

# Overlaps in Maltese Conversational and Task-Oriented Dialogues

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## Abstract

This paper deals with overlaps in spoken Maltese. Overlaps are studied in two different corpora recorded in different communicative situations. One is a multimodal corpus involving first acquaintance conversations; the other consists of Map Task dialogues. The results show that the number of overlaps is larger in the free conversations, where it varies depending on specific aspects of the interaction. They also show that overlaps in the MapTask dialogues tend to be longer, serving the function of establishing common understanding to achieve optimal task completion.

**Keywords:** overlaps, MapTask dialogues, face-to-face conversations, Maltese

## 1 Background

We know that overlap, the phenomenon by which two or more speakers talk over one another, plays a significant role in spontaneous interaction (Schegloff, 2000). We also know that the amount and function of overlap varies depending on the type of communicative situation (Cetin and Shriberg, 2006; Adda-Decker M. et al., 2008; Campbell et al., 2010).

Several factors seem to correlate with the occurrence of overlap. One is the existence of predefined roles: for instance Cetin and Shriberg (op. cit.) observe that in chaired meetings, in which the general interaction is controlled by the chair, there is little overlap. Conversely, the more spontaneous and free the conversation, the more

overlap can be expected. Moreover, Campbell et al. (op. cit.) claim that familiarity is also an important factor, such that the more familiar people are with each other, the more overlap they produce when they talk.

This paper examines overlap in two different corpora of spoken Maltese: the MAMCO multimodal corpus of first acquaintance conversations, and the Maltese Map Task dialogues. The two corpora differ substantially in ways that are expected to be directly related to the occurrence of overlap. Thus the paper aims to verify previous claims about the relation between overlap and communicative situation. It also provides an analysis of overlaps in a type of situation, first acquaintance dialogues, which has not been studied earlier in this respect<sup>1</sup>.

The aims of the study are to see (i) how frequent overlaps are in the two corpora; (ii) what types of overlap occur; (iii) how overlaps are distributed between the speakers; (iv) whether the occurrence of overlap varies as the interaction proceeds. In general, we are interested in investigating whether there are systematic differences in the two corpora due to different features such as the presence or absence of pre-defined roles, and the nature of the conversation.

## 2 Overlaps: definition and types

An overlap is a stretch of time of variable duration where two or more conversation

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<sup>1</sup> We report on a pilot study in Vella and Paggio (2013).

participants speak over one another, and which may or may not result in a change of speaker. In what follows, overlap is always between two speakers, since all the interactions examined are dyadic.

Different types of overlap may also be distinguished based on different functional categories. In our corpora the following three general types can be noted:

1. *Feedback-related overlap* (*ACKNOWLEDGE* move in Carletta et al., 1997): there is no competition for the floor and change of speaker is possible but not necessary. This can be lexical (e.g. *orrajt/owkey* ‘all right, okay’, *sewwa/tajjeb* ‘good’) or quasi-lexical (e.g. *mhm/ehe*).
2. *Question-related overlap*, especially in answers involving a yes or a no (*REPLY-YN* in Carletta et al., 1997): the current speaker relinquishes the floor and a change of speaker is expected. (Overlap is less likely, though not impossible with *wh*-questions – *REPLY-W* in Carletta et al., 1997).
3. *Competitive overlap*: the two speakers are competing for the floor. In some cases, this competition seems to result from an attempt at establishing common ground (mutual understanding, a common topic, etc.). The current speaker can retain or relinquish the floor.

In section 5 we will give examples of the various types, and discuss how they relate to the communicative situation specific to the two corpora investigated.

### 3 The corpora

The two corpora used in this study are the multimodal corpus of Maltese MAMCO and the Maltese Map Task dialogues. In Vella and Paggio (2013), which this paper builds upon, only one example from each corpus was considered. This study, by contrast, considers both corpora in their entirety.

#### 3.1 The multimodal conversational corpus

The multimodal corpus of Maltese MAMCO consists of twelve video-recorded first

acquaintance conversations between pairs of Maltese speakers.

Twelve speakers participated (6 females and 6 males). Each speaker took part in two different conversations, one involving another female and another involving a male interlocutor. An important prerequisite was that the two participants had not met before: they were instructed to try to get acquainted during the conversation. They could, however, freely decide what to talk about. Recording was stopped after about 5 minutes. All conversations were recorded in a studio using three different cameras, as shown in Figure 1. The general set-up was very similar to the one used in the Nordic NOMCO corpus (Paggio et al., 2010) so that it will be possible in future to use the corpora for inter-cultural comparisons.



Figure 1: Screenshots from the MAMCO corpus.

#### 3.2 The Map Task dialogues

The eight Maltese Map Task dialogues form part of the MalToBI corpus (Vella and Farrugia, 2006), which was designed to be representative of spoken Standard Maltese, participants being carefully selected with a view to balance in terms of age, sex and educational background. The Maltese Map Task design is similar to that used for the HCRC Map Task corpus (Anderson et al., 1991). Two participants engage in a

communication gap activity. The aim is for the participant in the Leader role to describe the route on the Leader Map – which is absent from the Follower Map – to the participant in the Follower role, who has to draw the route following the Leader’s information. The locations on the Maps are not identical, so that negotiation is sometimes required. The Maltese Map Task dialogues involve 16 speakers (8 females and 8 males): half of the speakers of each gender fulfil the Leader role and the other half the Follower role.

Contrary to other similar collections, in the Maltese Map Task corpus all participants could see each other. As a result, the Maltese Map Task data are directly comparable to the MAMCO data in that non-verbal as well as verbal means of communication were available to speakers for use (only audio recordings of the Maltese Map Task data are available, however).

### 3.3 Initial comparison of the two corpora

Similarities and differences between the two corpora are summarised in Table 1, reproduced here after Vella and Paggio (2013).

MAMCO	Map Task
Dialogues	Dialogues
Subjects standing at comfortable speaking distance	Subjects sitting facing each other with two tables between them
Lapel microphones	Unidirectional microphones
Cameras	No cameras
Can see each other (entire body)	Can see each other (face and torso)
Talk freely	Have to solve a task
No predetermined role	Different roles
Do not know each other	Familiarity not an issue

Table 1: Similarities and differences between the corpora

The last three rows in the table refer to the most interesting features from the point of view of this study. In MAMCO, there are no pre-defined topics and no task (we don’t consider the sole instruction to get to know each other as a real, well-defined task), and participants have no predetermined roles in the dialogue. In the Map Task dialogues, on the contrary, participants have to complete a task and have been assigned

specific roles for how to achieve this goal. As for familiarity, there is also a difference in that the MAMCO participants’ starting point is that they do not know each other. Participants in the Map Task dialogues do know each other, however they do not talk about personal matters. Therefore, in a sense familiarity is not really an issue in those interactions.

A simple way to compare the two corpora is to look at how much participants speak, and how speaking time is distributed between the two speakers. In MAMCO, the average speaking time per participant is 248.56s. There is no clear pattern as to which participant speaks the most: sometimes Speaker 1 does, sometimes Speaker 2. The difference in speaking time between the two speakers is shown in Figure 2 in terms of seconds and time percentage. Bars above zero indicate predominance by Speaker 1 and those below by Speaker 2.

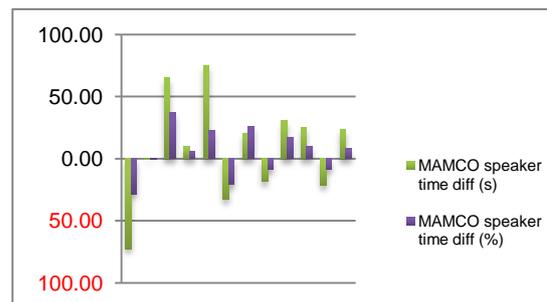


Figure 2: Distribution of speaking time in MAMCO: Bars above zero indicate predominance by Speaker 1 and bars below by Speaker 2.

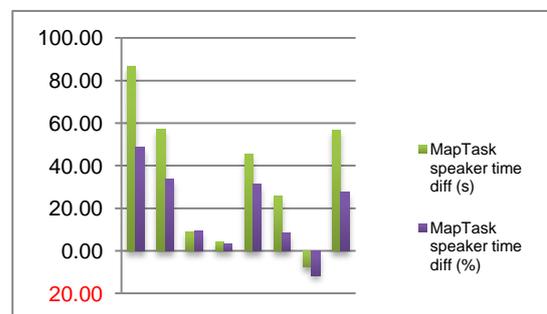


Figure 3: Distribution of speaking time in the Map Task dialogues. Bars above zero indicate predominance by Speaker 1 and bars below by Speaker 2.

The picture is quite different for the Map Task dialogues (Figure 3). The average speaking time, 257.83s, is comparable, but in this case one of the speakers nearly always has the most speaking time. Not surprisingly, this speaker is Speaker 1, always the Leader in these data. In the one exception in which the Follower – Speaker 2, bars below zero – speaks more than the Leader, this is due to this speaker often replicating part of the instruction given before adding an own comment. This noticeable difference in the way the two participants share speaking time in the two corpora is one of the consequences of the different type of communicative situation. Based on this difference, and on the claims made in the sources quoted above about how pre-defined roles and degree of familiarity impact the occurrence of overlap, we would expect the following facts concerning overlap to hold:

- a greater degree of overlap in the MAMCO conversations because both participants have to negotiate the floor;
- fewer overlaps resulting in change of speaker in the Map Task dialogues, since we expect the Follower to overlap in order to confirm, and the Leader to keep the floor;
- an increase in overlapping as the dialogue proceeds, as speakers get more comfortable with the situation and also more familiar with each other.

## 4 Quantitative analysis of overlap

### 4.1 Degree of overlap

The first dimension along which we want to compare the two corpora is the degree of overlap. We looked at this in several ways by measuring (i) the number of overlaps, (ii) the proportion of overlap time over total conversation time, and (iii) the length of the overlaps. These sets of measures are shown in Figures 4-6. For each measurement, the box on the left represents MAMCO, and the one on the right the Map Task dialogues.

Figure 4 shows that there is a significant difference in the average no. of overlaps (Two Sample t-test:  $t = 3.6413$ ,  $df = 14.84$ ,  $p\text{-value} = 0.002451$ ), and that the difference is in the expected direction, with MAMCO showing more overlap as well as more variation in degree of overlap in the various conversations. The picture for the Map Task dialogues is much more uniform with the exception of a single outlier.

The difference in the proportion of overlap time between the two corpora, shown in Figure 5, is also significant (Two Sample t-test:  $t = 3.3975$ ,  $df = 14.393$ ,  $p\text{-value} = 0.004187$ ). The explanation is that on average the length of the overlaps in the Map Task dialogues is higher, although not in a statistically significant way (Figure 6).

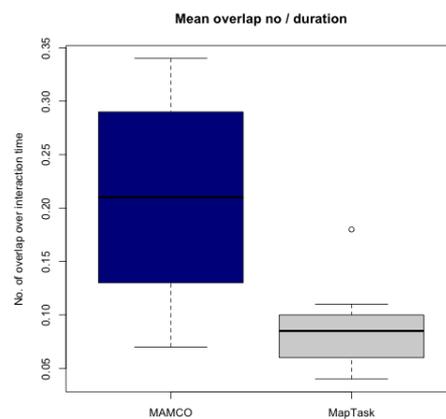


Figure 4: Overlap number over duration

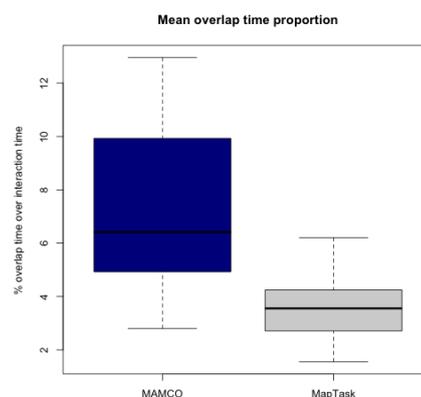


Figure 5: Proportion of overlap time over duration

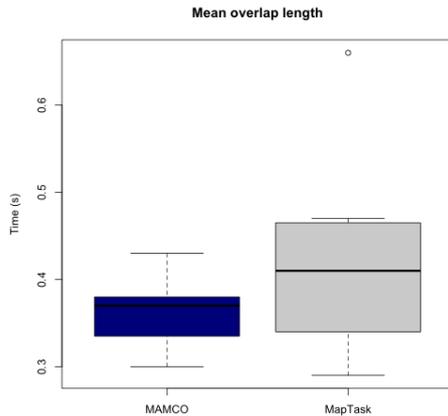


Figure 6: Overlap length in the corpora

The length of an overlap can be seen to relate to the functional types listed earlier. We hypothesise that the so-called *competitive* type of overlap, in which speakers compete for the floor, sometimes in an attempt at homing in on a topic of common interest, tends to be longer. As will be shown in section 5, examples of this type of overlap occur in the Map Task dialogues in places where there is breakdown of communication, or a misunderstanding of an instruction on the part of the Follower. In MAMCO, on the contrary, there are no inherent reasons for speakers needing to interrupt each other to clarify misunderstandings.

#### 4.2 Overlap and change of speakers

To verify our second prediction, we measured the proportion of overlaps resulting in a change of speaker (Figure 7). As expected, the proportion of overlaps resulting in speaker change is (slightly) larger in the MAMCO corpus.

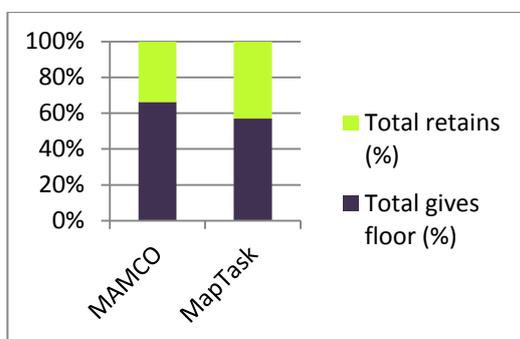


Figure 7: Overlap and change of speakers

Contrary to our expectations, however, in both corpora both speakers take the turn equally often when there is a change of speaker.

#### 4.3 Overlap and familiarity

Finally, we wanted to verify whether increase in familiarity is proportional to amount of overlap. We tested this by looking at whether overlap increases as the dialogue progresses. We chose 60 seconds as a threshold, corresponding more or less to one third of the interaction, hypothesising that the participants would by then have broken the ice. Interestingly, there is no effect in the Map Task dialogues, whereas we see in fact a decrease in MAMCO (Figure 8).

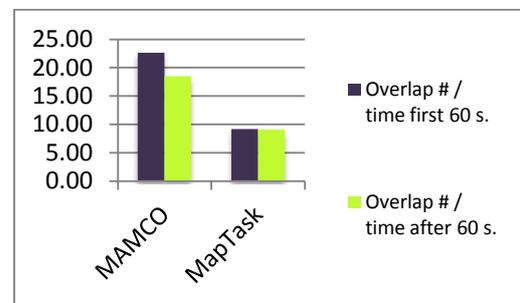


Figure 8: Overlap progression during the dialogues

It is debatable whether the effect we see is a counterexample to the familiarity effect observed by Campbell et al. Arguably, speakers in the MAMCO dialogues are not familiar with each other after 60 seconds of interaction. The decrease in overlap, therefore, has probably nothing to do with familiarity, but is due to the speakers adjusting their turn taking mechanism to each other after having broken the ice, introduced each other and familiarised themselves with the situation, although other factors cannot be excluded at this stage. In this sense it is significant that this does not happen in the Map Task dialogues, where what is important is that the task assigned be completed. In these dialogues therefore, whatever adjustment creates this effect may be overridden by the need to move the interaction forward, a goal which overlaps may in part help achieve (see also section 5.1).

## 5 Overlap functions and examples

Examples of the different functional types of overlap identified in section 2 above are presented below.

### 5.1 Feedback-related overlap in the context of feedback

It is worth noting at this point that negotiating turn-taking in dialogues is a logical necessity. In addition to this, providing one's interlocutor with feedback is also an important element if interaction is to succeed, and feedback and turn-taking are often related. Examples of turn-taking involving smooth changes between the two speakers one of whom is providing the other with feedback, are therefore, not unexpectedly, frequent in the data analysed. One such example is the following from one of the Map Tasks:

SP1: *Mela* (0.2) *nitilqu mill-Bajja ta' Ray* (0.6)

SP2: *Sewwa*. (0.7)

SP1: *ghan-naha tat-Tramuntana* (0.1)  
*mill-ewwel* (0.1)

SP2: *Mhm*. (0.7)

SP1: *fejn fiha* (0.6) *tghaddi bejn* (0.2)  
*Triq Mannarino*

SP1: So (0.2) we leave from Ray's Bay (0.6)

SP2: Right. (0.7)

SP1: towards the North (0.1)  
from the beginning (0.1)

SP2: Mhm. (0.7)

SP1: where in it (0.6) you pass through (0.2)  
Mannarino Street

The numbers in parentheses in these examples indicate the duration of both inter- and intra-speaker pauses. Exchange of information in this example is generally evenly paced with both inter-, and on occasion, also intra-speaker pauses with a duration of 0.6-0.7s. Examples of feedback items in the above include the lexical items *sewwa* 'right' and the quasi-lexical *mhm*. Other frequent lexical or quasi-lexical feedback elements include *iva* 'yes' (also *ija* or *iwa*), as well as *le* 'no', *orrajt* 'alright', *owkey* 'okay' and *tajjeb* 'good'.

Feedback of the sort illustrated above, however, can frequently be seen to involve overlap in both corpora. Sections of overlap in the examples provided below are enclosed within square brackets and the overlapping elements in the original indicated in bold.

A first example from the MAMCO corpus is given below:

SP1: *ghandi z-zijiet hemmhekk*.

SP2: [*Mhm*.

SP1: ***In-nan*** ] *na: (0.2) minn Bormla*

SP1: I have aunts there

SP2: [Mhm.

SP1: My grand ] *ma's (0.2) from Bormla*

SP2's *Mhm* in this example overlaps with part of SP1's continuing narrative on where different relatives come from without: there is however no competition for the floor. A second example, this time from the Map Task corpus is the following:

SP2: *jew Dar Millennia*

SP1: Dar Millennia [***sewwa***

SP2: ***jew*** ] *Vjal il-Mara* (0.3).

SP2: either Millenia House

SP1: Millenia House [right

SP2: or ] Women's Alley (0.3).

Again in this example, although it may appear, at a first glance, that SP1 is attempting to take the floor, this is in fact not the case since his contribution consists simply of a reaffirmation of the information he's been given by SP2 (*Dar Millenia*), followed by the lexical backchannel *sewwa* 'right'. It is in the context of this reassurance that transfer of information has been successful that SP2 comes in with her overlapping additional bit of information *jew Vjal il-Mara*.

To conclude on overlapping in the context of feedback, this type of overlapping in interaction often involves one speaker reassuring the other that transfer of information has been successful, which in turn, serves as a way to move the interaction forward. In most cases it does not

involve a change of speaker, but even where a change of speaker is involved, the overlap is co-operative rather than competitive.

## 5.2 Question-related overlap

In both corpora analysed, overlap also occurs when questions are answered. This is the case in the context of answers to both yes-no and wh-questions. An example from the MAMCO corpus is the following:

SP2: *Imma s-sitt waħda teži (0.2), hux ve [ru?*

SP1: *Ija. ]*

SP2: But the 6<sup>th</sup> one's a thesis (0.2), isn't that [so?

SP1: Yes. ]

An example from the Map Task corpus is:

SP2: *Minn Triq Mannari [no?*

SP1: *Ija. ]*

SP2: From Mannari[no Street?

SP1: Yes. ]

In these and similar examples, including examples involving wh-questions, although there is a change of speaker, there is no competition since, by virtue of the fact of asking a question, the current speaker is relinquishing the floor. Overlap in this context suggests engagement rather than competition, and once again serves the purpose of propelling the interaction forward. A characteristic of this type of overlap, which occurs in both corpora, is that it is short in virtue of the fact that the speaker who asks the question is relinquishing the floor on their own accord.

## 5.3 Competitive overlap

The third type of overlap identified in section 2 is competitive overlap. This can result in a change of speaker but does not always do so.

An example from the MAMCO corpus in which overlap leads to a change of speaker is given below:

SP1: *Mela mill-università for [si ġieli rajt wiċċek*

SP2: *Imma: ee ] (0.33) għandi z-zijiet hemmhekk.*

*[In-nanna:*

SP1: *Mhm.]*

SP1: So it's from University may [be that I know your face

SP2: But ee ] (0.33) I have aunts from there.

*għandi z-zijiet hemmhekk.*

[My grandmother

SP1: *Mhm.]*

In the above, SP2's overlap with SP1 results in SP2 succeeding in taking the floor.

Although examples similar to the above, in which competitive overlap leads to a change of speaker, can also be found in the Map Task data, the purpose of such examples in the Map Task dialogues seems different, in that speakers do not compete for the floor to contribute to the conversation with their personal stories or opinions, but to ensure that the task is completed successfully. Let us examine the following example from the Map Task corpus:

SP1: *[Trid issib (0.1)*

SP2: *hemm naqra bogħod ]*

*[biex ngħaddi*

SP1: *Ehe. ] (0.5)*

SP2: *minnha.*

SP1: *Ehe.*

SP1: [You need to find (0.1)

SP2: it's a bit far ]

[to go through

SP1: Ehe] (=Yes). (0.5)

SP2: from it

SP1: Ehe (=Yes).

The above contains two instances of overlap. The first of these is competitive and results in SP1, who was in the process of giving an instruction (*Trid issib*), relinquishing the floor to SP2. Having lost the floor however, SP1 recalibrates, as it were. She proceeds immediately to acknowledge that yes (*Ehe*), the location they need to move to is rather far away, overlapping with SP2 again when she does this, but making no further attempt, at least at this point, to regain the floor.

A further example will serve to illustrate the complexity involved:

- SP1: *Ibla' l fuq.* (0.73)  
 SP2: *Mela.* (0.17)  
 SP1: *[Fid-direzzjoni*  
 SP2: *Tini sekonda ] çans ta ħa nsib l-bajja* (2.47)  
*Iwa* (0.21) *sibna l-bajja* (0.75)  
*Trid [titla 'l fuq*  
 SP1: *Titla 'l fuq ]* (0.38)  
*fid-[direzzjoni*  
 SP2: *Sewwa. ]*  
 SP1: *ta' Triq Mannarino.*
- SP1: Move upwards. (0.73)  
 SP2: So (0.17)  
 SP1: [In the direction of  
 SP2: Give me a second ] to find the bay (2.47)  
 Yes (0.21) we've found the bay (0.75)  
 You need [to go up  
 SP1: You go up ] (0.38)  
 in the [direction  
 SP2: Right. ]  
 SP1: of Mannarino Street.

In the first overlap in this example SP1 has the floor. SP2 signals, using the discourse marker *Mela* (frequently used as a means of 'resetting', in preparation to initiate a new move), that he would like to take the floor: there is no overlap up to this point. SP1 however does not get the message, and continues giving directions (*fid-direzzjoni*). At this point, SP2 overlaps, and takes the floor specifically to say that he needs time to carry out the instruction he had been given. Once he has done this, he picks up from where he had interrupted SP1's instruction to *Ibla' fuq*, by saying *Titla' l fuq*. SP1 realises that he is ready to move on and overlaps with him once more, once again taking the floor and repeating the instruction *Titla' l fuq*. It is now clear he is ready to follow. There is one final overlap involving SP2 providing feedback, with no further change of speaker.

The examples illustrated above suggest that it may be too simplistic to suggest that overlap with change of speaker is always the result of competition for the floor, at least for the kinds of

data, such as Map Task data, where speakers are engaged in a collaborative task. Or at least, competition for the floor here serves a different function than in conversational data, in that the speakers are eager to make sure that they understand each other in order to complete their joint task.

In an attempt at getting a preliminary indication of whether or not competitive overlap tends to be longer than non-competitive overlap, we examined overlaps in the data which exceeded (the arbitrarily chosen threshold of) 60s in duration. In line with the finding that the number of overlaps in the MAMCO data is greater than in the MapTask data, there were also more lengthy overlaps in the MAMCO data than in the MapTasks.

Preliminary findings do not, however, support the hypothesis of a greater tendency for longer overlaps to be competitive. Straightforward feedback-related overlap with no competition and no change of speaker occurred in more than half the cases examined (8/13). In two further instances of feedback-related overlap, a change of speaker occurred, but without competition. In the first of these, a (relatively long) pause (0.52s) followed the feedback – the speaker responsible for the overlap consequently felt the need to get the interaction going again. In the second instance a new element of information was provided following the feedback, with the speaker immediately relinquishing the floor once this information had been communicated.

Three of the 13 cases of longer overlap could, indeed, be classified as examples of competitive overlap. A complete analysis of the relation between length and competitive overlaps, however, presupposes functional labelling of all the examples in the corpora, a task which we leave for future research.

## 6 Conclusion and future work

In conclusion, we have shown that overlaps in both the corpora analysed are used (i) to provide feedback during the dialogues; (ii) to anticipate

answers to questions that are being asked, and (iii) to take the floor. The degree and length of overlapping is different in the two corpora, reflecting the different communicative situation involved.

As we were expecting, a larger degree of overlapping occurs in the free MAMCO conversations. In addition, slightly more overlaps in MAMCO result in a change of speaker, which also confirms the more dynamic nature of these conversations, in which neither speaker has a pre-defined role in the dialogue. However, the degree of overlapping is seen to decrease slightly as the conversations proceed, probably due to the participants adjusting to each other's turn taking mechanism.

Conversely, less overlapping and less change of speaker in connection with overlaps occur in the Map Task dialogues, where the underlying task and the roles assigned to the two participants provide for a more rigid structure. A peculiar feature of these dialogues, by contrast, is the occurrence of relatively long overlaps in which the dialogue participants try to recover from communication breakdowns in order to be able to complete their task.

In this paper, overlaps were studied only from the point of view of the speech contributions. In future, we would like to extend the analysis to non-verbal behaviour. For example Navarretta (2013) discusses how multimodal behaviour can be used to predict overlaps on the Danish NOMCO corpus, which, as was pointed out earlier, has a very similar setting to MAMCO. It would be interesting to compare her findings with similar observations from the Maltese data, in both the corpora described here.

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