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Direct comparison of ADS and CDS: The Qaqet pear story corpus

In the following chapters, I present a direct comparison between adult and child-directed speech in Qaqet. An elicited narrative task was used to control for the content of the speakers' communications. Each adult told the same story twice, once to an adult and once to a child between 28 and 67 months old.

These narrations were videotaped, transcribed and annotated on various levels. The transcripts were then analysed for features that are known to vary between CDS and ADS: mean length of utterance (Chapter 4), disfluencies (Chapter 5), prosodic features (Chapter 6), speech acts (Chapter 7), corrective input (Chapter 8) and the lexicon (Chapter 9). Section 3.1 describes the methods, while Section 3.2 is dedicated to the data.

3.1 Methods of data collection

The present section is dedicated to the methodology of the comparative study. Section 3.1.1 introduces the pear film as a stimulus. In Section 3.1.2 the sampling and selection of participants is explained, the data collection methods are introduced and some challenges, along with their solutions, are presented.

3.1.1 The stimulus

The stimulus chosen for this study is the ‘pear film’ (Chafe 1980). The pear film is a video of approximately six minutes produced by Chafe et al. in 1975. It was designed to allow for cross-linguistic comparison of different people talking about the very same topic. Its content (see below for the complete summary as given by Chafe) is easy to interpret for people from different cultural backgrounds, and the film does not contain any language.

Chafe and colleagues (1980) used the stimulus successfully with people with such diverse language backgrounds as English in California, Chinese in Taipei, Japanese in Tokyo, Malay in northern Malaysia, Thai in Bangkok, Persian in Tehran, Greek in Athens, German in Berlin, Creole in Haiti, and K’iche’ and Sacapultec in Guatemala.

I chose the pear film as a stimulus because the villagers expressed great interest in videos during my first stay in Raunsepna in 2015, and asked me to bring some with me on my next visit. Showing the film thus promised to result in the relatively natural setting of someone telling somebody else about something interesting (albeit unusual) they had experienced during the day: ‘people’s mental processing of films appears in various ways to approach the processing of “reality”’ (Chafe 1980: xii). Additionally, telling bedtime stories is a common cultural practice in Raunsepna. In example (28) from Hellwig (2020) a grandmother describes how the children tell the stories to their friends afterwards:

- (28) *Ide resiit nanget de dama renngi aris. [...] Deip maget, de sa nyitlirang ngatit. De sa irang ngeresiit, naluqa amasiitka, imedu iani, de ngerenarliqa. [...] Tika amasiitka qatit. Sa qatira, mrama.. ama.. amaburlem nara. Be radrlem luqa amasiitka.*
 ‘They (the parents) used to tell them (stories) at night. [...] Then later you will right away see the little ones (children) go around. And they will right away tell this (same) story (to their friends), the (story) that they have just heard. [...] And so the story spreads. It now spreads to many (people). And they now know the story, too.’

The incentive to pass the story on to his older brother was also used during the recordings for the comparative corpus by a mother to motivate her son to listen (see (29)).

- (29) *Itnani qukun de nyisil barek ma S.*
 'Afterwards you go to tell the story to S.'

Apart from these ecological advantages, I appreciated the possibility of broad cross-linguistic comparison a widely used stimulus like the pear film would allow.

To comprehend the analyses in the next sections, it will be useful to know the 'pear film story'. Chafe (1980) describes it like this:

The film begins with a man picking pears on a ladder in a tree. He descends the ladder, kneels, and dumps the pears from the pocket of an apron he is wearing into one of three baskets below the tree. He removes a bandana from around his neck and wipes off one of the pears. Then he returns to the ladder and climbs back into the tree.

Toward the end of this sequence we hear the sound of a goat, and when the picker is back in the tree a man approaches with a goat on a leash. As they pass by the baskets of pears, the goat strains toward them, but it is pulled past by the man and the two of them disappear in the distance.

We see another closeup of the picker at his work, and then we see a boy approaching on a bicycle. He coasts toward the baskets, stops, gets off his bike, looks up at the picker, puts down his bike, walks toward the baskets, again looking at the picker, picks up a pear, puts it back down, looks once more at the picker, and lifts up a basket full of pears. He puts the basket down near his bike, lifts up the bike and straddles it, picks up the basket and places it on the rack in front of his handlebars, and rides off. We again see the man continuing to pick pears.

The boy is now riding down the road, and we see a pear fall from the basket on his bike. Then we see a girl on a bicycle approaching from the other direction. As they pass, the boy turns to look at the girl, his hat flies off, and the front wheel of his bike hits a rock. The bike falls over, the basket falls off, and the pears spill out onto the ground. The boy extricates himself from under the bike, and brushes off his leg.

In the meantime we hear what turns out to be the sound of a paddleball, and then we see three boys standing there, looking at the bike boy on the ground. The three pick up the scattered pears and put them back in the basket. The bike boy sets his bike

upright, and two of the other boys lift the basket of pears back onto it. The bike boy begins walking his bike in the direction he was going, while the three other boys begin walking off in the other direction. As they walk by the bike boy's hat on the road, the boy with the paddleball sees it, picks it up, turns around, and we hear a loud whistle as he signals to the bike boy. The bike boy stops, takes three pears out of the basket, and holds them out as the other boy approaches with the hat. They exchange the pears and the hat, and the bike boy keeps going while the boy with the paddleball runs back to his two companions, to each of whom he hands a pear. They continue on, eating their pears.

The scene now changes back to the tree, where we see the picker again descending the ladder. He looks at the two baskets, where earlier there were three, points at them, backs up against the ladder, shakes his head, and tips up his hat. The three boys are now seen approaching, eating their pears. The picker watches them pass by, and they walk off into the distance. (Chafe 1980: xiii)

3.1.2 Participants, procedure and challenges

The data for the pear stories were collected and transcribed with the help of community members in 2016 and 2017. I targeted people as participants with children between 24 and 48 months of age to allow for comparisons with the longitudinal data in our project.

Typically, in small communities, sampling is a challenging procedure (Schilling-Estes 2013: 31). As Kelly et al. (2015: 291) note, communities that speak lesser known languages are often rather small, which can make it difficult to get the appropriate sample size:

While families are interested and in some cases eager to participate, cultural practices and traditions take precedence and dictate their movement in ways that may be in conflict with the needs of the research project.

This study is based on a convenience sample for which a range of criteria have been applied. Each narrator tells the story twice: once to an adult, and once to a child. The adult listener is a spouse, close relative or friend. The children are either the narrator's own offspring, or they are sufficiently familiar with them to allow for a convenient experimental situation. An equal number of women and men function as narrators. It was not always possible to determine the exact age of the children beforehand.

Hence, the age of the children was occasionally misinterpreted, and the age of the children participating can be as high as 67 months, even though 48 months was the desired maximum age.

In order to ensure a high degree of control over the situation, I wanted only the narrator and the addressee present. In practice, this setting does not prevail in Raunsepna: people spend most of their time in groups with a varying number of children around. So usually, several adults would arrive for the recordings, accompanied by their children and their children's friends. Sending them away seemed inappropriate, as also described by Du Bois (1980: 6): 'Forcing the speaker to isolate herself from her family would probably have injected an alien tension into an otherwise relatively natural setting'. This resulted in various mixed-participant settings with multiple speakers co-constructing the story, which is the usual way of storytelling in Raunsepna (Hellwig personal communication). Those recordings were only included in the data analysis if the roles of narrator and listener were still predominantly fulfilled by the persons who were meant to do so.

After the arrival of the participants and some acclimatisation, I explained the procedure. One of the participants would watch a film on the laptop, while the other one, or the child, would wait outside. Then I set up the camera and the other person was called back. I went outside while the person who watched the film told the other about what happened in the video. There were no constraints regarding the manner of retelling apart from it being done in Qaqet and in such a way that the listener could make sense of it. The listener could interrupt the narration at any time to ask questions. Participants were explicitly asked to narrate in Qaqet, as this is the dominant language in Raunsepna and the language everyone uses when talking to their children (Marley 2013). This instruction was necessary as some speakers offered to talk in their lingua franca, Tok Pisin, to facilitate understanding for me. Usually, the participants had some questions concerning my expectations, which I answered as much as possible without revealing the actual target of the experiment. Some wanted to know if they would have to remember every detail of the film or if there would be a test concerning its content. Many were interested in the names of the fruits, how they should refer to them in the narration and how they would be prepared for a meal.

When there were two adults present, they discussed who would be the narrator and who the listener. However, if one of them had already told the story to a child, he or she was asked to tell the story again. I hoped

that this way, those participants who felt more comfortable telling stories would be the ones to narrate. Especially in the case of the younger children (36 months and below, i.e. the first year of the age range I aimed for), opinions regarding the ability of the child to listen and comprehend the story were always discussed previously with his or her caregivers, not with the intent to exclude them from the study but rather to encourage some discussion about storytelling with children. In the case of the older children, it was assumed that they would be able to follow the narration. What the participants estimated did not have a clear relation to the age of the children but rather reflected quite accurately the subsequent behaviour of the child: if the parents had doubts concerning the ability of the child to listen, the child usually turned out to be lacking in concentration. If the parents were optimistic about the whole situation, usually the children were interested, engaged and interacted vividly with the narrator. A challenge to a controlled experimental situation was that many children watched the film along with the narrators and it was not possible to send them away. Accordingly, the CDS-stories are often built on the narrators' assumption of a shared watching experience whereas the ADS-stories are not. It cannot be ruled out that the shared experience influenced the style of narration, but obvious differences other than occasional questions like, 'Did you see that, too?', posed to children, were not detected.

Another obstacle was that as soon as there were adults or older children present, people did not address the narration to the young children with the narration any more. This hints at a situation-centred style of caregiving as described for many non-Western communities by Schieffelin and Ochs (1986). Children are not positioned at the centre of attention, but they accompany adults during their everyday activities and thereby adapt to observational learning (see Chapter 2).

All the narrations were videotaped with a Zoom Q8 recorder plus internal microphone in a MOV/WAV format (1080/30). Recording times had to be chosen carefully, especially to avoid a noisy environment (Crowley & Thieberger 2010: 124), as the setup was hardly protected from ambient noise like afternoon rains or noisy garden work.

For most of the challenges, it was possible to find compromises. Still, I definitely lost 'some of the control which is sought after by Western scientists, but this seemed preferable to imposing an alien way and receiving stilted and unnatural narratives in turn' (DuBois 1980: 7).

Altogether, 48 stories were collected and transcribed, but only 20 stories were chosen for statistical comparison (displayed in Table 3.2 and 3.3). Stories told by siblings (13) were excluded as beyond the scope of this study, other stories were excluded from the study for various reasons (see Table 3.1; one particular reason may apply to more than one story).

Table 3.1: Reasons for the exclusion of collected stories.

Reason for exclusion	Stories excluded
There were two adult speakers present	5
There was no CDS-story for comparison	3
There was no ADS-story for comparison	2
The child was too old	1
The audio quality was too bad due to heavy rain	1
The narrator told another story than the pear story	1
The child cried all the time	1
The older siblings joined in storytelling	1
The whole family was present, the young child was not addressed	1

3.2 The data

In Section 3.2.1 I will introduce the corpus, then explain the transcription and coding process (Section 3.2.2). In Section 3.2.3 the different tiers in the examples are introduced. Following this, I will present the segmentation conventions with regard to intonation units (Section 3.2.4) and words (Section 3.2.5).

3.2.1 The corpus

Altogether, 20 pear stories were selected for the comparison of features. Table 3.2 shows background data for the CDS-corpus and 3.3 for the ADS corpus. Mean age of the speakers is 36.7 years, for the adult listeners 34.7 years, and for the children 44.3 months, but as can be seen from Table 3.2 and Table 3.3, there is a large amount of variation. For the children, due to the large variation in age, the results from different age groups will occasionally be addressed separately in the remainder of this work. For each speaker, an ADS and a CDS version is available. The CDS part of the corpus consists of 1,178 intonation units (6,754 words), the

ADS-part of 1,049 intonation units (7,511 words). Altogether the corpus has a size of 2,227 intonation units (14,265 words). Each participant told the story twice. In the sample selected for comparison, half of the stories, both ADS and CDS, are first retellings and half are second retellings. This was meant to distribute the effects of the repetition across the two conditions.

Table 3.2: CDS-pear data: speaker code (ID), age, sex and relationships of participants.

ID	Age (y)	Sex	Chi1	Age (m)	Sex	Chi2	Age (m)	Sex	Relationship Speaker/Chi
ABD	36	f	XCL	33	m	ZGT	72	m	mother
AGK	28	f	WMM	53	f	-	-	-	aunt
ALR	40	f	XMU	60	f	-	-	-	mother
AMT	25	f	YDS	36	f	YRA	51	m	mother
ARL	37	m	XAT	34	m	-	-	-	father
AVD	32	m	YMN	40	f	-	-	-	father
BCP	40	m	XRN	40	f	-	-	-	father
BLN	31	f	ZDL	28	m	-	-	-	mother
DCK	39	m	ZEA	34	f	-	-	-	father
DCM	59	m	XEB	67	f	-	-	-	grandfather

As can be seen in Table 3.2, older children were present in two narrations. For ZGT, this did not seem problematic as ABD still directed her speech to the primary listener XCL, as was apparent from her gaze and gestures. YRA's presence was not a problem as he was within the focal age range of the current study anyway. For the statistics on MLU (Chapter 4), disfluencies (Chapter 5) and prosodic features (Chapter 6), the mean age of the listening children has been used for correlations with age. In the section about interaction (Chapter 7), the age of the child originally intended as addressee is used as many of the speech acts under investigation serve to attain the attention of the relevant child.

In the CDS story told by ARL, his wife and the mother of XAT is also present, but watches quietly most of the time. She starts to interfere only once during the story, but she is mostly ignored by ARL. Her data have been included in the analysis only in Chapter 9, as she is the only adult producing specific baby talk words.

Table 3.3: ADS-pear data: speaker code (ID), age, sex and relationships of participants.

ID	Age (y)	Sex	Listener	Age (y)	Sex	Relationship Speaker/Hearer
ABD	36	f	XCS	12	f	mother
AGK	28	f	AMM	25	f	neighbour
ALR	40	f	ACL	61	f	neighbour
AMT	25	f	AHL	29	m	wife
ARL	37	m	ACP	38	m	neighbour
AVD	32	m	AMM	25	f	husband
BCP	40	m	ARN	34	f	husband
BLN	31	f	APA	34	m	wife
DCK	39	m	AJK	approx. 35	m	neighbour
DCM	59	m	AMI	54	f	husband

The choice of 12-year-old XCS as listener in the ADS-corpus is based on the fact that so far, the features that discriminate CDS from ADS are only found in the speech directed at young children. Significant differences have been previously reported, for example by Snow (1972), when comparing speech to toddlers with speech to six year olds. Twelve year olds, who also fulfill many adult duties in Raunsepna, can therefore be expected to be spoken to in language typical for ADS. There was high individual variation in how much interaction there was between child and narrator, as can be seen from Table 3.4.

Table 3.4: Utterance and word counts in the CDS-stories.

Speaker	U/CDS	W/CDS	Child	U/Child	W/Child
ABD	116	611	ZCL	3	9
AGK	153	1015	WMM	0	0
ALR	93	658	XMU	13	13
AMT	85	474	YDS	21	40
ARL	124	485	XAT	77	204
AVD	71	412	YMN	27	49
BCP	145	1096	XRN	8	8
BLN	124	526	ZDL	62	85
DCK	150	630	ZEA	11	11
DCM	117	847	XEB	14	40

Some children like ZDL, XAT, YMN and YDS interacted intensely with their parent while they were told the story. Others did not talk at all (WMM), or hardly spoke and were barely understandable (ZEA). This is partly due to the expectations of the parents: some, like BLN, made a great effort to have their child join them in telling the story. Hellwig (2020) describes co-construction stories with children as the normal social practice in Raunsepna. Others, like AVD in example (30), suppressed their children's conversational turns. AVD clearly emphasises that it is him, not his daughter YMN, who is supposed to talk.

- (30) *sung nanyi de ngu^{siit} banyⁱ*
 sung ne-nyⁱ de
 quiet from/with-2sg conj.
 ngu=siit barek-nyⁱ
 1SG.SBJ.NPST=tell_story BEN-2SG
 ‘be quiet so I can tell you the story’ (PearAVDP 005)

Still, this does not explain all the differences: DCK, for example, tried very hard to make his daughter ZEA speak without much success, while AVD's daughter was not impressed at all by his attempts to have her listen quietly and instead continued imitating what he said. When explaining the task, I tried to make it clear to all parents that they should narrate the story in such a way that the child would understand it. The results still reflect their own, culturally mediated, interpretations of appropriate behaviour in an experimental situation like the one I created.

For all pear stories, only the part where the story is actually told is counted for analysis: most speakers explicitly signalled the beginning and end of the story. The surrounding material, mostly clarification of the task among the speakers, was excluded from analysis. Only if off-topic scenes occur within the storytelling are they taken into account for the analysis.

3.2.2 Transcription and coding

Once the story had been recorded, I segmented and transcribed it with community members. If non-participants who were helping with the transcription were not able to understand what was said in the video, the original participants were asked. This was especially helpful in the case of unintelligible child utterances, as mothers and fathers could usually tell what the child said or, at least, intended to say.

Before every transcription session of CDS-stories I asked the transcribers to pay special attention to speech they perceived to be typical for speech directed to children. This happened only once, during transcription of the story told by ARL to his son XAT (see Chapter 9).

For the transcribers, it was especially challenging not to correct people when they judged the Qaqet utterances to deviate from what they perceived as correct language. It reassured them, however, that I always wrote a corrected version, too, which would allow me to identify children's non-target-like productions. The Qaqet version, as repeated by the speakers in the transcription sessions, and a free Tok Pisin translation were written into notebooks and checked when digitised in the evening. I marked all doubtful sequences where the audio/video data and the written version seemed to differ from each other, and verified them with community members.

The transcribed stories were then transferred to ELAN, exported to Toolbox and interlinearised. Once interlinearised, the data were transferred back to ELAN where a tier following the CHAT (Codes for the Human Analysis of Transcripts) annotation conventions (MacWhinney 2000) was created for the inclusion of features like hesitations, self-interruptions and special forms. An additional tier for the annotation of speech acts was also created. The exact coding decisions, if necessary, will be discussed in the relevant chapters. The various levels of annotation are shown here in the example format.

3.2.3 Example format and pitch display

In the Qaqet pear corpus, there are various levels of analysis, see (31):¹

- (31) (a) *masmasna retatnavet luqa*
 (b) masmasna te=tatna=pet
 (c) quickly:redupl 3pl.sbj=do_work:recp=on/under
 lu-ka-a d
 em-nc.sg,m-dist
 (d) 'quickly they help him' (PearALRA 092)

In line (a), the original text is given as dictated by the transcribers, and written down and edited by me with help of community members. The text separated by blanks corresponds largely to phonological words. For representation of hesitation pauses or self-interruptions, '..' is used.

1 The tier following the CHAT-conventions (MacWhinney 2000) is not included in the examples.

Line (b) of (31) shows the morpheme break as generated with the help of the program Field Linguist's Toolbox (SIL 2018 [2002]).² Line (c) contains the interlinearisation following the Leipzig Glossing Rules. In line (d), a free English translation is provided.

Speech is presented graphically through periograms (Albert et al. 2020), which is a novel way of displaying pitch, modulated with periodic energy, hence pitch intelligibility (Oxenham 2012), with the aim of creating a 'perceptually motivated representation of the pitch contour of an utterance' (Albert et al. 2018: 807). The workflow is described in Albert et al. (2018) and uses the Praat script *mausooth* (Cangemi 2015) for extraction, manual inspection, smoothing and interpolation of F0 trajectories in Praat (Boersma & Weenink 2021). Periograms are then created in R (R Core Team 2018) with *ggplot* (Wickham 2009), whereby periodic energy is represented through the transparency and width of the line. I opted for displaying pitch in semitones (st) rather than Herz (Hz) with a fixed pitch range window of 20 st to allow for maximum comparability across gender and across speaking style. The resulting periograms hence offer a highly information-rich and, most importantly, perceptually based representation of speech.

3.2.4 Segmentation: Intonation units

It is of great relevance to apply consistent criteria to identify utterance boundaries, especially if one wishes to study utterance-related topics like the mean length of utterance (MLU), or annotate features, such as speech acts, at the utterance-level (Rowe 2012: 202).

In this section, these criteria will be outlined. The unit of segmentation chosen here is the intonation unit (IU) as:

It is widely held to be the basic unit into which native speakers themselves chunk their utterances, i.e. it is seen as a unit of speech production which in some sense has a psychological reality for the speakers as opposed to a purely analytic construct 'invented' by linguists. (Himmelfmann 2006: 260)

Chafe characterises intonation units as each containing one single focus of consciousness:

² A dictionary and a parsing database for Qaqet, on which I could draw for interlinearisation, were developed by Birgit Hellwig.

It is intuitively satisfying to suppose that each intonation unit verbalizes the information active in the speaker's mind at its onset. (Chafe 1994: 63)

Accordingly, it makes sense to assume that it is also a real unit for the hearer, that is, conceptualised in such a way by the speaker that it is what he wants to present to his hearer as one single 'focus of consciousness'.

One intonation unit is identified by its coherent pitch contour. Intonation units may be, but do not have to be, divided by pauses. Of course, there is variation between languages in the form of those contours. The Qaqet patterns as described by Hellwig (2019) are listed in Table 3.5.

Table 3.5: Intonation contours in Qaqet (Hellwig 2019: 56).

Type	Prosody	Function
Final	final fall	declarative utterance; final member of a list
Non-final	final rise-fall	non-final unit of a declarative utterance (e.g., non-final clause, left-dislocated constituent, interjection <i>kuasik</i> 'no' and vocative); possibly also some phrasal units
Continuation	final level	self-interruption; introducing reported
	+ glottalisation	speech and non-verbal demonstrations
List	final rise	non-final member of a list
Content question	fall	interrogative (content question)
Quoted content	initial rise	reported interrogative (content question)
question	+ final fall	
Polar question	final rise-fall	interrogative (polar question)
Imperative	(initial rise) + final rise	imperative

Most of the contours in Table 3.5 pose no problems in segmentation, as each contour exemplifies a full intonation unit. However, additional criteria for segmentation have to be employed for the continuation type:

'Speakers interrupt utterances when searching for words or continuations. In such cases, the pitch level is held and the last word is uttered with final glottalization' (Hellwig 2019: 61). Usually after those intonation units, a pause occurs. After the pause, there are two possibilities, and segmentation in the current corpus depends on the continuation of the intonation pattern. If there is a reset in pitch after the pause, the pause is interpreted as a case of self-interruption and is then delimited an intonation unit. If the intonation pattern is continued, the pause is

interpreted as a hesitation pause (Himmelfmann 2014: 935). Thus the material before and after the pause is analysed as one single intonation unit, and is not segmented separately.

Example (32) and Figure 3.1 show a typical hesitation pause and its intonation contour. The article *ama* is uttered before the hesitation pause and repeated after it. Before the pause, it shows final glottalisation and carries level pitch. The intonation contour is not interrupted, but stays steady until the end where it shows a rise-fall. In this case, the material before and after the hesitation pause is not segmented separately but analysed as one single intonation unit.

- (32) *katrama.. amaningara*
 ka=tat ama ama=ninga-it-a
 3SG.M.SBJ=take ART ART=head-NC.SG.LONG-DIST
 'he takes the.. the cap' (PearALRA 107)

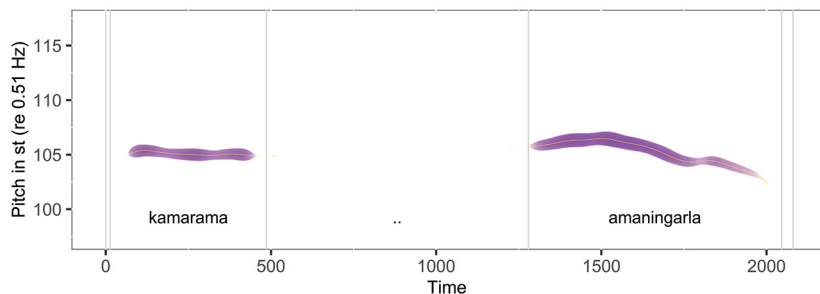


Figure 3.1: F₀-extraction for (32) (female speaker).

Example (33) with Figure 3.2 shows a typical self-interruption. The intonation contour is interrupted after *de* and restarted after the hesitation pause. The *de* is glottalised and involves a jump in pitch of nearly 100Hz. The boundary between the two intonation units thus occurs between *de* and *tatit*.

- (33) *deiva de.. tatit dera..*
 de=ip-a de ta=tit de=ta
 conj=conj-dist conj 3pl.sbj=go conj=3pl.sbj
 'and then.. they go and they..' (PearARLA 105/106)

I applied Himmelfmann's (2014: 936) suggestion that pauses above 500msec lead to abandonment of the original intonation contour because speakers usually cannot continue it. Random acoustical analyses

confirmed that this was a good approximation. Therefore, those strings of speech have been segmented separately unless it was clearly audible that the intonation contour continued. The reliability was tested with the help of one student trained in segmentation according to intonation units. She re-segmented four randomly chosen stories, half CDS and half ADS. This resulted in 95 per cent accordance between my own segmentations and hers for CDS and 78 per cent for ADS.

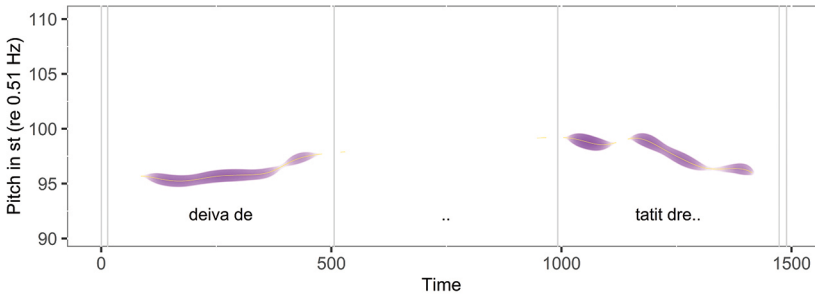


Figure 3.2: F0-extraction for (33) (male speaker).

3.2.5 Segmentation: Words and clitics

In this section, the segmentation of words in the corpus is explained. The differentiation is important for word counts and calculations of MLU. A clitic (without its host) is counted as a full word, whereas a suffix counts as a word only together with its host. This decision is based on the criteria proposed by Zwicky and Pullum (1983), explained by Spencer and Luís (2012), and applied to Qaqet by Hellwig (2019) with some additional criteria. Hellwig invokes three arguments for the analysis of a given formative in Qaqet, either as a clitic or as a suffix:

1. **Selectivity with regard to its host:** suffixes are strict, whereas clitics attach to a range of forms.
2. **Morphophonological idiosyncrasies:** suffixes may show phonological changes or trigger them in the stems to which they are attached, changes ‘that are not the result of completely regular phonological processes that affect all words or words combinations of a given phonological type’ (Spencer & Luís 2012: 109).
3. **Word-like appearance:** occurrence as free morpheme or indications of word boundaries before the realisation of a clitic.

Qaqet shows extensive cliticisation. The difference between cliticisation and affixation can be illustrated with the help of free subject pronouns and pronominal suffixes, both of which index arguments on the verb. As explained by Hellwig, the pronominal suffixes are analysed as such because:

they invariably form a phonological word with the preceding preposition or verb. Qaqet clitics, by contrast, are more variable: the same form can usually be realized as either a proclitic or an enclitic, depending on the environment. And second, the pronominal arguments trigger phonological changes in preceding elements that are otherwise only attested in suffixes, not in enclitics. (Hellwig 2019: 107)

Example (34) shows an instance of the subject clitic *ke* ‘3SG.M.SBJ.NPST’ realised as a proclitic.

- (34) *tika luqa qeksiqa [...]*
 tika lu-ka-a **ke**=ksik-a
 EMPH DEM-NC.SG.M-DIST 3SG.M.SBJ.NPST=climb-DIST
 ‘it is that the other man climbs [...].’ (PearARLA 025)

In example (35), in contrast, the subject clitic *ta* ‘3pl.sbj’ appears in enclitic position.

- (35) *tatramagama ndsaqira..*
 ta=tat ama=gam-a
 3PL.SBJ=take/pick_up ART=seed/fruit-DIST
 de=saqi=**ta**
 CONJ=again/also=3PL.SBJ
 ‘they pick the fruits and they..’ (PearARLA 070)

The realisation of subject pronominals as proclitic in (34) and as enclitic in (35) shows their openness to attach to a range of different forms, and supports their analysis as clitics. Similarly, the next two examples show how the suffix pronouns may cause morphological idiosyncrasies. In (36), the word *kuarl* ‘give’ appears in its standard form, whereas in (37), the combination with the suffix *-ta* ‘3pl.h’ triggers the appearance of the *a* between the two forms.

- (36) *katira bequkuarl luqa*
 ka=tit-a be=ke=kuarl
 3SG.M.SBJ=go-DIST CONJ=3SG.M.SBJ.NPST=present/shine
 luka-a
 DEM-NC.SG.M-DIST
 'he goes and he gives it to this man' (PearARLA 098)
- (37) *kukuarlara araagam amadepguas*
 ke=kuarl-ta araa=gam
 3SG.M.SBJ.NPST=present/shine-3PL.H 3PL.POSS=seed/fruit
 ama=depguas
 ART=three
 'he gives them their three fruits' (PearAGKP 136)

The third of the three criteria above, namely the word-like appearance, can be explained with reference to the demonstratives. They consist of a base *lu*, a noun class suffix (e.g. *-a* 'dist' or *-iara* 'prox') and a deictic root. However, the situation is slightly different for *mara* 'here'. Occasionally, it is realised as a separate word, therefore it is analysed as an enclitic (Hellwig 2019: 201ff.). The determiners, too, are analysed as clitics rather than prefixes, since they can occur as free morphemes or form a clitic group with the preceding preposition instead of the following noun (Hellwig 2019: 118).

The three criteria applied here align clitics with words rather than with affixes. Accordingly, I decided to include clitics into the word counts whereas an affix and its host count as one word. This will be of relevance in Chapter 4 on the mean length of utterances.

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