Aligning caller and call-taker

The opening phrase of Dutch emergency calls

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This paper reports on conversation analytic research for the Dutch national emergency call-centre. In a corpus study of 120 emergency calls we show that callers' orientations to their communicative tasks are not aligned to the institutional communicative tasks of the call-takers. In a subsequent workplace experiment involving over 2000 calls, it appeared that the use of an alternative question rather than a wh-question, significantly altered callers' emergency deliveries and adapted them to call-takers' communicative needs. The analysis shows two aspects of callers' responses to the different question formats: (i) The alternative questions produced significantly more type-conforming answers than the wh-questions, and also (ii) callers treated their non-conforming answer to alternative question more often as dispreferred than their non-conforming answers to wh-questions. Callers thus treated the preference for type-conformity to be stronger for alternative questions than for wh-questions.

Keywords: emergency calls, conversation analysis, applied conversation analysis, type-conformity, preference organization

1. Introduction[1]

In the investigation we report on here, we carried out a workplace experiment with the aim to align callers with the communicative tasks of the call-takers. The national emergency call-centre in the Netherlands had requested an investigation aimed at shortening the length of calls since call length determines the time before emergency assistance can be dispatched, as well as the time before a call-taker is available again for a next call. Based on an analysis of a collection of 'long' calls, we

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concluded that one possible cause was a lack of caller-call-taker alignment and we proposed to repair this by a newly formatted opening question for call-takers: the wh-question 'who do you want to talk to?' was replaced by the 'alternative question' (Englert 2010) 'do you want police, fire brigade, or ambulance?'. A workplace experiment showed that although the new opening question was not successful in shortening mean length of calls, it *was* more effective in guiding the caller's contribution to the call, thus aligning the caller to the institutional communicative task of the call-taker.

Emergency call organization

The emergency call organization in the Netherlands consists of one national call-centre and a large number of local call-centres. All mobile calls to the emergency number 112 are answered by call-takers at the national call-centre, whose task it is to connect callers to a local call-centre of either police, fire-brigade, or ambulance.[2,3] A call-taker at the national centre thus has to establish (i) the location in terms of the appropriate local call-centre, and (ii) the emergency in terms of one of the three services, and it is left to the local call-taker to take the details of the emergency and of the location, and to decide if aid should be dispatched. The national call-centre where this investigation was carried out needs callers to supply these two types of information and the new answer-options question succeeded significantly better than the wh-question in making callers do this.

   This increased functionalit of the new opening question raises interesting questions about the relation between question design and answer options, especially in an institutional context such as emergency calls in which callers and call-takers have been shown to have a fairly stable orientation to what is expected of them in the call (e.g. Whalen & Zimmerman 1989; Raymond & Zimmerman 2007). Not only was the answer-options question more successful than the wh-question in bringing callers to produce type-conforming answers (Raymond 2003; Schegloff 2007), also did callers orient to the alternative question much more than to the wh-question as preferring a type-conforming answer.

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2.   These three are the main services. Sometimes a caller may need to be connected to a different service such as the coast guard or the military police.

3.   The organization of the emergency call-centres in the Netherlands is presently undergoing significant changes that will also alter the communicative practices we discuss in this paper.

2. Emergency calls and questions

Emergency calls have been the object of social interaction research over the last more than 30 years (e.g. Zimmerman 1984; M. Whalen & Zimmerman 1987, 1990; J. Whalen & Zimmerman 1998; Tracy & Tracy 1998; Zimmerman 1992; Imbens-Baily & McCabe 2000; Raymond & Zimmerman 2007; Fele 2008; Cromdal, Osvaldsson & Persson-Thunqvist 2008; Dovigo & Redaelli 2010; Paoletti 2012; Cromdal, Landqvist, Persson-Thunqvist & Osvaldsson 2012).

One thing these investigations have shown is that participants in these calls have a strong orientation to what they should or should not do; this holds for not just the call-takers as professional participants, but also for callers in spite of their often being first-time emergency callers. Whalen & Zimmerman (1987) showed how openings of US emergency calls are reduced by both call-takers and callers in comparison to openings of mundane telephone calls (Schegloff 1968) by leaving out greetings and how-are-yous. Raymond & Zimmerman (2007) showed how callers and call-takers in emergency calls are pre-aligned as respectively service-seeker and service-provider even when the caller calls to seek information rather than service. Larsen (2013) showed how callers to a Danish emergency call-centre display their entitlement to service. And Koole et al. (2013) found, in Dutch calls to the local emergency call-centres, that callers in their first turn report a 'what' and a 'where' of the incident, regardless of whether the call-taker opened the call with only an identification (e.g. "fire brigade speaking") or with an additional invitation (e.g. "112 police, what can I do for you"). At the same time, Cromdal et al. (2008) showed that a local interactional contingency such as a protocolled new opening question in Swedish emergency centres produced a new type of response from callers. This suggests that on the one hand emergency callers have a stable orientation to their rights and responsibilities, while on the other hand they remain sensitive to local contingencies such as question design.

These findings informed the workplace experiment in which we aimed to align callers with the communicative task of call-takers by changing the question format. Moreover, Conversation Analysis research in other institutional encounters than emergency calls has produced earlier empirical evidence of the impact of question design on the interactional behaviour of clients. Houtkoop-Steentra & Antaki (1997) demonstrated the impact of a change from wh-questions to yes/no-questions on responses in social science interviews, Vinkhuyzen et al. (2006) investigated the impact of different opening question in calls to a financial services organization, and Heritage & Robinson (2006, 2011) tested the impact of the design of physicians' questions to patients.

This work, and that of Cromdal and colleagues (2008), is all based on (and contributes to) the conversation analytic notion of the 'preference organization'

of action sequences according to which the grammatical and prosodic design of first pair-parts and the actions performed by them normatively constrain the responses (e.g. Pomerantz 1978; Sacks 1987; Schegloff 2007). It was shown that in response to a first pair-part action such as a request, participants treat the two alternative responses (compliance and non-compliance) as not symmetrical: the response that renders the project initiated by the initial action successful is treated as 'preferred'. In the case of a request the preferred response is a compliance, while for example the preferred response to an invitation is an acceptance. In a similar way, positively formulated yes/no-questions (e.g. 'do you understand?') are treated as preferring a yes-answer, while negatively phrased yes/no-questions (e.g. 'don't you understand') prefer a 'no' (Schegloff 2007: 78).

The preference type that is at stake in our workplace experiment is the preference for type-conformity. Raymond (2003) introduced the notion of type-conformity when he demonstrated that yes/no-interrogatives 'prefer' responses that contain the verbal elements 'yes' or 'no' or equivalents thereof. This showed that preference organization can also bear on the formal design of the second pair-part. Schegloff (2007) and Schegloff & Lerner (2009) extended the notion of type-conformity from yes/no-interrogatives to wh-questions: "rather than specifying the very words that will constitute a type-conforming answer, they [wh-questions] project the type of formulation an appropriate answer should deliver" (Schegloff & Lerner 2009: 111). A type-conforming answer to a who-question should contain a person reference, while a type-conforming answer to a where-question should contain a location reference, and so on (Schegloff 2007: 78).

We want to argue in line with these arguments that a type-conforming answer to an alternative question is an answer that picks one of the answer options presented in the question. It would seem that conforming answers to alternative questions behave more like the answers to yes/no-interrogatives than the answers to wh-questions since the alternative questions specify the very words that a conforming answer should contain. A type-conforming answer to the question 'do you want police, fire-brigade, or ambulance' is an answer that contains a reference to one of these three services while an answer such as 'my house is on fire' would be sufficiently informative but non-conforming. Clayman & Heritage (2002) show how news interviewers make use of this preference to construct adversarial alternative questions by presenting one of the answers options as correct. Margutti (2006) and Koole (2010) have shown how teachers make use of this preference to limit pupils' choice of possible answers. Also, research of survey interviews has shown that an alternative question has a preference for a type-conforming response that picks one of the proposed answer options (Gaskell et al. 1994).

3.   Data and methods

The national emergency call-centre gave us a set of 120 'long' calls with the rather broad question 'how can we make our calls shorter?' (naturally, after having agreed on research ethics and having signed an appropriate contract on how to deal with these data).[4]

Conversation Analysis

We approached the problem of call length with a diverse methodology of which Conversation Analysis (CA) provides the basic building blocks (Pomerantz & Fehr 1997; Drew 2005; ten Have 2007; Heritage 2008; Sidnell & Stivers 2013). We first transcribed the collection of 120 calls using the CA transcription conventions designed by Jefferson (2004) and then started a first analysis of what makes these calls long, including the question by what standards can calls be called 'long' or even 'too long'.[5] In order for our readers to understand what it means to use CA as a method, we will shortly outline three characteristics of this method that are relevant for the analyses presented here.

In the first place, CA has shown that meaning in talk is an observable phenomenon and not a cognitive 'intention' or 'interpretation'. By designing an utterance in a particular way in terms of lexical choices, word order, and prosody, and by producing that utterance at a particular moment in interaction, for example in response to a question, or as the first turn in a conversation, we indicate aspects of that utterance's meaning to our co-participants in interaction. CA as a research method is concerned with what participants make observable for each other.

A second element that follows from the first, is that participants in interaction not only show each other how they want to be understood, but also how they understand each other. By responding to each other's talk, we show what meaning we give to that talk. Thus, Whalen & Zimmerman (1987: 178) conclude that the caller's emergency report is seen by call-takers as a request for help, also when the report takes the form of a mere description such as 'we were involved in an accident'. They conclude this from the fact that call-takers *respond* to these reports

in terms of 'we will / will not send help'. With this response, call-takers 'treat' the emergency report not as merely a piece of information, but as a request for help, and make this treatment observable to the caller.

A third relevant aspect of CA-theory and consequently of CA-methodology concerns the normative organization of talk-in-interaction. In order to be able to show our co-participants how we treat their utterances, we need to talk in turns, and to achieve this, we use norms as to when a turn is possibly complete, and who can speak when it is (Sacks, Schegloff & Jefferson 1974; Huiskes 2010). Also there are norms dealing with the sequential order of actions, such as the norm that a question should be followed by an answer (Schegloff 2007), and the norm that certain types of questions should be followed by certain types of answers, as we have shown above in our discussion of preference and type-conformity.

Measuring effectiveness

We found that one cause – among several other causes – for calls to last long is that callers tended to report the details of their emergency. Although it may seem quite reasonable for callers to suppose that this is expected of them when calling an emergency number, emergency calls in the Netherlands, as was explained earlier, are so organized that the first call-taker will transfer the caller to a second call-taker at a local call-centre, and it is only this second call-taker who needs the details since it is this call-taker who can dispatch help. A second cause for calls to last long is that callers tended to act from the belief they are connected to a local rather than a national call-centre. In providing location information they orient to the call-taker as someone who is in the town from which the call is made and call-takers at the national call-centre often have a hard – and long – time getting the caller to understand that in addition to – or rather: instead of – for example 'main square, opposite the supermarket' they need to know the name of the town.

Having established these two problems, we constructed new opening phrases for the call-takers, designed to counter the caller orientation to the call as requiring all details, as well as the orientation to the call-taker as being a local. Then we conducted a workplace experiment in which the national emergency call-centre had 9 different call-takers work 9 days with the original and 2 newly designed opening phrases, resulting in a total of 2183 calls of which 37% used the original opening phrase and 28% and 35%, respectively, the two newly designed phrases. This enabled us to do a quantitative analysis to establish whether one of these opening phrases produced significantly shorter or longer calls. Further we did a combined qualitative and quantitative analysis by transcribing the opening phases of 50 randomly selected calls of each of the three opening phrases, to establish

whether one of these phrases produced a significantly lower number of the 'full detail' or the 'local' responses.

4. What makes a call long?

The first phase of the analysis was to find out what makes calls 'long' and we answered this question in two different ways. First we will show characteristics of 'long' calls, then we will go into the causes for longer calls.

What is a 'long' call?

From the perspective of the national emergency call-centre, the purpose of emergency calls is to retrieve two bits of information: (i) the emergency service required (police, fire brigade, or ambulance), and (ii) the location of the emergency in terms of town or area. Thus, calls have an institutionally preferred format such as the first four lines of the following excerpt:

(1) [onder voorbehoud] (simplified for emotions in caller's voice)

CT: Call-taker
C: Caller

```
1  CT      () wie wilt u ↑spreken.
               who do you want to talk to
2  C (i)   ha ehm ↑politie .hh=
           ha uhm police .hh
3  CT      =ja in welke ↑plaats
            yes in what town
4  C (ii) .hh eh nou ehm Serooskerke
           .hh uh well uhm Serooskerke
5  CT      ↑Serooskerke? (.)
           Serooskerke
6  C       ja (      ) (.)
           yes (      ) (.)
7  CT      ↓ja in >Zeeland is dat<
           yes that's in Zeeland
8          ik ga je doorverbinden met de politie hoor
           I'm going to put you through to the police
9          (.) >blijft u aan de lijn<
               stay on the line
```

In those first four lines we see that in response to the call-taker's question "who do you want to talk to", the caller picks one of the three available services (2: "police"), and in response to the location question (line 3) the caller produces a town

name (4: "Serooskerke"). These two pieces of information are precisely what the call-taker needs to connect the caller to a local emergency call-centre, and lines 8 and 9 could have been produced following line 5, had the call-taker not followed the protocol and expanded the sequence to verify (lines 5–7) that she heard the town correctly.

These two types of information can be produced even sooner in the call, as we can see in excerpt 2.

(2) [0.26 15 0:14]

CT: call-taker
C: caller
```
1  CT  alarmcentrale 112, wie wilt u spreken?
       emergency call-centre 112, who do you want to talk to?
2  C   eh politie Maastricht.
       uh police Maastricht
3  CT  Maastricht, ik verbind u door mevrouw,
       Maastricht, I will put you through madam
4  CT  blijft u aan de lijn.
       hold the line.
5  C   ja hoor.
       I will.
```

In this call we see that in response to the call-taker's question "who do you want to talk to", the caller picks one of the three available services (2: "police"), and immediately adds the name of a town ("Maastricht"). These two pieces of information are precisely what the call-taker needs to connect the caller to a local emergency call-centre.

Thus we can argue that from the perspective of sequence organization, the length for the two necessary chunks of information to be produced is two question-answer sequences, and in cases such as extract 2 where a caller answers 'more than the question' (cf. Stivers & Heritage 2001), even a single pair could suffice. Yet, the applied question with which the emergency call-centre approached us was framed in terms of duration, not in terms of sequences. It is their interest, as we explained above, to shorten the time for the service to reach the emergency location, and at the same time shorten the time for the call-taker to be available again for a next call. Indeed, in our data, we see calls such as extract 3 with only the two required question-answer sequences that still take more time than desired.

(3) [Schaatsbaan]
```
1  CT  alarmcentrale één één twee. wie wilt u spreken.
       emergency call-centre one one two. who do you want to talk to.
2  C   .hh met Sofie Annie (.). ik heb  een- (.)
       .hh this is Sofie Annie (.) I have a-
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```
3       ehm ik word hier lastig gevallen
        uhm I am being harassed here
4       ik heb hier een hele zware (.) ze zijn me hier aan het
        omsingelen
        I have a real heavy here (.) they are surrounding me here
5       ((snik)) .hh en ik heb (.)
        ((sob)) .hh and I have (.)
6       ik heb .pt een dossier.
        I have .pt a file
7  CT   in welke plaats is het mevrouw? (.)
        in what town is that madam? (.)
8  C    het is in Eindhoven.
        it's in Eindhoven
9  CT   in Eindhoven. ik verbind u door met de politie in Eindhoven.
        in Eindhoven. I will put you through to the Eindhoven police
10      blijft u aan de lijn. (.)
        hold the line
11 C    .hh dank u wel.
        .hh thank you
12 CT   alstublief.
        welcome.
```

In the first question-answer sequence of this call, the call-taker asks the question "who do you want to talk to" and in response, the caller provides information in lines 2–7 that the call-taker treats in line 9 as identifying the police as the required service. Although the identification of the required service thus only needs one question-answer pair, it needs no argument that the caller's description of her harassment in lines 2–7 takes more time than asking for the police.

Thus, we will speak of long calls, not in terms of the number of sequences, but in terms of their duration, since it is duration that matters here. And yet, we argue that there is a strong relation between duration and sequential organization. In extract 3, the difference between the caller's response in lines 2–7 and a phrase such as 'can I speak to the police' is not just that the first is *longer* than the second, but also that the second is type-conforming (Raymond 2003) while the first is not. The who-question format in line 1 projects a type-conforming answer format that identifies a party – a person or organization – that one can speak to, and from this perspective, the caller's description in lines 2–7 deviates from the projected response to this question.

Why are calls long?

Having established what long calls are, we went on to establish what causes calls to be long. We have seen that callers produce responses to the opening question that deviate from the answer format 'a party one can speak to'. Why do they do

that and what do callers do in these longer responses? One possible answer can be gained from a second look at extract 3 above. The caller self-identifies and then presents an involved account of persons harassing her there-and-then. The form "ze zijn me hier aan het omsingelen" ('*they are surrounding me here*') strongly stresses the 'continuous aspect' of the event: it describes the act of surrounding, not its result.[6] Thereby, the caller seems to argue the urgency of her need for help and seems to orient to the call-taker as the one who decides on prioritizing and dispatching the police. Thus, one reason why callers may lengthen their initial report is that they assume to be talking to a dispatcher, rather than to an operator who can only connect them to a dispatcher.

A second reason can be that the caller is unsure whether the reported event warrants a call to 112 and the sending of a police car. Extract 4 is an example.

(4) [H...........]
```
1  CT   alarmcentrale 112, wie wilt u spreken?
        emergency call-centre 112, who do you want to talk to
2  C    ehm, goede avond e:::h, ja ik weet niet e:h,
        uhm good evening u:::h, yes I don't know u:h,
3       ik heb hier-
        I have here-
4       op de promenade gaat de hele tijd alarm af
        on the boulevard the alarm goes off all the time
5       t'is een eh een ijscokraam.
        it's an uh an icecream stall
6       >maar ik denk niet dat< daa:r >echt wat gebeurt,<
         but I don't think that something is really going on the:re
7       ze hebben alleen een eh (0.3)
        they just have an uh (0.3)
8       (ik hoop het maar ofzo)
        (at least I hope sort of)
9       >maar 't alarm gaat al een uur af ofzo daar.< =
         but the alarm has been going off for an hour or so.
10 CT   =wacht even,
         wait a minute
11      u bent niet zo heel, ↑heel duidelijk te verstaan.
        I can't understand you very, very clearly
12      .hh wat heeft u nodig, (.) de politie?
        .hh what do you need (.) the police?
13      (1.1)
14 C    ja dat lijkt me wel
        yes, I should think so.
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6. In fact, in Dutch syntax also simple present ('*ze*/they *omsingelen*/surround *me*/me') can be used to refer to continuous events.

The caller presents a tentative (2: "I don't know") and at times downgraded (6: "but I don't think that something is really going on there") or mitigated (7: "they *just* have an uh") report of an alarm sounding from an ice-cream stall. This may be designed for the call-taker to act as gate-keeper and decide whether this call warrants help (cf. Whalen & Zimmerman 1990), in the same way that patients in health care are oriented to the 'doctorability' (Heritage 2009) of their complaint.

A third reason for calls to last longer is not so much located in the length of caller's initial response to the call-takers' opening query, but in their orientation to the emergency call-centre as local rather than national. In extract 5 below the caller treats a street name as sufficient location information and this forces the call-taker to produce follow-up questions.

```
(5)  [R..............]
1  CT   alarmcentrale één één twee, wie wilt u spreken?
        emergency call-centre one one two, who do you want to talk to?
2       (0.7)
3  C    goeienavond, ik wil gauw politie hier
        good evening, I quickly want police here
4       naar de Driegangstraat.
        to the Driegangstraat.
5       astublieft.=
        please.
6  CT   =welke stad is dit?
         what town is this?
7  C    de Driegangstraat
        the Driegangstreet
8  CT   =welke stad is dat?
         what town is that?
9  C    (in) Amersfoort
        (in) Amersfoort
10 CT   Amersfoort, blijft u aan ↑de lijn
        Amersfoort, hold the line
```

This caller again answers 'more than the question' when in response to the who-question, she not only asks for the police, but also gives a street name ("Driegangstraat"). The caller presents the street name as sufficient information. Her intonation falls after "Driegangstraat" as a token of completeness, and when she decides to add an extension, it is a 'please' that is equally intonationally designed as complete. When in response, the call-taker asks what town this is, the caller treats this as asking the street once more (7). Only after the call-taker has redesigned her question by shifting her stress from "is" (6) to the word "stad" (8), the caller provides the information needed: "Amersfoort" (9). The design of the caller's initial emergency report (3–5) and her answer in line 7 show a strong orientation to the call-centre as local rather than national. In terms of Schegloff's

(1972) analysis of formulating place, we can conclude that this caller uses a 'correct' location formulation (assuming that it is indeed de Driegangstraat), but not 'appropriate': the caller's membership analysis of the call-taker as a local is mistaken. Note furthermore, that just as in extract 3, this caller's 'quickly' (3) and 'please' (5) seem to assume that the call-taker is the dispatcher.

5.   A new opening phrase

In the previous section we identified two interactional phenomena that produce longer calls than institutionally desired: callers may produce long turns, and they may cause long sequences. As we explained above, the national Dutch emergency call-centre is a 'portal' and will connect a caller to a local emergency call-centre as soon as they know (i) which of the three emergency services (police, fire-brigade, ambulance) a caller needs, and (ii) where the emergency is. Callers however, often do not choose one of the three emergency services to be connected to, but for several reasons that we discussed above, they treat the initial call-taker question as an invitation to present their emergency. Also they often do not specify the location as nationally recognisable, but treat the call-centre as being located in their city or area, for example by only mentioning a street name. Thus, they produce long turns by responding to the opening question in ways that deviate from the answer projected by that question, and they cause longer sequences by not giving the required location information which leads to call-taker's follow-up questions.

On the basis of these findings we set up a workplace experiment with alternative call-taker opening questions and tested whether these would result in aligning callers to the communicative tasks of the call-takers, and subsequently in shorter turns, shorter sequences, and shorter calls. We based our design of a new opening question for the national Dutch emergency call-centre on the preference for type-conformity (Raymond 2003). To constrain the caller to a choice between the three emergency services, we hypothesized that an alternative question ('police, fire-brigade or ambulance') might do the job, in part because of its preference for a type-conforming answer, and also because alternative questions present a finite set of answer options which makes them easier to answer than who-questions with their in principle infinite set of whos. If this is so, then compared to the original opening query, callers' responses to an alternative question should show increased choosing of one of the three services, and decreased descriptions of the emergency.

In order to counter callers' assumption that they are connected to a local call-centre, we proposed to add the adjective 'national' to the original identification: '*landelijke alarmcentrale 1–1–2*' (national emergency call-centre 1–1–2). If this were successful, we would expect callers in response to the new identification

phrase to produce increased nationally recognisable locations, less often forcing call-takers to produce follow-up questions.

This was tested in a workplace experiment in which 9 different call-takers worked on 9 different days with 3 different opening phrases. Each phrase was used by at least 6 different call-takers:

(0) *Alarmcentrale 112. Wie wil u spreken?* (Emergency call-centre 1–1–2. Who do you want to talk to?)

(1) *Landelijke alarmcentrale 1–1–2. Wilt u politie, brandweer of ambulance* (National emergency call-centre 1–1–2. Do you want police, fire-brigade or ambulance?)

(2) *Landelijke alarmcentrale 1–1–2. Wilt u doorverbonden worden met politie, brandweer of ambulance* (National emergency call-centre 1–1–2. Do you want to be connected to police, fire-brigade or ambulance?)

The first of these phrases (0) was the original one. The second (1) and third (2) were new, while the difference between the second and third is the addition of the phrase 'to be connected to' with which we aimed to emphasize the portal function of the call-centre.

The experiment resulted in a total of 2183 calls, distributed over the three different opening phrases as displayed in Table 1.

Table 1. Number (n) of calls per phrase

Phrase	Calls (*n*)
(0)	810
(1)	770
(2)	603
Total	**2183**

In the two subsections below, we will first present the results of this workplace experiment in terms of their applied value for the national call-centre and as an example of applied conversation analysis (e.g. Peräkylä & Vehviläinen 2003; Heritage & Robinson 2006; Antaki 2011). After this, we will present additional analyses of our data for a discussion of the preference for type-conformity of wh-questions versus alternative questions.

Results of the experiment

After having collected these calls we measured the mean call length for each opening phrase. After all, the goal of the entire operation was to shorten the length

of calls. However, as we can see in Table 2, only the first of the two new opening phrases resulted in a slightly lower mean length, and taking phrase (0) as a point of reference and $p < 0.05$, the differences with phrase (1) ($t = 0.916$, $p = 0.578$) and phrase (2) ($t = 0.457$, $p = 0.648$) proved not to be significant.

Table 2. Mean length of calls (seconds)

Phrase	Mean (sec.)	SD	t-test
(0)	26.80	13.2	
(1)	26.49	12.6	$t = 0.457$ $p = 0.648$
(2)	27.53	11.7	$t = 0.916$ $p = 0.578$

These results begged the question whether the new opening phrases were not successful in performing the task they were designed to do, or whether alternatively, the opening phrases perhaps were successful without however shortening the length of calls? In other words, (i) does the alternative question make the caller choose between police, fire brigade and ambulance, rather than deliver their emergency, and (ii) does the new identification make the caller present a nationally identifiable location rather than a local one?

We tested this question by taking a random sample of 50 calls of each of the three opening phrases, transcribe the opening sequences of these 150 calls, and analyse these. Figure 1 shows that the alternative questions in phrases 1 and 2 ('police, fire brigade or ambulance') indeed made callers respond in terms of one of the three services significantly more often than the content question ('who do you want to talk to') of phrase 0.
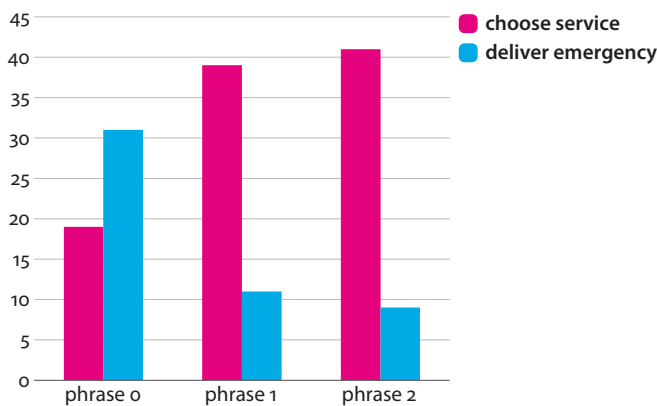

Figure 1. Content (0) vs. alternative question (1 and 2)

A χ^2 analysis of phrase 0 and phrase 1 with $p < 0.05$ showed that callers respond to the alternative question in phrase 1 significantly more often with a choice for one of the three services ($\chi^2 = 16.42$, $p < 0.001$). This is also the case when we compare phrases 0 and 2 ($\chi^2 = 20.17$, $p < 0.001$) (Table 3).

Table 3. Content (0) vs. alternative question (1 and 2)

	Emergency delivery	Choice of service	χ^2
(0)	31	19	
(1)	11	39*	$\chi^2 = 16.42$ $p < 0.001$
(2)	9	41*	$\chi^2 = 20.17$ $p < 0.001$

The alternative questions (*) thus appeared to be successful when it comes to making callers choose an emergency service rather than tell their emergency.

The second question is whether the adjective 'national' we added to the identification phrase had managed to bring callers to identify the location of the emergency in a nationally recognizable manner, that is, mention the name of a town rather than just the name of a street. Our sample of 3 times 50 calls showed us two things on this score. First, the problem did not appear to be as big as the earlier corpus had made it seem. Remember that the earlier set of 120 calls was selected by the call-centre for being long calls, while the 2183 calls in the workplace experiment were a random sample of calls over a 9-days period. In fact, in 92% of the 50 calls using phrase 0, that is, without the addition 'national' in the identification phrase, callers provided the name of a town without further prompting. Second, the new identification phrase 'national emergency call-centre', was not more successful than the original phrase in bringing callers to produce a nationally identifiable location. The two new phrases still produced instances (around 10%) such as extract 6 where the caller in line 5, following a call-centre identification as 'national' (line 1), identifies the location of the fire in terms of a street name ("Toby street").

(6) [1.15.13]

```
1  CT  landelijke alarmcentrale 1-1-2,
       national emergency call-centre 112
2      wilt u doorverbonden worden met
       do you want to be connected to
3      politie, brandweer of ambulance?
       police, fire brigade or ambulance
4   C  brandweer,
       fire brigade
5      want er is brand bij de schoolplein in Tobystraat.
       cause there's a fire at the school yard in Toby street
```

When we now relate these results to the three different phrases used in this work-place experiment

(0) *Alarmcentrale 112. Wie wil u spreken?* (Emergency call-centre 1–1–2. Who do want to talk to?)

(1) *Landelijke alarmcentrale 1–1–2. Wilt u politie, brandweer of ambulance* (National emergency call-centre 1–1–2. Do you want police, fire-brigade or ambulance?)

(2) *Landelijke alarmcentrale 1–1–2. Wilt u doorverbonden worden met politie, brandweer of ambulance* (National emergency call-centre 1–1–2. Do you want to be connected to police, fire-brigade or ambulance?)

we can conclude that:

– the alternative questions in phrases 1 and 2 were more successful than the content question in phrase 0, in bringing callers to choose one of the three emergency services

– the addition in phrase 2 of the words 'to be connected to' did not make this phrase more successful in achieving this goal than phrase 1

– the addition of the adjective 'national' to the identification phrase did not make callers produce significantly more nationally identifiable locations.

Therefore, our advice to the emergency call-centre was to adopt a new opening phrase that would include the successful alternative question and leave out both the unsuccessful 'connected to' from phrase 2, and the unsuccessful addition 'national' to the identification phrase. The new opening phrase resulting from these considerations was "*Alarmcentrale 112. Wilt u politie, brandweer of ambulance?*" ('Emergency call-centre 112. Do you want police, fire-brigade or ambulance?') which the national emergency call-centre indeed adopted as its opening phrase.

Type-conforming answers of wh-questions and alternative questions

In the subsection above the results of this study were phrased from an applied, call-centre perspective as a choice between (i) choosing an emergency service and (ii) presenting the details of the emergency, and it was concluded that the newly designed alternative question was more successful than the wh-question at making callers choose the former option. From a theoretical perspective these results can be rephrased as that 62% of the wh-questions (31 out of 50) received non-conforming answers (i.e. a presentation of the emergency) as opposed to an average of 20% of the alternative questions (phrase 1: 11 out of 50; phrase 2: 9 out

of 50) (see Table 3). The alternative questions thus produced significantly more type-conforming responses than the wh-questions. What does this mean?

An explanation could lie in callers' pre-alignments. One of the issues for the national call-centre is that callers appear to be pre-aligned to tell their emergency and not to choose a service. The call-taker's question in the opening phrase thus has more work to accomplish than just ask information from the caller, it also has to counter the caller's expectations and align the caller with the communicative task of the call-taker, i.e. to gather the information required to transfer the caller to a local dispatch centre. Callers' non-alignment may add significantly to the difficulty they experience with the who-question, since it may not be immediately clear to them what category of whos they are supposed to choose, whereas the alternative question solves this problem by simply listing the answer options. It may well be therefore, that in a context where callers are prepared for these questions, the percentage of conforming answers, also for the wh-question, would be much higher.

In addition to these issues, our analysis also revealed another matter that raises questions about the relation between question-types and their conforming answers: 42% of the callers producing non-conforming responses to the wh-question did *not* show an orientation to their answers as dispreferred (cf. Table 4 below: 50 calls; 31 non-conforming answers; 13 of these: no orientation to dispreference). Let us consider the contrast between extracts (7) which shows a non-conforming answer that the caller treats as dispreferred, and (8) with an equally non-conforming answer that is not treated as such.

(7) [0.27 15]

```
1  CT   alarmcentrale 112, wie wilt u spreken?
        emergency call-centre 112, who do you want to talk to?
2  C    eh, ja maakt mij niet zo veel uit,
        uh, well doesn't make much difference to me,
3       maar eh, bij kilometerpaal 150.4 op de A28
        but uh, at kilometre pole 150.4 on the A28
4       tussen Hoogeveen en Groningen
        between Hoogeveen and Groningen
5       staat een hert eh op de vluchtstrook.
        there's a deer uh in the emergency lane
6  CT   ↑oh. op de A28 150.4.
        ↑oh. on the A28 150.4
```

(8) [0.13 15]

```
1  CT   alarmcentrale 112, wie wilt u [spreken?
        emergency call-centre 112, who do you want to talk to?
2  C                                 [goede-
                                      good-
```

```
3   C    goedemiddag u spreekt met Van der Waal,
         good afternoon my name is Van der Waal
4        ik zit nu in de auto,
         I am in a car right now,
5        ik werd net tot staan gebracht door een eh,
         I was just stopped by an uh,
         door een meneer in een eh Nissan.
         by a gentleman in an uh Nissan.
```

In both calls, the responses of the callers to the who-question are non-conforming as they do not contain a reference to a 'who' that can be 'talked to'. But while the caller in extract (7) clearly orients to the non-conforming character of his response (2–3: "uh well doesn't make much difference to me, but") indicating that he leaves it up to the call-taker to decide which service should deal with this, the caller in extract 8 launches into a greeting + identification (3) and a subsequent incident report (4–5) that does not show any orientation to its possibly dispreferred character.

   In line with our earlier observation we may again consider the possibility that callers' first turns are pre-designed as a result of callers' expectations rather than being answers to the call-taker's opening question. Indeed, the early start of the caller in line 2, before the call-taker has finished her question, seems to show this pre-alignment: the caller knows what he is going to say and will not be distracted from that by the call-taker's question. Yet, the break-off in line 2 and the restart in line 3 also show that the caller has heard the question but chooses not to adapt his turn to it.

   The conversation analytical concept of preference is a fundamentally social and interactional phenomenon (Pomerantz 1984; Sacks 1987; Raymond 2003; Schegloff 2007; Pomerantz & Heritage 2013). The preference of a first pair-part for a particular second pair-part cannot be established only on the basis of the first pair-part. In Pomerantz' (1984) formulation "a next action that is *oriented to* as invited will be called a preferred next action; its alternative, a dispreferred next action" (emphasis added) (Pomerantz 1984: 63). If preference is established not only by the first pair-part but also by the orientation observable in the second pair-part, then we can say that, just as the caller in extract (8), callers to the national emergency call-centre treated 42% of their non-conforming answers *not* as dispreferred. The 100 calls in which the alternative question ('police, fire-brigade, or ambulance') was used produced 20 non-conforming answers, but all but one of these non-conforming answers (*n* = 19) were oriented to as dispreferred as in extract (9) where the caller uses a strategy similar to the caller in extract (7): they address the question by saying that they are not going to answer it and precede this by elements such as a pause, 'uh', or 'well' that defer the non-conforming answer to later in the turn (Sacks 1987).

(9) [1.31]

```
2  CT:  landelijke alarmcentrale 112,
        national emergency call-centre 112
3       wilt u doorverbonden worden met politie, brandweer of
        ↑ambulance.
        do you want to be connected to police, fire-brigade or
        ambulance.
4       (2.0)
5  C:   e::h, niet direct. ehm, (0.5) ik spreek nu met 112?
        u::h, not directly. uhm, (0.5) is this 112 now?
6  CT:  ja.
        yes.
7  C:   okay, ehm, nou ja, ik heb een beetje een vraag.=
        okay, uhm, well, I have sort of a question
8       =ik zie hier e::h twee mensen die staan graffiti te
        spuiten,
         I see u::h two people doing graffiti here,((continued))
```

On average, callers' pre-alignment will be equally strong in all calls, irrespective of the opening phrase, yet the alternative question is more successful in making callers design their opening turn as an answer to that question – whether preferred or dispreferred – than the who-question. Table 4 shows that 1 out of 20 non-conforming answers that was *not* designed as dispreferred amounts to 5% for the alternative questions versus 42% for the who-question.

Table 4. Non-conforming responses

Question type	Non-conforming responses		Non-conforming responses oriented to as			
			dispreferred		*not* dispreferred	
wh-questions (phrase 0) ($n = 50$)	31	(62%)	18	(58%)	13	(42%)
alternative questions (phrases 1 + 2) ($n = 100$)	20	(20%)	19	(95%)	1	(5%)

This relative frequency of callers showing a dispreference for non-conforming answers (Table 4, columns 3 and 4) is more relevant for our understanding of type-conformity than the mere difference between the amounts of conforming answers (Table 4, column 2). As we argued, callers may have found themselves unable to produce a type-conforming answer to the who-question and this may account for (part of) the different numbers of conforming answers produced by the two question types. But this cannot explain why non-conforming and possibly pre-designed answers to the alternative questions would be treated more often as dispreferred than similarly non-conforming answers to wh-questions.

It seems that callers treat the alternative question as more strongly preferring a type-conforming answer than the who-question.

6.   Conclusion

As an example of applied conversation analysis, our investigation is an illustration of the three-step cycle of intervention research: diagnosis – intervention – evaluation (Koole & Mak 2014). The national emergency call-centre wished to shorten the length of calls in order to free lines and call-takers for new calls, and for the emergency services to reach the emergency locations sooner. Our first step was diagnostic: we analysed 120 long calls to identify causes in the interaction for calls to be long. One possible reason we identified was that callers make *turns* longer than required – in stead of only asking for police, fire-brigade, or ambulance, they reported their emergency – and a second possible reason was that they forced call-takers to make *sequences* longer – callers did not provide the required location information thus forcing call-takers to expand the sequence. Our second step was an intervention: we designed new opening questions for call-takers that were aimed to make callers ask only for one of the three services, and to supply the appropriate location information. In our third step we tested the effectiveness of these new questions by conducting a workplace experiment in which call-takers used the different questions and we performed quantitative and qualitative analyses to establish their success in shortening calls and in aligning callers to the communicative task of the call-taker.

The study supports Heritage & Robinson's "plea for eclecticism in applied conversation-analytical studies" (2011: 31), the idea that in order to be applied, conversation analysis may have to move beyond its traditional methodology. In this study, as well as in several other specimen of applied conversation analysis (Heritage & Robinson 2006; Kitzinger 2011; Koole & Mak 2014), we supplemented CA methodology with a workplace experiment and quantitative methods.

The experiment showed that the alternative question was significantly more successful than the content question in making callers choose one of the three emergency services rather than deliver their emergency. It also showed that adding a phrase to inform callers that they were going to be reconnected, ('do you want to *be connected to* police, fire-brigade or ambulance?'), did not add to the effect of the alternative question. Finally, the experiment showed that the addition of 'national' to the identification 'emergency call-centre 112' did not result in a significantly higher number of callers who presented the emergency location in a nationally identifiable manner.

It seems that the design features of the opening phrases that were aimed at altering callers' interactional behaviour *only by altering their assumptions* did not succeed, while the design features that also aimed directly at altering callers' interactional behaviour did. The phrase 'be connected to' was meant to contradict the assumption of callers that the call-taker is a dispatcher but did not increase the success of the alternative question. This seems to mean that the primary force that puts normative restrictions on potential second pair parts is the format type of first pair part (e.g. alternative versus content question), and not the information stored in the first pair part. Content information in the first pair part can play a sequential role when it is part and parcel of the question format, as in our example 'police, fire-brigade or ambulance' where the content is in the three alternative answers, but when content is added to the format such as our phrase 'do you want to be connected to' it does not seem to have an independent impact on the caller's answer options.[7]

A similar finding is the phenomenon that the change of the identification phrase (the addition of 'national') did not work to instruct callers that they should identify the location of the emergency for a non-local. From conversation analytical work as early as Sacks (1992, vol. I, part I, lecture 1 [1964]) we know that the way a call-taker identifies has a sequential impact on the way the caller should identify, yet in our workplace experiment, the adjective 'national' was meant to bring the caller not to a particular type of identification, but to a particular way of localizing the emergency, and different from an identification, localizing is not a sequentially relevant second to the call-taker's identification. Again it seems that it is primarily the normative order that holds between particular types of firsts and seconds that can be used to direct inexperienced callers, e.g. to Sacks' suicide prevention centre or our emergency call-centre. The information in the identification did not have an impact on the design of turns that are not directly sequentially related.

Then there is the issue that callers treat the alternative question as more strongly preferring a type-conforming answer than the who-question. This finding resonates with analyses of cross-cutting preferences. Sacks & Schegloff (1979) in their analysis of the organization of person reference note that a preference for minimization may conflict with a preference for recipient design, in the case of person reference the use of recognitionals. They conclude that when these preferences cannot be both satisfied "the preference for recognitionals [is] stronger than the preference for minimization" (1979: 19). And in his analysis of 'double-barreled' first pair-part utterances – an action such as an 'offer' being implemented

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7. It remains an empirical question how the grammatical embedding of content information in the turn impacts on its being taken up by a next speaker. Obviously, the phrase 'be connected to' used here, is less conspicuous than a separate TCU such as 'you are going to be connected'.

by a form such as a 'question' – Schegloff (2007) concludes for a case where the preference of the action conflicts with the preference of the form that "it is [ ] the preference structure of the action being implemented which dominates here and shapes the construction of the second pair part turn, not that of the action's vehicle" (2007: 77–78). Although these analyses refer to contexts where two different types of preferences are simultaneously operative they do reveal that participants may treat one preference as stronger than another preference. In our analysis we seem to be concerned with one preference type, the preference for type-conformity, but given the different implementations of what participants treat as 'conforming' – an answer *form* in the case of yes/no-interrogatives and alternative questions, an information *type* in the case of wh-questions – it may well be that participants also here treat one preference relation as stronger than another. In their recent review of preference research, Pomerantz & Heritage conclude that "preference phenomena are more complex than they tend to be treated" (2013: 223) and we gladly offer these results and discussion as a contribution to the further exploration of this complexity.

It appears that applied CA can be characterized not only as being eclectic, but also by the fact that even when the aims are applied, the analysis towards them can produce fundamental CA insights with respect to the organization of interaction.

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