

Reading Meters: Vision, Instrumentation and Evaluation in Voluntary Post-Licence Training for Older Drivers

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Abstract Out-of-home mobility, i.e. the possibility for individuals to move and participate in activities outside their immediate home environment, contributes to the overall well-being of (older) members of society. Private car travel, as one means of mobility, enables seniors to continue leading active, autonomous lives but, at the same time, requires skills and abilities that they may be losing or lacking. The chapter provides a social-interactional perspective into mobility at an older age: it adopts a qualitative research approach, ethnomethodological conversation analysis, and draws on audio and video recordings of voluntary post-licence training to examine how older drivers may take up and deal with possibly age-related challenges as they drive in real traffic in real time. The chapter focuses on a two-minute fragment of such a journey and explores how a potential problem in the driving activity emerges; how it is used as a basis for instruction, on the one hand, and self-reflection, on the other; and, finally, how old age as a category is first evoked and then dismissed in interaction.

* Dr Rauniomaa and Dr Laurier are responsible for identifying the phenomenon, analysing the data extracts and writing the chapter. Prof. Summala and his research team collected the data and prepared them for analysis. Prof. Summala also complemented analyses of the video data with observations from additional research material.

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Keywords: advice-giving, ageing, age-related challenge, age-related decline, cars, car travel, conversation analysis, ethnomethodology, evaluation, driving, driver education, instruction, instrumentation, mobility, older drivers, out-of-home mobility, post-licence, self-reflection, training, vision

1 Introduction

A key concern in maintaining an active, autonomous lifestyle through adulthood and into old age is out-of-home mobility, i.e. the possibility for individuals to move and participate in activities outside their immediate home environment (e.g. Mollenkopf, Marcellini, Ruoppila, et al. 2002; Siren & Hakamies-Blomqvist 2009; Webber, Porter, & Menec 2010). Out-of-home mobility contributes to the overall well-being of senior citizens, benefitting them physically, psychologically as well as socially. Transport makes out-of-home mobility possible by providing access to goods, services, people and places, and it enables both ‘serious’ travel that addresses a distinct need, such as running errands, and ‘discretionary’ travel that generates enjoyment, such as spontaneous outings with friends (Davey 2007). Furthermore, it is not only journeys that are in effect undertaken but also ‘potential travel’ that shapes out-of-home mobility: knowledge about being able to travel on a whim or out of acute necessity contributes to how mobile senior citizens consider themselves to be (Metz 2000).

Automobility constitutes an increasingly significant mode of transport for senior citizens, with the amount of older licenced car owners generally on the rise and the current transportation

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infrastructure geared heavily towards car travel (e.g. Alsnih & Hensher 2003; Bartley & O'Neill 2010). While automobility gives senior citizens opportunities to continue leading mobile lives and thus to sustain their well-being, it may at the same time pose them with various challenges. Gandolfi (2010) identifies three types of age-related decline that older drivers may suffer: 1) physical (e.g. restricted movement of head and neck, causing difficulties in scanning the road environment), 2) cognitive (e.g. trouble in processing information, causing slower reactions), and 3) visual (e.g. problems with sight, causing hitches in reading road signage and markings). Older drivers who are affected by such impairments have been found to cope with them by means of self-regulation, i.e. by reducing driving or avoiding specific driving situations (e.g. Raitanen, Törmäkangas, Mollenkopf, et al. 2003; Charlton, Oxley, Fildes, et al. 2006; Molnar, Charlton, Eby, et al. 2013), or, as a more drastic alternative, to cease driving altogether (e.g. Adler & Rottunda 2006; Musselwhite & Shergold 2013). While they generally show good self-judgement of changes in their driving skills and have good ability to adapt to those changes, older drivers, and women in particular, may lack in confidence as drivers and would often benefit from additional training (Musselwhite & Haddad 2010; Siren & Meng 2013). Indeed, it has been suggested that post-licence driver education could provide for more opportunities to practice driving, to self-reflect on one's skills as well as to interact with others in an environment where one feels safe to express one's views (Hatakka, Keskinen, Gregersen, et al. 2002; Nasvadi 2007).

In this chapter, we shall examine how older drivers may themselves take up and deal with potential age-related challenges as they drive in real traffic in real time. We shall step into a car, so to speak, with an older driver for a fragment of a journey and explore how a potential problem in the driving activity emerges; how it is used as a basis for instruction, on the one hand, and self-reflection, on the other; and how old age as a category is first evoked and then dismissed in interaction. The chapter draws on ethnomethodological conversation analysis and on audio and video recordings of voluntary post-licence training for older drivers.

2 Data and Method

The data used in the study were collected by Prof. Heikki Summala and his research team (Esko Lehtonen, Isa Dahlström, Harri Hiltunen, Jarkko Hietamäki and Jami Pekkanen), in the Traffic Research Unit at the University of Helsinki, Finland, in 2010. The data consist of voluntary post-licence training sessions for older drivers and include video recordings that capture the vocal and bodily conduct of participants inside a car. Additionally, eye recordings and car telemetry data of the sessions are available. The drivers are women between 59 and 70 years of age who, at the time of data collection, had a valid driving licence but who had not driven a car for a long time and had little driving experience overall. The training included three one-hour driving sessions in real traffic in real time. During the sessions, the drivers were assigned various tasks that were aimed at the drivers gaining practice in driving and the instructors gaining information to evaluate, and eventually to help the drivers improve, the performance. The drivers gave their informed consent for the use of the data for research purposes. For a description of the data collection process (in Finnish), see Summala, Lehtonen, Dahlström, et al. (2011).

The video recordings include instances where drivers explicitly refer to challenges that they face in driving or handling the vehicle: these concern different visual and physical impairments (see Gandolfi 2010), such as difficulties in seeing meters on the dashboard and traffic signs in the surrounding environment or trouble in positioning oneself appropriately inside the car and turning to look at relevant other road users. The challenges are often presented by the driver, and treated by the instructor, as possibly age-related and as potentially problematic in terms of the ongoing driving activity. For this chapter, we have selected one such case to explore in close detail.

In examining references to possibly age-related challenges in the data and in presenting the particular case at hand, we draw on ethnomethodological conversation analysis (EMCA). Based on this approach, we understand human activity and interaction to rely on the categories that members of society or a particular community use to recognise the actions of others and produce their own

actions as recognisable (see, e.g. Francis & Hester 2004; Garfinkel 1984 [1967]; Ryave & Schenkein 1974). Furthermore, we are interested in sequences of interaction where the design and timing of a vocal or embodied action builds on what has occurred immediately before and, in turn, impacts on what comes next (see, e.g. Heritage 1984; Schegloff 2007). In this way, we aim to uncover the practices and resources through which participants construct the meaning and order of their everyday conduct on a moment-by-moment basis. Potential age-related challenges, for example, are examined as they gradually become manifest in participants' talk and other conduct and as participants in this way evidently orient to them in social interaction.

A classic problem in EMCA studies is that of 'omni-relevant' categories such as doctor and patient during a medical consultation or teacher and student in an instructional setting. While these categories are always potentially relevant, finding where the parties to the activity actually do orient toward them or draw upon them as a resource is harder to establish. In the case of older drivers taking driving lessons during a research project, there are anyway an even more challenging number of seemingly omni-relevant categories: older person being the one that is the concern of this book, but also driver and passenger, instructor and pupil, researcher and participant. A number of these converge around age in slightly different ways, the study having the relationship between age and driving as its topic but needing to extract information in particular ways. In our analysis of the materials, an abiding problem has been finding any events on the road where age can be disentangled from those other categories, as we shall see in the fragment that follows.

3 Vision as an Emergent Challenge

The fragment examined in this chapter runs for about two minutes and, as it unfolds, highlights different elements that become relevant during the training, i.e. vision as an ability that may change over time and that can be tested and evaluated, in-car instrumentation as a resource for interpretation and instruction, and evaluation as a possibility for the instructor to guide and the driver to self-reflect. The fragment involves four participants: at the front, the older driver-pupil

behind the wheel and the instructor beside her, and, at the back, a researcher who is in control of data collection and another instructor who here acts solely as an expert observer. It is the second day of training for this particular driver, and she is following a specific route under the instructor's guidance. The fragment is presented as transcripts and framegrabs, which have been edited in order to protect the anonymity of the participants. In the transcripts, RES refers to the researcher, DRI to the driver and INS to the instructor at the front (see Appendix for other transcription conventions). The location of the framegrabs in relation to the transcripts are indicated with asterisks (*) and plus signs (+).

Setting up a Test and Revealing a Potential Problem The fragment begins some 20 minutes into the training session when the driver has just entered a carriageway with multiple lanes. In the first extract, the researcher sets up the situation as a test by requesting the driver to read the milometer on the dashboard (lines 01–03), which involves the driver's having to shift her gaze from the roadway to relevant instrumentation on the dashboard in the near space and thus touches on issues of vision.

(1)

01 RES: kertoisittekko mulle että,
could you please tell me,
02 *kuinka monta +kilometriä täällä autolla on ajettu- (.) ajettu,
how many kilometres this car has been drivenen- driven,
03 että mitä se mittari< (1.0) matkamittari näyttää.
that what does the meter< milometer show.
04 DRI: °ootappa nyt°, kuustuhatta neljäsataa viis.
°hang on now°, six thousand four hundred five.
05 RES: joo. kiitos.
yes. thanks.

FIG. 1 HERE

The researcher makes the request in order to glean information that can later be used to assess the driver's multitasking performance: the driver is deliberately put in a situation where she has to control the car, take notice of relevant events taking place outside the car and the request is also then asking her to attend to a single detail inside the car, namely a figure displayed in the milometer on the dashboard. Requests, as an action produced through talk, are designed so as to make relevant a particular type of response: typically, if a response is not provided right away, the delay is analysable—or, if a response is not produced at all, that is also analysable as, for instance, a refusal or a failure (Schegloff 1968; Schegloff & Sacks 1973; Rauniomaa & Keisanen 2012; Stivers & Rossano 2010). In this case, the request is being used with the expectation that with an older driver it can be used to measure how the driver manages multitasking, especially as it involves alternating between looking near and far while driving (e.g. Wikman & Summala 2005). We can note that she is not being asked to read the speedometer, despite that being the more commonly used instrument in driving practices, but another relatively standardised instrument that requires similar focusing on details inside the car. In this context, reading the milometer has the additional value of distancing the driver from the information that she is asked to provide: a key piece of information car owners—rather than drivers—are expected to know is the mileage of their car because this number indexes cycles of car servicing, parts replacement, financial value and eventual sale or scrapping. For on-road driving performance, reading the milometer is not relevant at all. In a sense, then, the car itself here serves as an instrument for investigating the capacities of the driver because it is unfamiliar to her and, like an optometrist's consultation room (Gibson, Webb, & vom Lehn 2011), has previously unseen optical characters for her.

The driver in this fragment does then orient to the relevance of an immediate response and the test that has been set up: she turns her gaze towards the dashboard to look for the requested mileage on the milometer when the researcher's turn is still under way but already recognisable as a request for information (Fig. 1) and continues to glance at the milometer during her response. Vision thus

becomes a relevant ability that the driver is to draw on in this test setting. The driver also inserts a counter-request, *ootappa nyt* 'hang on now' (line 04), which serves as a preface to an eventual compliance and buys the driver more time to provide the actual answer. During her request for time, the driver continues glancing at the milometer and, immediately after the request, she goes on to provide the mileage (line 04). By signalling a slight interactional delay, the driver's response reveals a potential problem with the reading of the milometer, one that may be consequential not in terms of how the driver fares in the multitasking situation but in terms of interaction and participant categories that are invoked through the design and timing of conversational turns.

Evaluating and Giving Advice The second extract shows how the instructor draws on information available in the instrumentation in front of him, with reference to their present surroundings, to evaluate the driver's performance, and how the driver responds in a subtle but significant way. After the driver has read the milometer (extract 1), 23 seconds elapse as she drives straight ahead and no one speaks. The instructor can be seen to shift his gaze between traffic ahead and the instrumentation in front of him before he comments on what he has seen (lines 07–09).

(2)

06 (23.0)
07 INS: n:yt saavutettiin viimein seitkyt kilometriä tunnissa.
now we finally reached seventy kilometres per hour.
08 .hhh tultiin kiihdytyskaistalta:,
.hhh we came from the acceleration lane:,
09 (2.0) vähän alta kuuttakymppiä. liikenteen sekaan.
at a little under sixty. into the traffic.
10 *(1.0)
11 INS: se on vaan helpompaa jos kiihdyttää heti (siellä).
it is simply easier if one accelerates right away (there).
12 (1.0)
13 DRI: .mt
14 (15.00)
15 INS: jatketaan taas Pasilan suuntaan.
let's continue towards Pasila again.

FIG. 2 HERE

We can again remind ourselves here of the institutional nature of both the vehicle being used (i.e. a specially adapted car for both training and research), the identities of occupants of the car (e.g. pupil/subject, instructor and researcher) and the ongoing courses of action (e.g. instruction, evaluation and research data collection). Unlike everyday car travel where the passenger has no instruments in front of them and has to be careful about looking at the driver's instruments at all (Watson 1999), here the instructor constantly monitors instruments, measuring aspects of the driver's performance, such as speed and eye fixations.

In this extract, the instructor evaluates the driver's performance with reference to the current traffic situation, picking up a problem in the speed at which the driver has entered the carriageway this time. He does this as a noticing (see Keisanen 2012) about the present speed of the vehicle, *now we finally reached seventy kilometres per hour* (line 07–09), flagging the problem with the initial temporal marker *nyt* 'now' and the subsequent marker of delay *viimein* 'finally'. The instructor continues by contrasting their present speed, which corresponds to the current speed limit, with their speed on the acceleration lane earlier: *we came from the acceleration lane at a little under sixty into the traffic* (lines 08–09). The evoked contrast implies that the driver has failed to monitor the speedometer, or interpret her sense of speed, and adjust the speed of the vehicle to this specific traffic situation.

It is worth noting that the instructor's noticing uses a formulation of their speed in terms of number (i.e. 70 km/h and 60 km/h), rather than 'fast' or 'slow'. His measure of their speed is obviously taken from his instrumentation, but it is also produced as units of 10 km/h rather than an exact figure (e.g. 61 and 72). What this form of presentation makes relevant is that driving speeds are

categorised for different road types rather than in fact the measures the instructor is reading off his instruments as a mere noticing. His noticing is occasioned by the driver reaching each road-type-relevant speed and where she did this. Vision is not brought up explicitly, but it remains an important underrunning theme: monitoring the speed of one's vehicle is key to entering and keeping up with the flow of traffic at different points in time and space.

In response to the instructor's noticing, the driver tilts her head from side to side and puckers her mouth (Fig. 2); the driver treats the noticing as containing potential critique, a negative evaluation of her driving. Moreover, the driver's facial expression and head movement can be seen as self-criticism², which in effect shows that the driver has competent knowledge of the driving activity. In other words, although the driver may have failed to pick enough speed on this particular occasion, she shows awareness of what is considered appropriate conduct in traffic, i.e. that the speed of the car should be adjusted with reference to road type and speed of other vehicles, and in line with relevant traffic regulations.

Having established that there was a problem in the driving activity, the instructor goes on to give advice to the driver: *it is simply easier if one accelerates right away there* (line 11). The advice-giving builds on and delivers the upshot of his earlier noticing. It suggests what the driver could do differently on acceleration lanes: it presents accelerating to 70 km/h in the acceleration lane as being the undemanding way of getting into traffic. Therefore, rather than this being a capability problem which the instructor has attributed to the driver, he is presenting her driving as having here taken the more challenging approach to entering a flow of traffic. The problem is thus not to be understood as persistent and unalterable; on the contrary, the instructor has in effect commended the

² It is worth noting that the driver responds similarly when driving over a speed hump slightly too fast and on other occasions where it is the vehicle, rather than the instructor, that provides feedback about her driving. Furthermore, in arguing that *the driver treats the instructor's noticing as containing potential critique*, we do not wish to present the instructor in any negative light whatsoever. On the contrary, during the first training session on the day before, the instructor gave the driver detailed instructions on how to accelerate on this particular motorway entrance ramp and during this second session, at the beginning of the ramp, he primed her very positively for the task.

driver's picking enough speed on an acceleration lane earlier (data not shown). However, we also have to maintain the ongoing project here of the 'lesson': the advice-giving is a recognisable instructor's occasioned recommendation that the driver can take home from the situation in order to improve her driving in the future (see, e.g. Vehviläinen 2010).

Self-reflection Again, the driver continues to drive ahead and, after driving in silence for almost 30 seconds, she brings out an issue with her vision. In this third extract, then, the driver begins to deal explicitly with a potential problem that has earlier been revealed but only been alluded to.

(3)

16 (28.0)
17 DRI: (mulla on) juuri se että kun,
(I have) exactly the issue that when,
18 (.) lähinäkö (.) on huonontunu ni,
near-sight vision has gotten worse so,
19 mulla on kaksteholasit mutta ku mä en oikein,
I have bifocal spectacles but because I don't really,
20 (.) kauas katsoessa en niitä tarvi:,
looking far I don't need them,
21 ni ei sitte tule,
then I usually don't,
22 *(.) se +että näkee niinku,
to see like,
23 [juuri näen vielä mittarin, ai niin (juu),
I only just see the meter, oh that's right (yes),
24 INS: [°joo°, (.) (se on) ihan vasemmanpuoleista kaistaa,
°yes°, (it is) the lane on the very left,
25 (8.0)

FIG. 3 HERE

It is here that the driver makes age relevant through self-reflection, a negative assessment of her near-sight vision and 'bifocal spectacles' which are a *category resonant description* (Stokoe 2012),

not just for the category of age but of course for the decline of visual capacities in old age: (*I have exactly the issue that when, near-sight vision has gotten worse so, I have bifocal spectacles but because I don't really, looking far I don't need them, then I usually don't* (lines 17–21). The driver's self-reflection connects back to a prior sequence (extract 1) and accounts both for the interactional delay in providing a reading of the milometer (not to mention the fact that it may have been erroneous) and an understanding of that early request as initiating a test during the driving. Not only does it account for the delay but shows that the driver is aware of her visual difficulties and has taken the appropriate measure by owning bifocal spectacles. At the same time, the driver reasserts that she is a suitable participant in the training by arguing that it is only her near-sight vision that has gotten worse (lines 17–18); after all, being able to drive without spectacles was a recruitment criterion for the participants of the training and research project because spectacles would obstruct relevant research instrumentation from gleaning data. Moreover, the driver suggests that because car-driving involves 'looking far' rather than near, she 'usually' doesn't have the bifocals on (lines 19–21). As we noted earlier, the central instrument required for driving is the speedometer although, as Sacks (1992) observed many decades ago, speed is much more commonly established and assessed by the experienced driver in relation to surrounding traffic.

Although her performance in this training situation does not have any serious repercussions, for instance, so that she could lose her licence, the driver may be treading treacherous ground here: does she have the vision needed in order to drive safely, or not? Is she able to draw on available, relevant resources, such as the speedometer, to judge what is the appropriate speed at each location? She addresses these concerns by glancing at the meters, lifting her hand from the steering wheel to point to them (Fig. 3) and noting that she is in effect able to see the meter without spectacles—if 'only just' (lines 22–23). In quite an elaborate way, the driver then conveys that the trouble that she has with her vision may affect her driving performance to a certain extent but are, nonetheless, only minor.

Some of the remedial work done by the driver is, however, overlapped by talk by the instructor, who responds to an earlier part of the driver's verbal contribution, the negative self-assessment. The instructor could here pick up the issue of wearing bifocal spectacles but, instead, he dismisses the driver's account by providing only a minimal response, a quiet *yes*, and then quickly moving on to deal with a more pressing matter, the current traffic situation where the driver should change lanes, by pointing out the lane on the very left (line 24). The driver goes along with the given directions and begins to prepare for a lane change by switching on the indicator. The movement of the car in and through space, at a certain speed, defines when certain actions are timely, so that changing lanes, for instance, is possible and relevant only at certain moments (Haddington 2010; Haddington & Keisanen 2009). When such a moment arrives, dealing with spatial and mobile issues often overrides any interactional activities: here, too, first the instructor and then the driver dismiss talk about the driver's vision and focus on the lane change.

Small Talk After the driver has successfully changed lanes, the instructor returns to prior talk. Here, the possibly age-related challenge, the driver's declining near-sight vision, is once more brought up, but in a way that is stripped off of any overtly evaluative quality.

(4)

26 INS: ööm:, (.) niin mitenkä päin se oli, nyt<
 ehm, so which way was it, now<

27 (2.0) ilman:: silmälaseja ei nää lähelle vai kauas.
 without glasses one can't see near or far.

28 DRI: .mt siis en< en näe lähelle ilman laseja.
 .mt I mean I can't< I can't see near without glasses.

29 INS: joo,
 yes,

The instructor returns to the issue of the driver's vision by requesting clarification: *so which way was it, now<, without glasses one can't see near or far* (lines 26–27). In this way, the instructor treats the driver's earlier self-reflection as relevant and his own direction-giving as interruptive of it. The request for clarification does not specifically highlight the trouble the driver has claimed to have with her vision or the effects it may have on her driving but provides an opportunity for the driver to elaborate on her self-reflection. It is inviting small talk about issues relevant to the present activity and signalling the instructor's newly established availability for such talk, not setting up a new lesson to be learnt for the driver. In response, the driver provides only a brief clarification, *I mean I can't see near without glasses* (line 28), which the instructor receipts with a *yes* (line 29). Both participants then fall silent, treating the matter as something that is dealt with to a satisfactory degree and that does not need to be pursued further, as a line of small talk or as anything else.

4 Conclusion

With this 2-minute fragment of data, we have begun to show how older drivers' performance is assessed through using the car's instruments both as a reading challenge for the driver and a source of 'objective' measures for the instructor and how these are occasioned and made relevant during the ongoing lesson as it unfolds on the road. We have shown also how it is the driver that introduced an age-related challenge, her declining near-sight vision, rather than the instructors or researcher(s). The relevance of age-related decline in capacities stems, however, from the earlier actions that revealed potential or actual problems, if not quite errors, that relate to driving: the driver is not reading the meters on the dashboard at relevant points in space and time, or at least she does not adjust her driving accordingly.

Matters of both vision and speed relate to what is considered appropriate or inappropriate conduct in traffic. Road users are expected to be able to manoeuvre their vehicles and to abide to speed regulations. In this fragment of data, the driver displays her awareness of both, by accounting with her declining near-sight vision for her failure to follow the speedometer to an adequate degree, and

by doing that accounting in a way that does not cast her in an overly negative light. The driver presents the challenge that she faces with her vision as affecting, but not compromising, her driving.

It is worth noting that all the drivers in the study had had a longer break in driving and had relatively little driving experience at the time of data collection. The drivers had therefore not been ongoingly adapting their driving skills to possibly poorer vision and other such age-related decline. In voluntary post-licence training, they are back in the position of reaching a required performance of skills and ongoing competence that will satisfy an instructor, who may not be a gatekeeper advising older drivers for or against driving, but a professional driver nevertheless, representing the highly regulated side of traffic and transport.

That said, we would like to argue that the voluntary and fairly informal nature of the post-licence training that we have examined here is key to the impact that it may have on encouraging older drivers to continue driving as well as to keep up and build up their skills and abilities. Possible age-related challenges may become relevant in older drivers' mistakes and failures when they drive in real traffic in real time. The way in which such mistakes and failures come about and become topicalised in talk also provide opportunities for older drivers to be guided and to self-reflect. When this takes place in a setting where the drivers are evaluated—and are able to evaluate themselves—in order to improve their driving but not, for instance, to renew their licence, older members of society can be seen to receive true support for out-of-home mobility.

Acknowledgements

Rauniomaa would like to acknowledge the Academy of Finland (decision number 251757) and the Oulu University Research Council for granting funding that made the preparation and completion of this chapter possible. Rauniomaa would also like to acknowledge the FLARE programme and fellows for making up such an encouraging and inspiring research community. The authors wish to

thank Dr Fredrica Nyqvist, Dr Anja K. Leist and Dr Jenni Kulmala for the opportunity to contribute to the book and the support that they provided throughout the publication process. The authors are grateful to Dr Tiina Keisanen for providing invaluable feedback on a previous version of this chapter and to other colleagues who have commented on the study on various occasions.

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Appendix

List of transcription symbols (based on Jefferson 2004).

wo[rd onset of overlapping talk

(0.8)	pause in tenths of a second
(.)	micropause, less than 0.2 seconds
wor-	truncated word
wor<	word ended abruptly but not truncated
hh	outbreath
.hh	inbreath
.mt	smack of the lips at inbreath
°word°	talk softer than surrounding talk
wo::rd	lengthening of a sound
word.	downward intonation
word?	upward intonation
word,	continuing intonation
(word)	uncertain hearing

Figure captions

Fig. 1 Driver turns her gaze from roadway to dashboard

Fig. 2 Driver puckers her mouth and tilts her head from side to side

Fig. 3 Driver glances at and points to meters on dashboard



Fig. 1



Fig. 2



Fig. 3