a social construct [30]. It is indicative that almost in parallel with the notion of shared mental representations put forward by psycholinguists in their exploration of dialogue, scholars investigating interaction from the social position introduced the notion of socially shared knowledge, or shared understanding, or intersubjectivity [31]. Coordination in conversation is a fundamental question for conversation analysts as much as it is for psycholinguists. In the conversation analysis paradigm, this coordination is supported by the tight organisation consisting of turn adjacency pairs which are complementary to each other [3] and where the production of the first part creates an expectation for the second part to take place.

In the realm of L2 interaction, which is considered to be a necessary component of L2 development from the earliest to the advanced stages [9,12,16,17] the crucial question concerns evidence of interactional competence. For example, interactional competence can be seen even in speakers of low linguistic ability who may use some formulaic features of conversation such as backchannelling [30]. On the other hand, interactionally competent proficient speakers will participate in conversation by providing responses that are contingent with the interlocutor's interactional behaviour, showing an awareness of the social context [32]. Turn-taking management and topic negotiation which includes

topic development and topic shifts, have thus been identified as the conspicuous features of interactional competence at the micro level, with the addition of interactive listening, breakdown repair, and non-verbal behaviour [33]. The role of non-verbal behaviour is one of the areas that still need to be addressed in discussions on interactional competence, as is the role of task design and its relationship with the elicited interactional behaviour [32].

1.3. Interactive Alignment and the Role of Task Design

Following calls for more research in richer, more natural contexts of L2 use [24,34] where alignment could be investigated in speaker and context dependent discourse, taking a task-based approach might offer a possibility to elicit language in a communicative context. However, tightly scripted tasks that have so far dominated investigation of interactional alignment in L2 may be too restrictive in the sense of narrowing the opportunities for co-construction of meaning in interaction. On the other hand, unscripted and less controlled tasks, which give participants more opportunities to co-construct the meaning in their interaction, may be criticised for making the aligned structures "task necessary" or driven by the task rather than alignment. For example, in one of the rare unscripted studies, such as Dao et al. [6], it was found that the types of aligned structures were in fact related to the type of task. It might be the case, indeed, that it is very difficult to completely separate alignment from collaborative interaction in unscripted tasks and to precisely assign the source of evidence to one or the other.

The present study also used unscripted, unstructured tasks with L2 speakers to elicit interactions that might be similar to naturally occurring conversations. Methodologically, this study made an attempt to connect two fields in linguistics that have historically been separated and separately researched, namely, psycholinguistics and CA, to show the nature of interactional alignment and how it occurs in spontaneous L2 production. Calls for closer collaboration of cognitive and sociocultural traditions in applied linguistics have been put forward by researchers on both sides over the years [35–38], to use the best of both approaches for the sake of research thoroughness, truthfulness, and comprehensiveness in applied linguistics. It is believed that linking the two approaches can assist and move forward the field of both L2 acquisition and L2 education as both approaches used simultaneously help us better understand the processes in L2 learning and consequently, build the strategies for L2 teaching.

2. Methods

The present study set out to address the following research questions:

1. Do upper intermediate L2 learners align their interaction in an unscripted task to successfully complete the task as (a) a pair and as (b) a group of four?
2. Are there any differences in participant behaviour while working in pairs and in groups of four?

The aim of the study was to find out whether alignment is present in L2 speakers' task-based interactions that might be similar to spontaneous conversation, and whether the student behaviour demonstrates any differences between interactions in pairs and in groups. The study was designed as an exploratory, descriptive study, bringing in a novel methodological approach, in line with the calls for linking the advantages of qualitatively described processes in L2 interaction and the need to generalise and categorise [36]. Therefore, the present study employed both CA and quantitative analysis to show how interactional features of coordination and synchronisation described in CA translate at the level of language use, as categorised in psycholinguistics.

2.1. Participants and Setting

Participants in the study were 20 Croatian students, age 19–20 (17 females) majoring in English at a university in Croatia. At the time of data collection they were in the second year of their study. They had been learning English for 11 years on average (8–12) as most of them started with English lessons in school at the age of 10, but some started earlier in

private language schools and some later if English was their second foreign language. Most of them were exposed to communicative language teaching methods during their entire education. None of them had spent a period of more than two weeks in an English-speaking country, but they reported regular watching of films, reading, and use of social media in English. Their proficiency at the time when this study was conducted was estimated as B2 in the Common European Framework of Reference for Languages (equivalent to IELTS score of 6.0–6.5 or TOEFL iBT score of 72–94). They had been together as a group for two years, since the beginning of their undergraduate study. Some even went to the same high school or have known each other from primary school. Thus, the level of familiarity among the members in this group was rather high.

2.2. Procedure

The students completed two communicative tasks in which they had to solve problems and make decisions. Prior to taking part in the study, they signed consent forms, including the consent to being audio-recorded. In the first task they worked in pairs, and in the second task, in groups of four. In the first task, they were asked to make a proposal for a renovation project in a community that experienced massive damage to their homes. The students had to take on the roles of councillors, whose task was to discuss new buildings planned for that site. To complete the task, they had to present the main ideas that resulted from their discussion. In the second task they had to discuss and decide which roles to take in a magazine editorial team. The outcome of this task was a presentation of a new magazine, including the description of the four roles in the editorial team. The students were advised to use their own interests when selecting their roles. The purpose of these two tasks was to encourage the use of L2 spontaneous speech as much as possible and to elicit interactions that might be comparable to talk occurring in naturalistic settings. These tasks can be described as holistic tasks in which language is used in the same way as it is used in everyday talk [39]. Holistic tasks involve the learner's knowledge at different levels, from phonology and grammar to discourse, and in that sense they contrast with analytical tasks. Problem solving is considered to be a typical model of a holistic task, and in some educational views [40], it is highly valued for its contribution to the students' ability of meaning-making. These tasks were implemented in the present study exclusively for research purposes, as data collection for this study was not part of the students' curriculum. However, the students had had much experience with working on communicative tasks on different topics. It is important to note, though, that such unstructured tasks are more appropriate for L2 learners who have higher levels of communicative ability, vocabulary, and overall proficiency [40]. Task instructions are available in Supplementary file S1.

Each interaction in pairs lasted between 10 and 15 min (the minimum was 10 min, but students were allowed to use a few more minutes if needed). The interaction in the group of four lasted between 15 and 20 min (the minimum was 15 min). The tasks were carried out in a large lecture room where it was possible to hold four dialogues or two to three conversations in a group of four at a time, so that the voices of other people could not be heard in the other corners of the room. Voice recorders were placed on each desk between the interlocutors and each participant had a lapel microphone tied to their clothes. Only the interaction part of each task was recorded, while the presentations of the outcomes took place later. The performance of the two tasks (ten dialogues and five group conversations) produced recordings in duration of 215 min (3 h 35 min). The recordings were transcribed by two trained students and the transcription was checked by the researcher. Table 1 presents the distribution of words and turns in each task, as well as the time needed to complete these interactions:

Table 1. The number of words and turns generated in two tasks, and the length of tasks.

Interaction Type	Words	Turns	Minutes per Task
Pair interaction	5603 M = 280 SD = 128.55	944 M = 47 SD = 14.04	132 M = 13.2 SD = 1.03
Group Interaction	4541 M = 227 SD = 123.73	758 M = 38 SD = 19.34	83 M = 16.6 SD = 1.14
Total	10,144	1702	215

2.3. Coding

Once transcribed and initially checked for accuracy of transcription, the recordings were listened to again and relistened to multiple times. In the first phase the focus was on instances of all repetition, both syntactic and lexical. Turns were operationalised as stretches of speech from the point when one started to speak to the point when they stopped speaking. Once all the repetitions were identified, they were coded for alignment following the practice suggested in [6,20]. The constructions [41] were coded if in each of at least five conversations they appeared five times or more. The coding of all structures was bottom-up, i.e., from those constructions identified in the recorded talk. The first mention of a structure that was later repeated, either by the same speaker or by the interlocutor, was identified as a prime. Alignment was coded for target if the repetition occurred within ten turns following the prime [20,42,43]. If the same structure occurred in one of the turns following the tenth turn, it was coded as a new prime. If there was no repetition following the prime within the next ten turns, it was coded as a prime with no alignment. Each occurrence of a structure was coded only once, either as a prime or a target. Targets were also coded for source, depending on whether they occurred within the speaker who produced the prime or between the speakers, i.e., when the interlocutor repeated the structure. If two types of structure could be identified in a construction, it was coded only as one structure (for example, the utterance "…(have) another staircase to go to the next floor" was coded as a non-finite relative clause even though it also contained the construction "have + NP"). Such constructions were always coded for the less frequently present structure in the whole interaction. Another researcher coded two dialogues and one group conversation (around 20% of all data), and the agreement was 88%. For interpretation please refer to Plonsky and Derrick [44] (In Plonsky and Derrick's [41] meta-analysis of reliability coefficients in L2 research, the largest number of studies (369) used percentage agreement for interrater reliability, where the median score was 0.93 (the lowest was 0.81 for pronunciation, the highest was 0.96 for grammar)). All discrepancies were resolved in discussion before reaching the final full agreement.

Table 2 presents the identified structures in the two tasks and an example of each.

Once the coding was completed, a conversation analysis was carried out on those parts of the interactions which were deemed interesting for the persistence of interactive alignment. In doing this, Schegloff's [31] advice was followed, suggesting the introduction of analytic resources only by reference to the details of the interaction which require them for analysis. The aim of conducting a conversation analysis was to examine how individuals make progress in aligning with their interlocutors in the attempts to complete the task successfully. In analysing the transcripts, the transcription conventions were used following Markee [38], based on the Jeffersonian transcription tradition (Supplementary file S3).

Table 2. Most frequent constructions identified in the two tasks.

Structure	Example
Have + NP	*We have this building and who do we want to benefit from it?*
Have + VP (infinitive)	*You have to pay more for heating*
Complementiser *that* (omitted)+ nominal clause	*I think* (that) *this is good*
Going to + VP	*There's probably going to be a park, with trees and flowers*
Imperative (*let's* + VP)	*Let's move on from here*
Non-finite relative clause	*A decent place to live in*
Finite relative clause	*This will be for people who are alone*
Stranded preposition	*Who would we give the apartments to?*
Comparative	*That's a more expensive thing*
What kind of + NP	*What kind of community do you mean?*
NP + *like* + NP	*Something like that*

3. Results

3.1. Research Question 1

To answer the first research question, the following interaction demonstrates how the initial sequences of talk between the two L2 speakers are created and how collaboration between them develops gradually. In this analysis the focus is on instances of interactional alignment between participants 1 and 14 (for ease of reading, they are labelled as P1 and P2). Primes are operationalised as the first occurrences of structures that are later repeated either by the same speaker or the interlocutor. Repetitions of primes are identified as instances of alignment or targets. Syntactic repetitions are highlighted in bold:

(2)

001   P1: so::: (.) we need=

002   P2: =yeah

003   P1: um:: (.) we need to think of something (0.2) for **people** um (.) **who will be =** [=living here]

004   P2: [that are er]

005   P1: ↓yeah (.) a decent place to live in ↓=
= maybe (.) **the people who will be living there** (.) are those people ↑that (.) ↓well (0.3) maybe they don't have that **big pay to ↑support** themselves

006   P2: um yeah (.) **a nice place to live in**

007   P1: ↑so:: <u>these</u> flats will be (.) kind of local council estate um or:: **something like that =**
= so, ↑**let's start** with the building

008   P2: ↓okay. (.) if we are aiming at people in need (0.3) um maybe um we should divide the building (.) like (0.3) into ↓flats (.) **for people who will be living there alone**

009   P1: yeah (1.0) um and those with their families

010   P2: yeah! **Let's see** (.) so, those who are alone (.) could be **smaller ones**

011   P1: yeah! and (.) for **smaller families**

012   P2: so, (.) we will provide **more apartments** for ↑**smaller families**

013   P1: yes, I believe there are **more families** in need (.) than (.) **people who will be =**
= living alone

014   P2: um yeah (0.3) if um they have ↑kids =

015   P1: =they usually have ↓kids↓

016   P2: okay

017   P1: ↑ so:::

018   P2: so, those are **going to be** small apartments but (.) functional (.) like small kitchen

019   P1: yeah (.) small

In the above excerpt, the two participants start their interaction with an agreement on what they have to do: P1 (F) seems to be more proactive and initiates the conversation in the pre-expansion, while P2 (M) is slowly catching up and uses backchannelling ("yeah") to agree with his interlocutor. P1 initiates the topic in turn 003 and uses the relative clause "people who will be living here", which she repeats in turn 005 (within speaker alignment). In turn 004, P2 makes an attempt at expanding the conversation, but realises that P1 may not have completed her turn yet, so he quickly stops and applies a repair mechanism, which allows speakers to deal with turn-taking errors such as overlaps. At the same time, just before repeating the relative clause in turn 005, P1 starts developing the topic by saying "a decent place to live in". This non-finite relative clause primes her own structural repetition ("that big pay to support themselves") at the closure of turn 005. This is an expansion of the turn which introduces a new topic, related to the financial ability of potential residents in the planned building. In the following turn, 006, P2 aligns with the prime heard in turn 005 ("a nice place to live in"), which indicates an agreement with the interlocutor. At this point P2 seems to have been fully involved in the conversation. P1 can now complete the topic initiation and expand her turn 007 by suggesting where to start from. In turn 008, P2 explicitly agrees ("okay") with the suggestion and adds his own thoughts while aligning with the relative clause structure heard in turn 005. In turn 009, P1 uses backchannelling, showing overt agreement, but then pauses, and the rest of the turn may be understood as polite disagreement with the idea related to people living alone. P2 has now taken over the management of the topic, and in turn 010 he reuses the interlocutor's construction "let's see" to mitigate the disagreement. He expands the turn by offering the idea of building smaller flats for people who live alone, but in turn 011, along with the backchanneled "pro forma" agreement, P1 again negotiates the idea of "smaller families", where the comparative structure is repeated, suggesting hedging rather than comparison. In turn 012, after a short delay ("so..."), P2 accepts the idea of providing "more apartments" for "smaller families". As can be seen, alignment with the interlocutor's idea is accompanied by structural alignment. In turn 013 P1 elaborates on and justifies her idea of building flats for families rather than for people who live alone. The elaboration is inserted between the explicit agreement ("yes") and the aligned relative clause "people who will be living alone." The interaction from turn 014 to turn 019 can be seen as a post-expansion that leads to the sequence-closing sequence, as suggested by Schegloff [3], where "okay", "so", and "yeah", used by two interlocutors, show their explicitly expressed collaborative intentions.

As researchers in pragmatics have proposed [1,2,4,38,45], a conversation in the form of a dialogue is regularly instantiated as an attempt of collaboration to complete the task. To do that, the two interactants in a dialogue must work close to each other, listen to each other, and coordinate their utterances. All this is accomplished in a natural, spontaneous manner.

In terms of interactive alignment, a question can be asked why comparative structures (e.g., "smaller families", "more families", or "more apartments") were identified as alignment, but lexically similar units, such as "small apartment" or "small kitchen", were not coded as primes nor as alignment. The reason is in the explanation provided by Reitter and Moore [43] who argue that immediate lexical repetition can easily lead to syntactic repetition and may inflate results. Therefore, they recommend excluding the cases of immediate verbatim lexical repetition. Comparative units, on the other hand, were counted as alignment because they in fact were not employed to suggest comparison but had other functions, most often hedging, and in many other instances compound comparatives were used.

The following extract is from the second task in which the same students were in groups of four, discussing their ideas about an imaginary magazine and their roles in the editorial team. In this group, participants P1, P10, P12, and P14 took part. For ease of reading, they are labelled as P1, P2, P3, and P4.

(3)
001　P1: o-kay. (.) shall we start?
002　P3: um (.) what type of magazine should we do? =
003　P2:　　　　　　　　　　　　　　　　　　　　　　=what type of magazine should
　　　　we start? =
004　P4:　　　　　　=what do people read today?
005　P1: um (0.3) fashion?
006　P4: no. (.) [tabloids]
007　P2:　　　　[tabloids]
008　P4: yeah!
009　P2: we should [make -]
010　P4:　　　　　　　[yes, we should make] a <u>tabloid</u> ↓magazine
011　P2: yellow press
012　P3: yep.
013　P2: yes, maybe.
014　P4: um (.) maybe music magazine (.) which would cover <u>everything</u> (.) from
　　　　pop =
　　　　　　= I don't know (.) rock or -
015　P1: does anyone wanna read ↑that?
016　P3: yes, **I think they ↓<u>do</u>** (.) like Rolling Stone or (.) **something like that** I don't
　　　　know
017　P2: um ↓maybe.
018　P3: or:: something like political [magazine-
019　P2:　　　　　　　　　　　　　　　　　　oh ↑<u>no:::</u>↑]
020　P3: <u>come</u> ↓on↓ =
021　P4:　　　　　　　=or maybe something about nature?
022　P1: um::: who is **going to read** that?
023　P3: oh well, (0.3) =
　　　　　　= how much <u>time</u> do we have?
024　P1: [fifteen:: minutes]
025　P2: [fifteen:: minutes]
026　P4: ↓nice↓ (.) we [wasted two]
027　P2:　　　　　　　　　　[we wasted two]
028　P4: ok. (.) we have thirteen more minutes =
　　　　　　　　　　　　　　　　　　= I'm for tabloids.
029　P1: yeah. (.) that's probably best

In excerpt (3), four students start their conversation about the magazine ideas they should develop. P1 (F) initiates the talk, while P3 (M) and P2 (F) follow almost at the same time, with an overlap starting from "should we do?" in turn 002. This can be considered a pre-expansion, where P1 asks a question to invite the others to talk. The two overlapping instances of the question using a modal ("should we. . .") could have been coded as targets primed by the modal "shall we. . ." in turn 001. However, it may be argued that the use of modal verbs in this task is more task-driven than alignment-driven, and therefore, modals were excluded from coding in these tasks. The talk is expanded with very short turns that are inserted in this sequence as ellipses with additional overlapping. It seems that when overlapping occurs, the participants immediately become aware of the violations in their turn-taking and they stop immediately, offering a repair mostly by backchannelling ("yeah" or "yep"). This interaction can also be understood as brainstorming, where each participant offers their ideas in very brief verbal exchanges. Brainstorming is in the function of negotiation about the type of the magazine. In turn 014, P4 elaborates his idea by using a finite relative clause which is coded as a prime but is not aligned within the next ten turns. The question P1 asks in turn 015 indicates disagreement with P4, but P1 also faces disagreement by P3 in turn 016. Turn 016 contains two more primes: one is a subordinate WH clause with the omission of the complementiser "that", and another prime is the

construction "something like that", which is repeated in turn 018 ("something like political magazine") by the same speaker. In turn 022, there is one more prime ("going to read"), but again, no target is being recorded in the following ten turns. In turns 024 and 025, there are two instances of lexical immediate verbatim repetition ("fifteen minutes"), and in turns 026 and 027, there is also a verbatim repetition of "we wasted two" occurring as an overlap. These are not coded for alignment due to the reasons previously mentioned in [26]. As can be seen from this transcript, the interaction in this group of four participants differs from pair interaction as there is more overlapping and more short elliptic turns which do not appear to allow for more significant alignment of syntactic patterns. More evidence of these issues in group conversation can be seen in the transcript in Supplementary file S2.

3.2. Research Question 2

The following two tables present the descriptive data from the transcripts of the two tasks: the number of primes for each structure, within-interlocutor and between-interlocutor alignment, the number of non-aligned primes, and the number of total occurrences. Table 3 refers to interactive alignment in the dialogue task, and Table 4 refers to the group task.

Table 3. Aligned structures in pair interactions.

STRUCTURE	Primes	Alignment within speaker	Alignment between speakers	Total alignment	Total occurrences
have + NP	24	13	8	21	45
have + VP (inf)	16	11	6	17	33
complementiser *that* omitted	31	12	11	23	54
going to + VP	24	8	8	16	40
Imperative (*let's*)	22	9	6	15	37
non-finite relative clause	18	12	13	25	43
finite relative clause	47	17	15	32	79
stranded preposition	18	9	5	14	32
comparative	22	7	6	13	35
what kind of + NP	21	9	6	15	36
NP + *like* + NP	27	11	9	20	47
TOTAL	270	118	93	211	481
Mean	25	11	8	19	44
SD	8.58	2.80	3.27	5.76	13.45

Table 4. Aligned structures in group interactions.

STRUCTURE	Primes	Alignment within speaker	Alignment between speakers	Total alignment	Total occurrences
have + NP	15	8	4	12	27
have + VP (inf)	13	6	3	9	22
complementiser *that* omitted	17	8	6	14	31
going to + VP	22	10	5	15	37
Imperative (*let's*)	19	7	4	11	30
non-finite relative clause	11	4	3	7	18
finite relative clause	24	11	7	18	42
stranded preposition	8	5	3	8	16
Comparative	9	3	3	6	15
what kind of + NP	19	10	6	16	35
NP + *like* + NP	27	11	8	19	46
TOTAL	184	83	52	135	319
Mean	17	8	5	12	29
SD	6.18	2.81	1.79	4.47	10.50

To answer research question 2, a non-parametric Wilcoxon signed-rank test was carried out to examine whether there were significant differences between the alignment occurrences in pair and group interaction. The following report includes the test results with probability values and effect sizes *r*. The pair and group conditions were compared for the number of words, number of turns, number of primes, alignment between speakers, alignment within speakers, and total alignment. The results indicated that there was no significant difference between the number of words produced in pairs ($Md = 276$) and in groups ($Md = 203$), $z = -1.85$, $p = 0.064$, $r = 0.29$), but there was a significant difference between the number of turns in pair ($Md = 47.5$) and group ($Md = 38.0$) interaction, $z = -2.19$, $p = 0.029$, $r = 0.35$. For primes, the numbers were significantly higher in pair ($Md = 14.0$) than in group ($Md = 9.5$) interaction, $z = -3.14$, $p = 0.002$, $r = 0.50$. For total alignment, the numbers were also significantly higher in pairs ($Md = 11.0$) than in groups ($Md = 7.0$), $z = -3.73$, $p < 0.001$, $r = 0.59$. For between speaker alignment, there were significantly more occurrences in pairs ($Md = 4.5$) than in groups ($Md = 2.5$), $z = -3.78$, $p < 0.001$, $r = 0.60$. Similarly, for within speaker alignment, the number of occurrences was significantly higher in pairs ($Md = 6.0$) than in group ($Md = 4.0$) interaction, $z = -3.23$, $p = 0.001$, $r = 0.51$.

4. Discussion

The first research question asked if L2 speakers align their interaction when working on unscripted tasks in (a) a pair and (b) a group. The answer to this question is positive. A conversation analysis carried out on recorded conversations showed that interactants gradually developed their coordination, with priming and both within speaker and between speaker alignment occurring relatively frequently, particularly in pair interactions. However, this result needs to be considered with caution for at least two reasons. First, the sample was very small, with only 20 participants, so it is not possible to generalise these findings beyond this group to the entire L2 learner population at an upper intermediate level. The second reason is that this group of students have been studying and working together for two years, some of them even longer, which gives them a clear advantage in terms of developing the skills and competences associated with interactional alignment. In this period, they have had plenty of opportunities to interact among themselves, and this

must have contributed to their ease of communication and collaboration which is considered to be the basic precondition for interactive alignment to occur. Previous studies [19] have shown that peer interaction in the classroom where L2 learners know each other can boost structural priming and alignment.

The present findings are comparable with similar studies which used unstructured tasks [6,19,20]. In corpus-based research, Reitter et al. [26] found more priming and stronger between speaker alignment in dialogues that were task-oriented than in natural everyday conversation. In Dao et al.'s [6] study it was also found that the aligned structures were task driven. A question may be raised here related to the source of the repeated structures: is their use driven by alignment, or are they "task necessary" features if the task is to take part in a spontaneous interaction with minimal or no structure? One may argue that the latter is the case since in unscripted and unstructured tasks it may be more difficult than in tightly structured tasks to demonstrate that an optional syntactic structure could be used (such as, for example, the alternation between active and passive voice, or prepositional and double object dative in scripted tasks). In the present study it appeared that, specifically, modal verbs were extensively used as a function of the task type. For that reason, modals were excluded from coding. If they had been coded, they could have easily inflated the results since there were, in total, 109 modals used in pair interaction and 93 modals in group interaction. For the same reason, constructions using existential "there" and "need" + NP were also excluded from coding. These constructions were deemed to be directly related to the task necessary features, and therefore, less influenced by interactional alignment. For other constructions, those that were coded as primes and alignment, it may be possible to demonstrate that certain meanings could have been expressed in a different way. For example, in excerpt (2), instead of saying "people who will be living alone", following the relative clause prime "people who will be living there", one could have said "people/residents without families". Or, instead of saying "(they don't have) that big pay to support themselves", following the non-finite relative clause prime "a decent place to live in", one could have said "financially less able people", or "poorer people". However, conceptually, it may be impossible to isolate alignment and separate it from task essential features in natural interaction (such as speaker coordination, synchronisation, and convergence) because these features are also the preconditions for alignment to occur. In short, it appears that alignment and essential features of spontaneous interaction are the two sides of one coin: one cannot take place without the other, and their co-existence is fully acknowledged in Pickering and Garrod's [5] interactive alignment model.

4.1. Differences between Pair and Group Interaction

The second research question asked if there was a difference in student behaviour associated with different grouping (two versus four participants). The results of the statistical analysis indicate that there are significant differences between the interaction occurring between two people and in a group of four. Even though in some parts of group interaction participation was seemingly distributed equally, most of the time and in most groups the distribution of talk was unbalanced. Some participants were proactive most of the time, but some were not; for example, one participant contributed only five words in two turns during the whole group discussion, and another one contributed eighteen words in three turns. Both were reasonably active in pair interactions. There may be three reasons which cannot be excluded when explaining the different behaviour in different groupings. Firstly, although the two tasks had the same global characteristics, there may have been some slight differences between them, at least in the topic, i.e., in the interest each of the two tasks generated in students.

The second explanation might be related to individual variables [24] whereby certain students might be too shy or feel intimidated if asked to participate in a group conversation. For example, Van Moere's [46] research identified personality and talkativeness as social factors influencing group dynamics in spoken exam tasks. Nakatsuhara [47], who examined group dynamics in spoken exam tasks with three and four speakers, found that in groups

of four, there was more avoidance behaviour and less collaborative atmosphere, as well as more mechanical turn-taking. This study also found that the students' extraversion had more impact on topic initiation in groups of four, and the level of extraversion impacted the amount of talk produced by each member. This suggests that individual factors such as extraversion may have significant implications for group dynamics, but also, that a group of four participants may not be an ideal structure for work on collaborative tasks. This might be a plausible answer for the differences found in the present study too, but it should be pointed out that the participants in the present study knew each other well and their participation in research was not part of a high stakes exam as it was in Nakatsuhara's study.

The third explanation also seems to be tenable, i.e., that the differences in the performance and the occurrence of interactive alignment stemmed from different group dynamics in pairs and in groups, irrespective of the individual factors. If interactive alignment is partly due to the interactive nature of dialogue, as Pickering and Garrod [48] suggested, then the degree of alignment should also mirror the nature of the interaction between the speakers and the listeners because the interactive alignment model assumes that successful interaction involves the development of aligned representations on different levels, including people, time, space, etc. Pickering and Garrod [5] suggest that there are fundamental differences between addressees and other listeners in group conversation, whereby stronger alignment is predicted for addressees than other listeners. Branigan et al.'s [49] study found that syntactic alignment can occur in multi-party interaction, but it is modulated by participant role of the speaker relative to the source utterance. Stronger alignment was found when the participant was the addressee of the source utterance. A subsequent study conducted by Branigan et al. [50] confirmed these results, demonstrating again that participants were more influenced by the prime if it had been directed at them rather than at a third participant in conversation.

These findings confirm that by its nature, conversation or interaction is both a social and a cognitive activity [49,51], and that structural priming in dialogue reveals its social communicative dimension. From the social psychological perspective, the balance ensured by one-speaker rule in a conversation [30] is not guaranteed in conversations involving three or more people. The reason is that in a group, when one person stops speaking, any of the others may start, and this makes it possible for some people to choose not to speak. Sacks et al. [2] even suggested that a "schism" may take place in situations where a group of four may split into two pairs and continue their interaction in parallel. Gibson's [52] research shows that the interaction of numbers and temporality creates a conflict between responsibility and opportunity for producing content. This "conversational latency" is seen as a consequence of speaker linearisation in group talk.

4.2. Implications for Teaching

Considering the ubiquitous nature of priming and alignment, it is surprising that such naturally occurring processes are not used in language teaching more systematically. Specifically, structured and scripted tasks could be widely used to practice specific syntactic structures, such as passive, dative constructions, relative clauses, non-finite clauses, etc., as evidenced in several research studies [13,14,16,53]. Less structured tasks are more appropriate for more advanced language learners where they could employ their language skills to express more personal and creative ideas. Less structured tasks, such as problem solving and decision making, can be particularly beneficial for developing interactional competence, which is characterised by topic and turn management, negotiation of meaning, and repair strategies [33]. The present study has also touched upon the issue of interactive alignment in multi-party conversations. Even though this would require further and more comprehensive exploration, group structure might become more pronounced an issue when priming and alignment are viewed in light of their utility for language learning. In language teaching, pair work and group work are frequently used classroom practices aimed at developing communicative competence: consideration of priming techniques for teaching purposes should consider the present findings and balance pair work with group

work. However, to achieve equal and balanced participation in a group, clear roles should be given to each participant in the group. Otherwise, the group members might not be able to have equal chances for developing their interactional competence.

5. Conclusions

The tasks in the present study were of relatively short duration; thus, more tasks and more data with a larger number of participants are needed to make firm conclusions. Furthermore, some differently framed, naturally occurring conversations could be included, such as discussions about movies or books, or narratives concerning past experiences. An investigation of individual learner variables in relation to interactant behaviour and subsequent learning [24] is also a topic that requires further exploration, particularly in relation to participation dynamics in communicative tasks. Future investigations in L2 learning and use will certainly have to build upon the fact that the processes in L2 are interconnected, involving cognitive, psychological, psycholinguistic, and social dimensions. This leaves little space for isolated views unrelated to the context in which language is learnt or used.

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