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A case study in modality

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Proceedings of Conference on

Language Documentation and Linguistic Theory 4

Edited by Aicha Belkadi, Kakia Chatsiou and Kirsty Rowan

7-8 December 2013, School of Oriental and African Studies, University of London

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This publication can be cited as:

Jozina Vander Blok. 2014. On the use of questionnaires in semantic fieldwork: A case study in modality. In, Aicha Belkadi, Kakia Chatsiou and Kirsty Rowan (eds.). *Proceedings of Conference on Language Documentation and Linguistic Theory 4*. London: SOAS. www.hrelp.org/eprints/ldlt4_18.pdf

On the use of questionnaires in semantic fieldwork:

A case study on modality

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1. INTRODUCTION

Fieldwork research in semantics can assume a variety of different forms as part of the language documentation process including elicitation, speech recordings, or questionnaires. In this paper, I discuss how questionnaires can be used in semantic fieldwork. I illustrate the versatility of the questionnaire as a fieldwork tool through a case study on a questionnaire on modality that I designed to better understand modal expressions in Javanese (Austronesian).¹

Since Matthewson's (2004) seminal paper on semantic fieldwork methodology, truth-value and felicity judgment tasks are central to semantic elicitation; a view which I also adopt. These tools are considered to provide strong evidence in understanding the semantics of an item. Translation, on the other hand, is viewed as only providing clues towards uncovering the semantics of a linguistic item. Beyond tools used within the context of elicitation, other fieldwork methodologies useful to semantics include gathering examples from different speech modalities such as from interviews, narratives, or recordings of natural speech. Storyboards (www.totemfieldstoryboards.org) are another fieldwork tool that can be used in semantic fieldwork, where a set of pictures are designed to target a specific semantic meaning, combining narration and elicitation. Questionnaires have also been recently used more in semantic fieldwork, such as Dahl (1985) for better understanding tense and aspect cross-linguistically. However, most questionnaires focus on translation or providing examples for a specific grammatical property as the method of use. The focus of this paper is to highlight other methods for questionnaires and its flexibility in semantic fieldwork.

This paper is organized as follows. In section 2, I discuss a variety of ways a questionnaire can be implemented in semantic fieldwork. I give an extended focused example of three types of implementation (elicitation task, semi-forced choice task, and rating task) in section 3 via a case study on a questionnaire designed to target the semantics of modal expressions in Javanese. Section 4 concludes.

¹ I would like to thank Luis Alonso-Ovalle, Ana Arregi, Lisa Matthewson, and Lisa Travis for helpful comments on this paper as well as in developing the questionnaire on modality discussed here. Thank you to the audience at LDLT4 for feedback; in particular, Edward Garrett and Josep Quer. My deepest thanks goes to Javanese language consultants in Paciran, East Java, Indonesia, who helped develop and run this questionnaire: Mbak Titis, Mbak Fina, Mbak Haris, Pak Nasrul, Pak Faiz, Pak Farihi, and Pak Khoim. This work is supported by SSHRC Post-doctoral Fellowship #756-2012-0648.

2. VERSATILITY OF QUESTIONNAIRES IN SEMANTIC FIELDWORK

In this section, I discuss the versatility of questionnaires in semantic fieldwork from the following standpoints: (i) number of participants, (ii) written/oral implementation, and (iii) methodology. The first two points are used in fieldwork in general. With respect to the third point, I outline different questionnaire methodologies in the context of semantic fieldwork specifically.

First, depending on the goals of the researcher and the language under study, the number of participants for a questionnaire in fieldwork can vary from a small set to a large set. With a small set of participants, the researcher may want to consider implementing the questionnaire as an elicitation exercise with the researcher fielding each question individually with the language consultant either as a written or oral task. This could be done either with individual language consultants or together with a small group. With a larger number of participants, the researcher can control for possible variation across age, gender, socio-economic status, etc., by recruiting a diverse set of participants.

Second, a questionnaire can be a written or oral task. Generally, questionnaires are viewed as a written task. This is most useful in gathering robust judgments from a large, diverse set of speakers. Questionnaires can, however, be implemented orally; in this manner, the questionnaire could be viewed as elicitation. An oral implementation would be necessary with illiterate language consultants or if the language under study does not have a written tradition.

Third, with respect to methodology, based on the compilation of questionnaires from different researchers and universities that the Department of Linguistics at the Max Planck Institute for Evolutionary Anthropology hosts online², these questionnaires can be grouped into two types: (i) language property questions and (ii) translation exercises. The first type, based on language properties, tends to target typological paradigms about a specific aspect of the grammar and presupposes a linguistic background. For instance, the questionnaire on gender and number by Greville Corbett asks questions on number such as ‘Which grammatical numbers are distinguished?’ or ‘How is number expressed (lexically, morphologically, or syntactically)?’.³ These types of questionnaires request examples in support of specific language properties. The methodology of gathering the data is left open.

The second type of questionnaire is more specific in that the type of methodology advocated in gathering the data is translation. Dahl’s questionnaire (1985) on tense and aspect is one example of a translation-type questionnaire. In these questionnaires, sentences to be translated are usually given with a short context such as a dialogue. The verb is given as a bare verb form so as to preclude some language prejudice in translation. Two examples for targeting a perfect marker in a language is in (1a-b) from Dahl (1985):

² See: <https://www.eva.mpg.de/lingua/tools-at-lingboard/questionnaires.php>

³ https://www.eva.mpg.de/lingua/tools-at-lingboard/questionnaire/gender-and-number_description.php (Accessed March 10th, 2014)

- (1) Child: *Can I go now?*
Mother: *You BRUSH your teeth?* (Dahl 1985, ex.64)

This type of methodology can be helpful in semantic research on an understudied language. However, as Dahl (1985:49) notes, translation is less reliable than other methods. Matthewson (2004) reinforces that translation should be taken as a clue and not as evidence in semantic fieldwork. I want to therefore discuss alternative methodologies for questionnaires for semantic fieldwork.

One method of implementing a questionnaire that may be valuable when investigating the semantics of a less-familiar language is a production task such as a fill-in-the-blank task. Note, however, that this method presupposes that the fieldworker knows what grammatical category (e.g. noun, verb, adjective, affix, etc.) the particular linguistic item under study is.

Within the context of fecility judgment tasks (asking whether a sentence is compatible or not given the context) or truth-value judgment tasks (asking whether a sentence is true or false given the context), there are at least three different ways to implement these tasks in a questionnaire. These implementations include (i) a forced choice, (ii) semi-forced choice, and (iii) rating task based on a Likert scale.⁴ With a forced choice task, the participant is asked to choose one (or more) sentences out of two (or more) possible sentences. With a semi-forced choice task, the participant has more flexibility than the forced choice task in that the participant can choose all sentences, none, or offer their own alternative (or some version of this). With the rating task, participants are asked to rate the target sentence on a Likert scale, with the result of getting at possibly more nuanced judgments for a given semantic phenomena. These ways highlight the versatility of using a questionnaire in semantic fieldwork. Importantly, the results of these different implementations of a questionnaire can be taken as evidence to support or falsify a working semantic hypothesis in contrast to a translation exercise.

In sum, the use of questionnaires in fieldwork are flexible with respect to both written or oral implementation as well as the number of participants. With respect to semantic fieldwork in particular, different methodologies are available which allow the researcher to approach data from different angles as well as to confirm results obtained from other methodologies. As a consequence, questionnaires in semantic fieldwork offer an alternative strategy to better understand nuanced judgments in a quantitative manner as well as provide reliability and quality of data. In the next section, I illustrate three ways of implementing a questionnaire in more detail via a case study on a questionnaire that I developed for modality.

⁴ A Likert scale is an approach in which responses are rated along a symmetric range (with an equal number of positive and negative counterparts) in which the distance between the points of the scale are considered equal. For instance, in a scale from 1-5, the difference between choosing 1 and 2 is the same as 3 and 4.

3. QUESTIONNAIRE ON MODALITY: CASE STUDY IN JAVANESE

I designed a questionnaire to better understand the semantics of modal expressions in Javanese, an Austronesian language spoken by over 90 million speakers in Indonesia. I offer in this section examples of three different implementations of this questionnaire: (i) an elicitation task; (ii) a semi-forced choice task; and (iii) a rating task. I decided to use a questionnaire for the following reasons. After elicitation results on the semantics of modal markers with around three to four language consultants, while the semantics of some modal markers were clear, other markers were less understood. A questionnaire was therefore useful to gather robust judgments from a wider, more diverse set of speaker with a way to quantitatively understand the more nuanced judgments. Further, Javanese is a language that has a multitude of dialects with a high degree of dialectal variation. I wanted to offer a set of examples that could be applied across dialects for cross-dialectal examination as well as for future cross-linguistic application. The data set discussed in this paper is from a Javanese dialect spoken in Paciran, East Java, Indonesia in the *ngoko* ‘Low Javanese’ speech level. In the following sections, I focus on the procedure of each task. Since the same questionnaire on modality was run as three different tasks, I briefly discuss the design of the questionnaire before turning to their procedures.

3.1. Design of the questionnaire on modality

Developing a context that targets a specific semantics is crucial in semantic fieldwork.⁵ Here, I outline the theoretical background that the questionnaire on modality is set against.⁶ Classic work in formal semantics on modality has identified two main dimensions (Kratzer 1977, 1981, 1991; a.o.): MODAL FORCE and MODAL FLAVOUR. Modal force concerns the difference between possibility (i.e., existential) and necessity (i.e., universal) quantificational force. In English, *may* expresses possibility modal force and *must* expresses necessity modal force. The second dimension, modal flavour, concerns what type of modality a given modal expression is compatible with. For instance, epistemic modality is a semantic category compatible with a body of knowledge or available evidence; deontic modality is a semantic category compatible with a body of rules; circumstantial modality is a semantic category compatible with the way the world is; teleological modality is a semantic category that is compatible with someone’s goals. These modal flavours are illustrated in (2), showing that English *must* is compatible with epistemic, deontic, and circumstantial flavours.

⁵ This step is especially important with a questionnaire since in its implementations (excluding elicitation), there is no chance to follow-up or discuss each context individually. I discuss this issue from my experience with each task below.

⁶ See Vander Klof (2013) for further details.

- (2) (a) *The ancestors of the Maoris **must** have arrived from Tahiti.* (EPISTEMIC)
 (b) *The Maori children **must** learn the names of their ancestors* (DEONTIC)
 (c) *If you **must** sneeze, at least use your handkerchief.* (CIRCUMSTANTIAL)
 (Kratzer 1977:338, (2)-(3))

Given these two dimensions of modality, modal force and modal flavour, I designed each context in the questionnaire on modality to target only one cross-section of each dimension, such as epistemic-possibility (*s*), epistemic-necessity (*t*), deontic-possibility (*u*), or deontic-necessity (*v*), etc. These two dimensions are illustrated in Table 1, where each cell represents one cross-section.⁷

Table 1
 Cross-sections of two dimensions of modality (non-exhaustive)

		MODAL FLAVOUR			
		Epistemic	Root		
		Epistemic	Deontic	Circumstantial	Teleological
MODAL FORCE	Possibility	<i>s</i>	<i>u</i>	<i>x</i>	<i>y</i>
	Necessity	<i>t</i>	<i>v</i>	<i>w</i>	<i>z</i>

Further, each context is culturally appropriate (cf. Matthewson 2004:407). For instance, the context in (3) targets an epistemic-necessity reading. This context is compatible with the evidence available (epistemic) and that there are only three possibilities of where the ball is, and two of these are known; therefore, there is a high degree of certainty (necessity). In this context, only the necessity modal *must* in English is felicitous; the possibility modal *may* is not. Additional examples are given in the context of each task (elicitation, semi-forced choice, rating) below.

- (3) EPISTEMIC NECESSITY CONTEXT: The mathematician says: The ball is in box A, box B or box C. The ball is not in box A. The box is not in box B.
 (a) *The ball **must** be in box C.*
 (b) # *The ball **may** be in box C.*

(adapted from von Stechow and Gillies 2008)

This questionnaire on modality consists of forty-one controlled contexts in total (thirty-three contexts targeting modal expressions and eight fillers). Of the thirty-three contexts targeting modality, there are eight examples adapted from the literature on modality and twenty-five are original examples. In preparing the questionnaire for each task, I created contexts in English and together with a language consultant, each context was carefully translated to Javanese, ensuring

⁷ The types of modal force and modal flavour in Table 1 is non-exhaustive. Modal flavour can be broadly distinguished into epistemic modality, which can also include evidential types of modality, and root modality, or non-epistemic modality. Other types of modal flavours include bouletic modality, in view of someone's desires or wishes. Modal force can have gradients between possibility and necessity such as 'weak necessity', as in *should* or *ought to* in English. See Hacquard (2011; *inter alia*) for an overview on modality.

that the semantic target was preserved. I now turn to how I implemented this questionnaire as an elicitation task, a semi-forced choice task, and a rating task.

3.2. Elicitation task

The first implementation of this questionnaire on modality I designed was as an elicitation task, conducted monolingually in the Paciran Javanese dialect. This task doubled as a pilot study for further implementations as a semi-forced choice task and as a rating task. Specifically, the elicitation task of the questionnaire on modality served both to gather judgments as well as to verify that the contexts were straightforward, comprehensible, and culturally appropriate. I ran the questionnaire as a pilot study with two language consultants individually as well as in a group setting with three language consultants. In both settings, the contexts were presented orally and the language consultants could also read the contexts to verify the written form. This task was approached in two ways. One, language consultants were given one target sentence per context and asked to judge whether the sentence was natural or not given the context. Two, language consultants were given two target sentences per context and asked to judge both sentences whether they fit with the context. An example from elicitation is shown in (4), where 4/4 language consultants accepted the target sentence with *kudu* 'ROOT.NEC'.^{8,9}

- (4) TELEOLOGICAL NECESSITY CONTEXT: *Sa'wise isya', wis gak ono angkutan umum utowo dokar. Trus, sing ono karek becak thok, nek sampeyan iso nemo'no.* 'After maghrib, there are no 'travel' cars or horse-drawn carriages available. The only way is to travel by rickshaw, if you are lucky to find one.'

nek *gelem* *muleh* *mari* *isya'*,
if willing AV.go-home AV.finish fifth.prayer

sampeyan ***kudu*** *numpak* *becak*
2SG ROOT.NEC AV.ride pedicab

'If you want to go home after the fifth prayer, you have to travel by pedicab.'

(Vander Klok 2013: 359, (23); context adapted from von Fintel & Gillies 2007)

This elicitation task proved to be beneficial in determining which contexts I would use in the semi-forced choice and rating tasks, based on which contexts were most clear. For the contexts that were less clear, I used follow-up elicitation and discussion with the language consultants to help resolve ambiguity or infelicity as well as to catch spelling errors or to understand dialectal variation. Some contexts were not used in the final version of this questionnaire. Note that

⁸ The following abbreviations in this paper are used: 1= first person, AV = Actor Voice, CIRC = circumstantial modality, DEON = deontic modality, EPIS = epistemic modality, NEC = necessity, POSS = possibility, ROOT = root modality, SG = singular.

⁹ The necessity modal *kudu* in the dialect of Paciran Javanese is found to express the root types of modality including deontic, circumstantial, and teleological. The modal *kudu* in this dialect is not compatible with epistemic modality or bouletic modality. See Vander Klok (2013) for details.

the decisions were not based on if there were nuanced judgments for the target sentences – as long as the context is clear, it was the prospect that such nuanced judgments would be better understood in the rating task, for instance.

3.3. Semi-forced choice task

The semi-forced choice task of the questionnaire was conducted with a larger set of participants. There were a total of fifteen participants (four male and eleven females). Ages of the participants ranged from 19 to 51 years old; with an average age of 31.6 years based on the meta-data. The procedure of this task was as follows. We first went over the instructions and four practice examples together, where it was emphasized that there are no right or wrong answers in a felicity judgment task. The questionnaire was run on PowerPoint Presentation (PPT) via the ‘record narration’ function to record how long a participant took on each context as well as their overall time. There were no time constraints. We ensured that the participant was literate and felt comfortable using a computer (they pressed the space bar to advance to the next slide). Participants indicated their answers on a separate sheet of paper.

In the semi-forced choice task, participants were presented with two target sentences per context, indicated by (a) or (b). For the modal contexts, the target sentences differed only by the modal expression. Participants were asked to choose which target sentence was the most appropriate given the context. They could choose (a), (b), both (a) and (b), neither one, or offer an alternative. To illustrate, the context in (5) targets circumstantial possibility modality. Two target sentences differ minimally: (5a) has the modal *iso*, a circumstantial possibility modal, hypothesized to be felicitous in this context, while (5b) has a deontic possibility modal *oleh*, hypothesized to be infelicitous given the context.

- (5) CIRCUMSTANTIAL POSSIBILITY CONTEXT: *Miturut aturane, angkutan umum penumpange kudu 13 paleng akeh. Tapekne supire gak ngurusi. Terus isek numpakno penumpang luweh teko 13 soale angkutane yo rondok gedhe.* ‘According to the law, the public vans are required to pick up at most 13 passengers. But the drivers don’t care, and so they still take more than 13 people because the vans are bigger than you think.’

(a) *angkut-an umum iso kamot wong rong puloh*
 carriage-AN general CIRC.POSS fit people 2.LNK10
 ‘Public vans can fit twenty people.’

(b) *angkut-an umum oleh kamot wong rong puloh*
 carriage-AN general DEON.POSS fit people 2.LNK10
 ‘Public vans are allowed to fit twenty people.’

[14/15 chose target sentence with *iso*; 0/15 for *oleh*; 1/15 no answer]

(Vander Klok 2013: 358-9, (19))

This prediction was borne out; in the results of this task, all participants that provided an answer (14/15) chose (5a) providing evidence that *iso* is compatible

as a circumstantial possibility modal. One participant chose not to provide an answer. While this option was available, only 5/15 participants used this option, and no-answers were spread out over the course of the questionnaire. This option therefore served as a mark for a possible fatigue effect (as Dahl 1985:49 mentions as a possible caveat for questionnaires) – if participants became tired over the course of the questionnaire, I would have expected more no-answers towards the end. This option also served to mark if there was confusion with the context or target sentences. In my results, the most no-answers was 2/15 for two different contexts; I would expect higher numbers if confusion was at play.

Another way the participants could communicate with the researcher was via the option of providing an alternative target sentence. This option was more commonly used than the no-answer option: in 18/41 contexts, participants offered an alternative sentence and 9/15 participants used this option. In 7/18 cases, participants offered a variation of one of the target sentences that did not involve modality, such as with a different verb or adding a definite marker. More interesting cases for the purposes of this questionnaire were ones (11/18) where participants offered alternative target sentences with different modals, as it revealed that other modals were either compatible in this type of context or the context allowed for another type of modality. For instance, in a context targeting epistemic possibility as in (6), one participant offered an alternative sentence with negation *durung* ‘not yet’ plus the epistemic necessity modal *mesthi*, as shown in (6b). (This participant also chose the target sentence in (6a) with the epistemic possibility modal *paleng*.)

- (6) EPISTEMIC POSSIBILITY CONTEXT: Dewi is looking for her necklace. She’s not sure if she lost it or if it is still somewhere in the house because she doesn’t remember the last time that she wore the necklace. She looks in her wardrobe and on top of the wardrobe. It’s not there. She looks on top of the tv. It’s not there. She looks in her backpack; it’s not there. Wait! She didn’t check her sister’s wardrobe yet.

(a) *kalung-e* Dewi ***paleng*** *ilang*
 necklace-DEF Dewi EPIS.POSS lost
 'Dewi's necklace might be lost.' (14/15 responses)

(b) *kalung-e* Dewi ***durung*** ***mesthi*** *ilang*
 necklace-DEF Dewi NOT.YET EPIS.NEC lost
 'It's not sure that Dewi's necklace is lost.' (Javanese sentence offered)

This example in particular offers additional insight into the modal force of *mesthi*: if the negation of *mesthi* is compatible in a possibility context, then this suggests that *mesthi* can only have necessity (universal) force.

These examples therefore show that the semi-forced choice task offer flexibility to the participants similar to follow-up elicitation, where there is an avenue for communication between the researcher and the participant. Furthermore, this task allows for the researcher to directly compare different

modal expressions with respect to their felicity in a given context. I now turn to the rating task as the third implementation I conducted with the questionnaire on modality on Paciran Javanese.

3.4. Rating task

In the rating task implementation of this questionnaire on modality, the contexts were exactly the same as the semi-forced choice task. What differed was that only one target sentence of the two with the semi-forced choice task was presented. Therefore, there were two versions of the questionnaire for this task: Version A (presenting only the (a) target sentences) and Version B (presenting only the (b) target sentences). Similar to the semi-forced choice task, the questionnaire implemented with the rating task was conducted with a larger set of participants than with elicitation. For both versions, there were a total of ten participants each; for Version A, there were four male participants and six females, and for Version B, there were five males and five females. The ages of the participants for both Version A and B ranged from 17-50 years old, with an average age of 31.7 years, parallel to the ages with the semi-forced choice task.

The procedure for this task was also parallel to the semi-forced choice task. Meta-data was gathered by me or a research assistant; we then introduced the instructions and four practice examples. We reiterated that there are no right or wrong answers, and ensured that participants could use the computer and were literate. Both versions of the rating task were run on PPT via record narration, although there were no time constraints. In this task, participants were instructed to rate the appropriateness of the target sentence given the context on a Likert scale from 1-5, where 1 is completely appropriate and 5 is completely inappropriate. This was presented in Javanese as 1 = *cocok 100%* ‘fits 100%’ and 5 = *gak cocok blas* ‘does not fit at all’. An example is given in (7); this context targets a deontic possibility context. In Version A, participants rated the sentence with *oleh* ‘DEON.POSS’ in (7a); it was hypothesized that this sentence would have a rating closer to 1. In Version B, participants rated the sentence with *kudu* ‘ROOT.NEC’ in (7b); conversely, this sentence was hypothesized to be rated lower as infelicitous.

- (7) DEONTIC POSSIBILITY CONTEXT: *Tas tasan nek WBL mek iso ditumpaki bocah-bocah sing umure sa’durunge 15 taun. Tutus umure 12 taun. Nek Tutus gak kepingin, gak usah numpak gak opo-opo soale iku gak wajib.*
 ‘The ferris wheel ride at WBL is only for children under 15 years old. Tutus is 12 years old. It is not obligatory for Tutus to go on the ride if she doesn’t want to.’

(a) *Tutus oleh numpak tas-tas-an nek WBL*
 Tutus DEON.POSS AV.ride BAG-RED-AN at WBL
 ‘Tutus is allowed to ride the ferris wheel at WBL.’ (Version A)

(b) <i>Tutus</i>	<i>kudu</i>	<i>numpak</i>	<i>tas-tas-an</i>	<i>nek</i>	WBL
Tutus	ROOT.NEC	AV.ride	BAG-RED-AN	at	WBL

'Tutus has to ride the ferris wheel at WBL.' (Version B)

These rating predictions were borne out: (7a) with *oleh* had an average rating of 1.1 (Std Dev of 0.3) while (7b) with *kudu* had an average rating of 3.4 (Std Dv of 1.68). These results corroborated the results from the semi-forced choice task where 12/15 responses were for (7a) with *oleh*, 1/15 responses (7b) with *kudu*, and 2/15 participants gave no answer.

3.5. Summary of three implementations of the questionnaire on modality

To summarize this case study of three different implementations of the questionnaire on modality that I designed to better understand the semantics of modal expressions in Paciran Javanese, I have shown that questionnaires offer versatility in their implementation, a way of communication between the researcher and the participant, and a way to quantitatively understand nuanced judgments. Further, the reliability of data is confirmed by using a variety of different methods.

4. SUMMARY

I have offered a window into how questionnaires can be advantageously implemented in fieldwork, focusing on semantic fieldwork in particular. The point I have advocated is that questionnaires can be adapted to serve different needs of the fieldworker in gathering reliable data from a larger set of diverse speakers.

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