Answers to Polarity Questions

A Typological Study

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Abstract

Polarity questions, i.e. questions that demand as an answer either an affirmation or a denial (e.g. *yes* or *no*), are considered to be an universal language feature. Different strategies to answer polarity questions have been observed across languages. Sadock & Zwicky (1985) identified three systems of answer strategies: *yes/no* systems, *agree/disagree* systems and *echo* systems. Other studies have attested languages exhibiting a mix of these types (cf. i.a. Floyd *et al.* 2016, Holmberg 2016). Sadock & Zwicky (1985) do not offer any statements about the frequency distribution of the language systems, nor do they explain what kind of sample was used for their analysis. The aim of this study is to fill this gap. Specifically, the goals are to investigate the validity of the typology offered in Sadock & Zwicky (1985) and to establish some estimates about the cross-linguistic frequency of the types identified during this investigation. The data are collected through consultation of reference grammars and elicitation by means of a questionnaire.

Keywords: polarity questions, yes-no questions, typology, polarity, polarity reversal

Sammanfattning

Polaritetsfrågor, frågor där det förväntade svaret är *ja* eller *nej*, anses vara ett universellt språkdrag. Olika strategier för att svara på polaritetsfrågor har observerats i världens språk. Sadock & Zwicky (1985) identifierade tre svarssystem: polaritetsystem (*yes/no system*), sanningssystem (*agree/disagree system*) och ekosystem (*echo system*). Andra studier har funnit att språk också kan blanda dessa system (cf. i.a. Floyd *et al.* 2016, Holmberg 2016). Sadock & Zwicky (1985) varken redogör för vilken distribution dessa svarssystem har eller vilket urval resultaten baseras på. Syftet med denna studie är att fylla den luckan. Målet är att undersöka validiteten i Sadock & Zwickys (1985) typologi samt att fastställa den tvärspråkliga frekvensen för de svarssystem som undersöks. Datainsamlingen sker genom grammatikor och elicitering genom en enkät.

Nyckelord: polaritetsfrågor, ja/nej-frågor, typologi, polaritet

Presentation Conventions

This thesis was written in LATEX 2$_\varepsilon$. The tables are included where they fit best in the document according to the algorithm. All tables are placed after their reference in the text. A list of tables is given on page ii.

When no further sources are given, the examples are taken from the data I collected via a questionnaire (see section 4.3; appendix A). In the layout of the examples, *Q* stands for 'question' and *A* for 'answers'. In examples, the indented lines (/) separate the possible answer alternatives. For practical purposes, the orthography offered in the source is kept. When the source is using a writing system that is not based on the latin script, the closest transliteration is used. To facilitate language identification, all languages discussed in this study are provided with the ISO 639-3 code in square brackets ([]). A translation as well as linear morpheme by morpheme glossing is provided for all examples, except the English ones. The *Leipzig Glossing Rules* are followed as closely as possible.[1]

Abbreviations

1	1 person
3	3 person
COP	copula
JUS	jussive mood
M	masculine gender
NEG	negation
PFV	perfective aspect
PL	plural
Q	question particle/marker
REV	polarity-reversing particle
SG	singular
TOP	topic marker
V	verb

Within the discussion of cross-linguistic distribution, the six macro-areas defined by Dryer (1989) are abridged according to the use in Miestamo (2005: 32). In addition, the following symbols are used in the symbolic representation in the original sources.

Afr	Africa
ANG	Australia-New Guinea
EurA	Eurasia
NAm	North America
SAm	South America
SAO	Southeast Asia and Oceania
p	p (proposition)
$\sim$ p	not p

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[1]The Leipzig Glossing Rules can be looked up at https://www.eva.mpg.de/lingua/resources/glossing-rules.php, accessed on 2018-06-04.

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1 Introduction

The action of asking questions and answering them constitutes an important part of human communication. According to König & Siemund (2007: 290), questions, i.e. interrogative sentences, are found in all languages. A common type of questions are polarity questions, also referred to as *polar questions* or *yes-no questions*. They typically demand as an answer either a confirmation or a denial (e.g. *yes* or *no*). Just like all other kinds of questions, polarity questions are also considered to be an universal feature in human language (Sadock & Zwicky 1985, König & Siemund 2007, Dryer 2013).

It is reasonable to see questions and their answers as one functional domain and examine them together. However, studies that deal with the way polarity questions are expressed in languages generally consider questions in isolation (i.a. König & Siemund 2007, Dryer 2013). By focusing on questions only, the studies of the domain so far are largely incomplete.

Sadock & Zwicky (1985) are among the few authors that not only discuss questions but the subsequent answers also. In doing so, they not only offer a cross-linguistic discussion of polarity questions but also explore the common replies to them. These authors identify three systems of languages, with regard to answer strategies to polarity questions (1985: 189–191): a *yes-no system*, a *agree/disagree system* and an *echo system*. Sadock & Zwicky (1985) do not offer any insights on the quantitative distribution of the language types nor do they provide any information about the language sample used in their study.

The goal of my study is to fill this gap. Specifically, I investigate the validity of the typology offered in Sadock & Zwicky (1985). I collect and analyze data on the strategies used to reply affirmatively or negatively to positive and negative polarity questions. The ultimate goal of this study is to establish some estimates about the cross-linguistic frequency of the three simple types identified in Sadock & Zwicky (1985). In addition, this study also offers a preliminary typology of mixed types, which primarily consists of different combinations of the identified simple types. In summary, I seek to explore the following two sets of questions:

  (i) Is the typology offered by Sadock & Zwicky (1985) accurate?
       Are there additional types to the ones determined by Sadock & Zwicky (1985)?
 (ii) What is the cross-linguistic distribution and frequency of the types identified? Are there discernible patterns? If so, how can they be explained?

Section 2 introduces the most important concepts within the study of answers to polarity questions. In section 3, I specify the aims set for this study. I also recapitulate my research questions and clarify how this study contributes to the typology developed in Sadock & Zwicky (1985). In section 4, I go into the methods and data sources that were used to gather the data for this study. In section 5, the results from the study are presented. In section 6, the findings are discussed with reference to previous studies. Section 7 concludes the study. In this section, I provide a summary of the main findings. Finally, I offer some recommendations for further research.

2 Background

This study investigates the answer strategies used across languages to respond to polarity questions. There are many ways to answer a polarity question and the debate over the definition of a "proper answer" goes on. Studies about answer strategies (including this) have taken interest into the so called "minimal answers", i.e. answers typically taking the form of stand-alone answer particles or sentence constituents repeated from the question. Example 1 illustrates a polarity question as well as some answers to it.

(1) Q. Do you like my cooking?

    A.a. I do.

    A.b. Yes.

    A.c. No.

In the following sections, I introduce the most important concepts around minimal answers. In section 2.1, I first present an account of the literature existent on answers to polarity questions. Although the focus of this study lies primarily on the answering strategies, it is obvious that studying them goes along with examining the questions they respond to. In section 2.2, the function and form of polarity questions are addressed. Section 2.3 expands on the function and form of answers. It has been observed that, within languages, answers to polarity questions follow certain patterns. The abstract scheme of answer strategies used to respond to a question is called an *answering system*. The different systems identified in previous research are dealt with in section 2.4. An intrinsic property of polarity questions and the answers to them is their manifestation of polarity. Sometimes complex polarity relations between questions and answers arise. These relations are treated in section 2.5.

2.1 Previous Studies

As already pointed out, the focus of this study are the answers and not polarity questions per se. However, in the literature on answers to polarity questions, the questions also play a key part in the examination. One of the first scholars to address the issue is Emily Pope. In Pope (1976), she examines the interaction between questions and answers in English. Her analysis is framed within the theory of transformational syntax and aims at explaining how questions are derived in English. Although her analysis and conclusions leave much to be disputed, her discussion of the complex polarity relations between the questions and answers is seminal and sets the basis for following research (see i.a. Pope 1976: 174–212).

In Raymond (2003), Geoffrey Raymond investigates the polarity relation between questions and answers within the framework of discourse analysis. More specifically, he explores the manner the syntactic structure of polarity questions is influenced by and, in its turn, affects the responses subsequently obtained in talk-in interaction (2003: 941). An important idea advanced by Raymond (2003) is that speakers formulate polarity questions to trigger a specific response. He argues that question-answer interactions form a domain. This view is also adopted in my study.

Based on the preliminary categories set in Pope (1976), Jerold M. Sadock and Arnold M. Zwicky (1985) develop a typology of answer strategies found in the languages of the world. They identify three categories of answering systems: a *yes/no system*, an *agree/disagree system* and an *echo system*. The two former systems contain answer particles, while the latter involves

echoing parts of the question. The systems are discussed in more details in section 2.4. As mentioned above, Sadock & Zwicky (1985) do not make any statements about the frequency and distribution of these systems. Moreover, they do not clarify the kind of sample used for their study.

Simeon Floyd, Marianne Villermet and Joshua Birchall (2016) present a more nuanced study on answers to polarity questions and observe that the majority of the languages in their sample exhibits more than one of the identified systems. This is an interesting observation and is further explored in section 5. Their investigation covers only languages of South America and do not provide any comparable data to that in Sadock & Zwicky (1985). Further, their sample is quite small, containing only seven languages.

In another areal investigation, Federica Da Milano (2004) looks into polarity questions and the answers to them across languages spoken in the Mediterranean area. Other studies have focused on the answer strategies in one particular language: In Jones (1999), Bob Morris Jones studies the answer strategies for Welsh within the research of language usage in children. In Hakulinen (2001), Auli Hakulinen examines "minimal and non-minimal types of answers" in Finnish. In Gaszewski (2008), Jerzy Gaszewski investigates the answering system for Polish with the aid of methods of corpus analysis. In Wu (2015), Hofa Meng-Jung Wu examines the answers to polarity questions for Taiwanese in view of a minimalist approach to syntactic analysis. In section 6, the findings and analysis of these areal studies are compared to the results obtained in this investigation.

A study that might be of similar scale to the one by Sadock & Zwicky (1985) is Holmberg (2016). For his investigation, Anders Holmberg compiled data on answering strategies to polarity questions from a total of 136 languages (2016: 10–12). Although he ultimately pursues another goal, he offers some estimates about the cross-linguistic distribution of the answer strategies on the basis of the typology in Sadock & Zwicky (1985).

Holmberg's actual pursuit is investigating the origin of the differences in answering systems found across languages. He approaches his research question with the hypothesis that the difference traces to variation of the syntax of negation (Holmberg 2016: 5). Holmberg's work from 2016 was preceded by earlier publications on this topic: In Holmberg (2001), the author studies the syntax of answers to polarity questions in Finnish, while he focuses on English and Swedish in Holmberg (2013). His methodology and the account he offers are deeply dependent on formal syntactic theory.

A deficiency of the approach and analysis of answering systems in Holmberg (2001, 2013, 2016) is that the investigation is biased by a preconceived theory. It restricts the outcome of the study and does not succeed in reflecting the diversity of the systems found in the world's languages. Holmberg's insights on the typological aspects of answer strategies as well as his contribution to the typology by Sadock & Zwicky (1985) are addressed in further details (see sections 2.4, 4.2, 6).

2.2 Polarity Questions

In the literature, different names can be found to refer to polarity questions: *yes-no questions* (i.a. Pope 1976), *nexus questions* (Sadock & Zwicky 1985: 179) or *polar interrogatives* (i.a. König & Siemund 2007: 291). Among all these terms, the designation *yes-no question* appears to be the most common one, seemingly describing what it designates, namely questions that demand as an answer either *yes* or *no.* In what follows, it becomes clear that this definition is too narrow. Strikingly enough, many studies on "yes-no questions" do not provide a thorough definition for them (see e.g. Pope 1971 and Pope 1976; Hakulinen 2001; Holmberg 2001; Raymond 2003;

Da Milano 2004; Holmberg 2013).

König & Siemund offer the following specification: "Polarity interrogatives are typically used to inquire about the truth or falsity of the proposition they express" (2007: 291). In other words, polarity questions primarily seek information about whether the statement expressed in the question is true or false. Instead of relying on answer particles solely, this definition also includes questions, to which the answer is a repetition of its constituents.

According to the literature (Sadock & Zwicky 1985: 181; König & Siemund 2007: 292; Dryer 2013), polarity questions are marked out by either distinct intonation patterns, question particles, special verb morphology and/or word order. Note that these formal properties are not only characteristic of polar questions but also serve as distinctive features of the interrogative sentence type in general (König & Siemund 2007: 281).

In addition to these features, König & Siemund also mention so called *tag questions* and *disjunctive questions* in relation to polarity questions. Example 2 illustrates the tag question type. An example of a disjunctive question is given in 4.

(2) Tag questions

  a. You drink coffee, don't you?

  b. You don't drink coffee, do you?

(3) Polarity questions

  a. You drink coffee?

  b. Do you drink coffee?

  c. You don't drink coffee?

  d. Don't you drink coffee?

(4) Mandarin Chinese [cmd] (König & Siemund 2007: 297)
  tā zài jiā bu zài jiā?
  3SG at home NEG at home?

  'Is s/he at home?'

Tag questions are marked by a sentence final question tag, e.g. *do you, don't you* (Sadock & Zwicky 1985: 183; König & Siemund 2007: 296f). König & Siemund write about tag questions that they "contribute a certain bias by raising expectations towards either a positive or a negative answer" (2007: 296). Similarly, polarity questions can be positively or negatively biased (i.a. Sadock & Zwicky 1985: 180; Da Milano 2004: 5). With both, tag questions and polarity questions, speakers not only inquire about the truth value of a proposition but also reveal their assumptions about it in the formulation of the question. This is illustrated in examples 2 and 3. The questions in 2a, 3a and 3b elicit an answer, in which the truthfulness of the proposition is affirmed, while the questions in 2b, 3c and 3d rather evoke an answer, in which the falsity of the proposition is validated.

Disjunctive questions are characterized by a construction of *A not A*, where *A* stands for a predicate. They are typical of Asian languages but are also found in some languages of Papua

New Guinea (König & Siemund 2007: 297f). Disjunctive questions are answered by repeating the appropriate form of the predicate. Therefore, the response *zài jiā* 'at home' renders a positive answer, while the negated form *bu zài jiā* 'not at home' functions as a negative answer. Like polarity questions, disjunctive questions inquire the truth or falsity of a proposition.

2.3   Answers to Polarity Questions

As established in section 2.2, polarity questions seek information about the truth or falsity of the proposition expressed in the question. From this follows that all answers to polarity questions should offer some comment about the truth or falsity of the questioned proposition. Example 5 illustrates a typical polarity question. There are a number of ways to respond to a question like this. Example 6 shows some possible answers.

(5)   Polarity question

    Q.   Does she drink coffee?

(6)   Possible answers

    a.   Uhum.

    b.   Yes.

    c.   She does.

    d.   She drinks coffee.

    e.   Yes, she drinks coffee.

    f.   Of course.

    g.   Occasionally.

    h.   I think so.

    i.   She loves coffee.

The answers in 6 all express the same basic content, namely an affirmation of the proposition *She drinks coffee.* Formally, they are all different in structure. In example 6a, the answer is an interjection. They are often accompanied by emblematic gestures like e.g. shaking your head up and down for agreement (Ameka & Wilkins 2006: 3). In examples 6b–6e, the answers take the form of an answer particle or a full sentence or both, a particle and a complementary sentence.[2] Whether examples 6f–6i are proper answers to polarity questions is debatable, because they do not explicitly express a polarity value.[3] They are rather used by speakers to qualify the proposition inquired or to make statements about their current knowledge.

Previous research on answers to polarity questions have mainly been concerned with the "minimal direct answers", i.e. the most economical answer strategies to polarity questions (Pope 1971; Gaszewski 2008: 403). Formally, such answers can be characterized by a relatively short form. They either semantically, lexically and/or grammatically reflect the proposition of the question (Jones 1999: 2). In this category fall the stand-alone answer particles (e.g. example 6b above) as well as grammatical elements of the questions like a minimal subject-auxiliary sentence (e.g. example 6c above), a verb form or another sentence constituent. An instance

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[2] For a discussion of *sentence answers* see Jones (1999: 1–3).

[3] For a discussion of the forms of answers see Jones (1999: i.a. 17–22).

for the latter is given in example 7 below. In Hungarian, repeating one of the question's constituents is a common answer strategy.

(7) Hungarian [hun] (Rounds 2008: 266)

Q. *Lajos orvos?*
Lajos doctor

'Is Lajos a doctor?'

A.a. *Orvos.*
doctor

'Yes.'

A.b. *Lajos.*
Lajos

'Yes.'

2.4   Answering Systems

According to Sadock & Zwicky (1985: 191), all languages exhibit minimal answers. As described, these take the form of either special answer particles or sentence constituents repeated from the question (see section 2.3). It has been observed that, within languages, minimal answers to polarity questions follow certain systematic patterns. Three systems of minimal answers have been identified in Sadock & Zwicky (1985: 189–191): a *yes/no system*, an *agree/disagree system* and an *echo system*.

As mentioned, the yes/no system and the agree/disagree system both contain answer particles. In a yes/no system (also *polarity system*), the answer particles reflect the polarity of the intended answer. That is a positive particle typically accompanies or stands for a positive answer, while a negative particle accompanies or stands for a negative answer (Sadock & Zwicky 1985: 189). Examples 8 and 9, from English and Swedish respectively, illustrate the yes/no system. The answer particles *yes/no* in English and *ja/nej* in Swedish suffice as plain positive/negative answers.

(8) Q. Is it hot today?

A.a. Yes (it is).

A.b. No (it's not).

(9) Swedish [swe] (questionnaire data)

Q. *Är det varmt idag?*
is   it   warm today

'Is it hot today?'

A.a. *Ja (det är det)*
    yes it is it

    'Yes (it is).'

A.b. *Nej (det är det inte)*
    no it is it not

    'No (it isn't).'

Sadock & Zwicky note that plain answers, especially plain positive answers, to negative questions are somewhat peculiar (1985: 190). The reason for this traces to the polarity expressions of negative questions, which are semantically and pragmatically more complex than positive questions. Note that the question in example 10 does not strictly ask whether it is *not* hot but rather indicates the speaker's presupposition about the situation (i.e. *it is hot*). In this case, the answer particles alone are ambiguous.

(10)   Q. Isn't it hot today?

      A.1. Yes, it is.

      A.2. No, it's not.

Sadock & Zwicky explain that a simple *yes* for an answer could be interpreted in two ways; either as a positive answer to the question itself (*Yes, it is not hot today*) or as an expression of agreement with the speaker's presupposition (*Yes, you're right; it is hot*). In English, answers to negative polarity questions are therefore commonly followed by a complement (Sadock & Zwicky 1985: 190). In Swedish, however, the confusion is circumvented by a special particle *jo*, which expresses disagreement with the negated proposition of the question. This particle is referred to as *polarity reversing particle*. This term has been coined by Holmberg (2016: 6). The answer strategies in Swedish are illustrated in example 11.

(11)   Swedish [swe] (questionnaire data)

     Q. *Är det inte varmt idag?*
        is it not warm today

        'Isn't it hot today?'

     A.1. ***Jo***   *(det är det)*
         yes.REV it is it

        'Yes (it is).'

     A.2. *Nej (det är det inte)*
         no it is it not

        'No (it isn't).'

In a agree/disagree system (also *truth system*), the answer particles express agreement or disagreement with the polarity of the question. The Japanese examples in 12 and 13 illustrate this system (cf. Sadock & Zwicky 1985: 190). The positive particle *hai* expresses agreement with the polarity of the question, while the negative particle *iie* expresses disagreement. Note that in a *agree/disagree system*, there is no ambiguity in the response to negative questions.

(12) Japanese [jpn] (questionnaire data)

Q. *Kyō-wa   atsui desu-ka?*
today-TOP hot   COP-Q

'Is it hot today?'

A.a. *Hai (atsui   desu)*
yes hot   COP

'Yes (it is hot today).'

A.b. *Iie (atsuku-nai desu)*
no hot-NEG   COP

'No (it isn't hot today).'

(13) Japanese [jpn] (questionnaire data)

Q. *Kyō-wa   atsuku-nai desu-ka?*
today-TOP hot-NEG   COP-Q

'Isn't it hot today?'

A.a. *Hai (atsuku-nai desu)*
yes hot-NEG   COP

'Yes (it isn't hot today).'

A.b. *Iie (atsui desu)*
no hot   COP

'No (it is hot today).'

In an echo system, there are no answer particles. Instead, one or more constituents of the question are repeated in the answer (Sadock & Zwicky 1985: 191). This system is used in Welsh. In example 14, the positive and negative response simply consist of the verb in its affirmative or negative form.[4]

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[4]Note that Welsh exhibits a system of phonological mutation that affects the form of words. Most commonly, word-initial consonants are affected as can be observed in example 14. The mutations are triggered either by a particular word or a syntactical construction (King 2005: 13–15).

(14) Welsh [cym] (König & Siemund 2007: 321)

Q. *A welwch chwi hwy?*
   Q see   you them

   'Do you see them?'

A.1. *Gwelaf*
    see.1SG

   '(Yes) I see them.'

A.2. *Na   welaf*
    NEG see.1SG

   '(No) I don't see them.'

The typology of answering systems presented in this section has proven to be applicable and is undisputed to this day. In some studies the distinction is framed in a somewhat different manner by opposing the yes/no system to the agree/disagree system, the echo system to a non-echo system (see Jones 1999; Holmberg 2016). The categorization is essentially the same as presented above, since a non-echo system is equal to a system with particles (i.e. a yes/no system or a agree/disagree system). In addition, varying terminology from the one presented in this section is found (see section 4.2).

2.5   Polarity Relations

As touched upon in the preceding sections, the expression of polarity is an intrinsic property of not only polarity questions but also of their answers. The polarity of questions is determined by the polarity of the proposition they express. The polarity of the answers relates to the truthfulness of the proposition expressed in the questions. That is, both, the questions as well as the answers, express polarity values that are mutually affected by one another.

Speech event		Polarity relations	
Question	Answer	Polarity of answer	Polarity: question vs. answer
p?	p	positive	agreeing
p?	$\sim$ p	negative	disagreeing
$\sim$ p?	p	positive	disagreeing
$\sim$ p?	$\sim$ p	negative	agreeing

where 'p' means a proposition

Table 1: Polarity in question-answer pairs (Gaszewski 2008: 404)

In table 1, the polarity relations in question-answer pairs are demonstrated.[5] All potential speech events are stated on the left side of the table. It is indicated that polarity questions are either positive or negative, i.e. express either a positive or a negative proposition (symbolized by *p* and $\sim p$ respectively). The same holds for the answers.

The polarity relations between the question and the answer are specified on the right side of the table. Note that minimal answers are assigned a characteristic polarity value. The

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[5]The illustration in table 1 is taken one to one from Gaszewski (2008: 404).

answer particles *yes* and *no* in English, for example, are attributed the values positive and negative respectively. Beyond that, answers manifest polarity in relation to the question. In other words, they express agreement or disagreement with the question.

In order to cover all possibilities, four polarity relations can be expressed: i) The answer is positive and agrees with the polarity of the question's proposition, ii) the answer is negative and disagrees with the polarity of the question's proposition, iii) the answer is positive and disagrees with the polarity of the question's proposition, and iv) the answer is negative and agrees with the polarity of the question's proposition. The first two expressions occur in response to positive polarity questions, while the two latter ones occur in response to negative polarity questions.

All four expressions taken together form an answering system. A schematic representation of an answering system is given in table 2.[6] Tables 3 and 4 display the yes/no system and the agree/disagree system described in section 2.4 above. It becomes evident that the difference between these two systems lies in the functions of the particles. The Swedish answering system is illustrated in table 5 (see examples 9 and 11 in section 2.4). It differs from the English answering system in table 3 in that it includes two positive particles. It is indicated that the form *ja* expresses agreement, while *jo* has the function of disagreeing with the proposition of the question.

In an echo system, the polarity relations are expressed by the constituent(s) repeated from the question. In a schematic representation of the echo system, the slots would be filled by the affirmative or negative form of the constituent(s) repeated from the question. Table 6 reports the answer strategies from Welsh (see example 14 in section 2.4).

	agreeing	disagreeing
positive	*PA*	*PD*
negative	*NA*	*ND*

Table 2: Model representation of answering system (Gaszewski 2008: 405)

English	agreeing	disagreeing
positive	*yes*	*yes*
negative	*no*	*no*

Table 3: Schematic representation of English answer system

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[6]For a more exhaustive discussion of the configuration of answering systems see Pope (1976: 174–199) and Jones (1999: 41f).

Japanese	agreeing	disagreeing
positive	*hai*	*iie*
negative	*hai*	*iie*

Table 4: Schematic representation of Japanese answer system

Swedish	agreeing	disagreeing
positive	*ja*	*jo*
negative	*nej*	*nej*

Table 5: Schematic representation of Swedish answer system

Welsh	agreeing	disagreeing
positive	V	V
negative	NEG V	NEG V

Table 6: Schematic representation of Welsh answer system

3 Aims and Research Questions

In this section, I discuss the aims set for this study. In doing so, I emphasize how my approach differs from the one taken in Holmberg (2016) (cf. section 2.1). Moreover, I set forth the specific research questions that my study seeks to answer. In doing so, I point out how this study contributes to the typology developed in Sadock & Zwicky (1985).

A central difference between this study and Holmberg (2016) is the approach taken to the subject matter. The difference in approach is partly due to a difference in school of thought and partly due to a difference in research aims. As mentioned before, Holmberg examines the answers to polarity questions within the framework of generative grammar. While he is concerned with the syntactic structure of answers and the origin of the cross-linguistic differences in answering systems, I pursue another goal.

Following the approach taken in previous typological studies (see i.a. Sadock & Zwicky 1985; Dahl 2000; Miestamo 2005), I use an inductive method of analysis (Croft 2002: 282). In this study, the focus lies on the diversity of answering systems occurring in the languages of the world. The aims are to compile a sample of the world's languages and investigate cross-linguistic tendencies. This involves identifying types of answering systems and examining their distribution and frequency on a world-wide scale. A further aim is to offer some tentative explanations of the patterns detected. In summary, the ultimate goal is a preliminary, large-scale typological study that offers estimates about the cross-linguistic distribution and frequency of answering systems.

In terms of specific research questions, I seek to explore the following two sets of questions:

(i) Is the typology offered by Sadock & Zwicky (1985) accurate? Are there additional types to the ones determined by Sadock & Zwicky (1985)?

(ii) What is the cross-linguistic distribution and frequency of the types identified? Are there discernible patterns? If so, how can they be explained?

The next section goes into how I proceed to achieve the aims set for this study and answer my research questions.

4 Method and Data

As described in section 2.2, König & Siemund (2007) regard tag as well as disjunctive questions as types of polarity questions. I deliberately excluded tag questions and disjunctive questions from the focus of this investigation. In section 4.1, I explain my reasons for this decision. Further, I set out the working definition of polarity questions used in this study. In section 4.2, I specify the terms and working definitions used for the classification of answering strategies. In section 4.3, I go into the procedure of data collection. In sections 4.4 and 4.5, the compiled language sample as well as its limitations are discussed.

4.1   Definition of Polarity Questions

Polarity questions share many of their formal features with other types of interrogatives (see König & Siemund 2007: 292–299). They are, thus, not distinguishable from them solely by their form but rather by their functional features. In general, polarity questions require some from of answer. They typically demand as a response either an affirmation or a denial, thus only allowing for a limited set of answers. Moreover, they implicitly express expectations about the truth value of the proposition questioned (cf. Sadock & Zwicky 1985: 179; Raymond 2003: 1; König & Siemund 2007: 291). All these properties taken together lead to the following working definition:

> By means of polarity questions speakers seek information about the truth value of a proposition.

König & Siemund describe tag questions and disjunctive questions as subtypes of polarity questions (2007: 296f). All of them express expectations about the truth value of the proposition. Nevertheless, tag questions are suggested to be somewhat more explicit in asking for confirmation or denial (Sadock & Zwicky 1985: 183). Compare example 2 and 3 repeated from section 2.2. While positive polarity questions seek information, negative polarity questions and tag questions rather ask for confirmation about the truth value of the proposition.

(2, repeated)   Tag questions

      a.   You drink coffee, don't you?

      b.   You don't drink coffee, do you?

(3, repeated)   Polarity questions

      a.   You drink coffee?

      b.   Do you drink coffee?

      c.   You don't drink coffee?

      d.   Don't you drink coffee?

(15) Disjunctive question in Mandarin Chinese [cmd] (Li & Thompson 1989: 536)

Q. *tā   zài jiā   bu   zài jiā?*
    3SG at home NEG at home?

    'Is s/he at home?'

A.a. *zài jiā*
     at   home

     'Yes.'

A.b. *bu   zài jiā*
     NEG at   home

     'No.'

(16) Alternative questions (Sadock & Zwicky 1985: 179)

   a.   Is it raining, or isn't it?

   b.   Is it raining, or is it snowing?

In disjunctive questions, which typically take the form *A not A*, the answer set allowed is limited and overtly manifested in the form of the question (cf. example 15). In doing so, they seemingly share more functional and formal features with alternative questions than with polarity questions. Alternative questions typically offer a selection of mutually exclusive alternatives (Sadock & Zwicky 1985: 179, 183–186; König & Siemund 2007: 292). This is illustrated in example 16.

Compare examples 3, 15 and 16. Like polarity questions, alternative questions also only allow for a limited set of answers. Alternative questions, however, do not inquire the truth value of a proposition, but rather ask for which statement among a selection of alternatives is most appropriate. Unlike alternative questions, polarity questions, in turn, do not overtly provide a selection of answer possibilities in their form (cf. example 3). The affinity of disjunctive questions to alternative questions is also recognized in König & Siemund (2007: 297).

The line between polarity, tag, disjunctive and alternative question is indistinct.[7] Questions with a tag are seldom mentioned in data sources. Disjunctive questions have only been discussed in Southeast Asian languages. It is not clear in the current literature whether the answer strategies to tag and disjunctive questions differ from the answer strategies to polarity questions.[8] With this regard, it is open to question whether tag and disjunctive questions should be examined together with polarity questions.

In conclusion, I decided to disregard tag questions and disjunctive questions in this study, because their delimitation is problematic. Further, it is difficult to assess what polarity relations are at play. A closer cross-linguistic examination of tag and disjunctive questions goes beyond the scope of this study. Thus, I deliberately excluded them from the questionnaire (see section 4.3).

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[7]I would like to clarify that I do not make any claims about the categorization of polarity, alternative, tag or disjunctive questions. I merely demonstrate the difficulties in definitions for this study.

[8]Note that, in Wu (2015: 5), the author makes a distinction between "yes-no questions" and "A-not-A questions" for the study of Taiwanese.

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4.2 Definition of Answer Systems

For this typological study, I have classified the answer strategies used in the languages examined according to Sadock & Zwicky (1985). For a clear and concise reference, I use a terminology based on the conventions in Holmberg (2016). Hereinafter, the yes/no system is referred to as *polarity system*, the agree/disagree system is referred to as *truth system* (Holmberg 2016: 5).[9]

   Thus, languages showing answering strategies similar to the one in table 7 are classified as having a polarity system. Languages showing answering strategies with a polarity-reversing particle, as illustrated with Swedish in table 8, are classified as REV-polarity systems (cf. section 2.4). Languages exhibiting answering strategies as illustrated in table 9 are classified as exhibiting a truth system. Languages showing answering strategies that involve echoing a constituent of the question, as it has been described for Welsh, are classified as having an echo system (cf. section 2.4, 2.2). A schematic representation of an echo system is given in table 10.

English	agreeing	disagreeing
positive	*yes*	*yes*
negative	*no*	*no*

Table 7: Polarity system

Swedish	agreeing	disagreeing
positive	*ja*	*jo*
negative	*nej*	*nej*

Table 8: REV-polarity

Japanese	agreeing	disagreeing
positive	*hai*	*iie*
negative	*hai*	*iie*

Table 9: Truth system

   In addition, it has been suggested in the literature that number of languages exhibit more than one of the answering systems identified in Sadock & Zwicky (1985) (i.a. Hakulinen 2001: 3; Da Milano 2004: 28; Holmberg 2016: 68). In relation to the study of seven South American languages, Floyd *et al.* note that "rather than conforming to one type of answer [...] most languages have several options, so typologies of 'particle' versus 'echo' are too simplified" (2016: 9). Languages exhibiting answer strategies that fall into two different systems are classified as having a mixed system. The possible types of mixed systems are examined in section 5.

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[9]It was pointed out to me by Bernhard Wälchli that the designation *system* is not an accurate term for the domain described in this study, because it suggests that the minimal answers of the "answering system" are interdependent and form an entity. This line of argumentation is true in the sense that minimal answers are not interdependent but depend on the form of the questions they respond to. Moreover, it can be disputed whether the minimal answers form an entity, since they can also be used in other functions (see i.a. Jones 1999: 20f). To go into a discussion of the terminologies chosen in previous research goes beyond the scope of this study.

Welsh	agreeing	disagreeing
positive	v	v
negative	NEG V	NEG V

Table 10: Echo system

4.3 Data Collection

In order to answer my research questions (see section 3), I collected data on polarity questions and the answers to them by means of two methods. The first method involved gathering the data by means of language elicitation. This was achieved through a questionnaire. The second method involved consulting written linguistic documentations. Specifically, I examined reference grammars and an open database comprising linguistic data on a variety of features across the world's languages.

The methods and data sources used in this study have their advantages and constraints. By having made use of a variety of data sources, I ensured that the information needed would be gathered within the given time limit. Moreover, it allowed for balancing the limitations of one method or data source with the other. In the following sections, I go into a short discussion of the sources.

4.3.1 Elicitation

For the elicitation task of this research project, I designed and worked with a translation questionnaire (see appendix A), which guaranteed a systematic collection of data. The questionnaire is organized in different parts. It begins with a short introduction describing the objective of the study. This is followed by a section for sociolinguistic background information, which also encloses a clause stating how the personal information will be managed. A section giving the specifications for how the questionnaire is to be filled introduces the elicitation part.

The questionnaire contains eleven questions. I took care to include different sets of polarity questions, most importantly a variation of positive and negative interrogatives. Note that for purposes of clarity and practicality, I excluded tag questions (see section 4.1). The form of these interrogatives is based on examples in Sadock & Zwicky (1985) and Floyd *et al.* (2016). This facilitates the comparison of the language data with previous studies.

For each question, there are three tasks. First, participants are asked to translate the question given in English into the language inquired. Second, participants are requested to write down possible (positive and negative) short answers to this question for their language. Third, participants are asked to provide their translation and answers with glossing. In some instances, when the participants had no linguistic training, this task was completed by the interviewer or an assisting language expert.

The questionnaire was distributed via e-mail to a variety of institutions and posted on various platforms.[10] Moreover, the questionnaire was made available in different formats (i.e. as a web-based document, as a DOC as well as a PDF file) to enable participants to choose their preferred working tool. When distributing the questionnaire, care was taken to reach a wide range of informants, preferably language experts trained in linguistics. The data collection by means of the questionnaire was carried out for six weeks, at the end of which I had gath-

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[10]Specifically, I distributed the questionnaire via the public mailing lists *Funknet* and *Lingtyp*, which can be subscribed to at http://listserv.linguistlist.org/mailman/listinfo, accessed on 2018-02-12. Further, I sent out the questionnaire with an accompanying message to several language institutions at the University of Stockholm, Sweden and the University of Bern, Switzerland.

ered a total of twenty-seven completed questionnaires. Each questionnaire reflects the answer strategies of one informant and for one language (see appendix B).

4.3.2 Grammars

The consultation of grammars is popular among typologists, because it is a simple and budget-friendly method to gather language data. Grammars are, however, limited in the sense that they might not contain the information needed. Polarity questions, for example, are rarely discussed. When mentioned, they are mostly described in isolation, i.e. without any discussion of the answers given to them. Only a small portion of the grammar books examined contained an account of the answers strategies together with or in addition to a discussion of polarity questions. Some examples of valuable grammars are Thomas (1974) for Brazilian Portuguese [por], Karlsson & Chesterman (1999) for Finnish [fin], King (2005) for Welsh [cym], Mace (2003) for Persian [fas], Iwasaki & Ingkaphirom (2005) for Thai [tha], Rounds (2008) for Hungarian [hun] and Donlay (2015) for Khatso [kaf].

In this regard, an important advantage of questionnaires compared with reference grammars is that they allow for the collection of specific features in a comprehensive manner. However, gathering data through a questionnaire requires significantly more resources (e.g. informants, research funds) than consulting grammars. Moreover, questionnaires only explore previously formed hypotheses and do not necessarily lead to new findings.

4.3.3 Syntactic Structures of the World's Languages

Parallelly to the examination of grammars and surveyed language material, I consulted the *Syntactic Structures of the World's Languages* (hereinafter SSWL), which is an open database assembling linguistic data on a variety of features.[11] The data collection on polarity questions and the answers to them is the merit of Anders Holmberg and his colleagues at SSWL, who initiated the data collection in the year 2014. The data material is composed of feedback from a variety of language experts on a set of questions posted by Holmberg and colleagues (Holmberg 2016: 11f).

The database at SSWL has been a helpful tool in supplying a further source of information and/or support for the evaluation of language systems. However, as Holmberg notes himself, the information value of the data recorded in the database varies and depends on the expertise of language informants (2016: 11f).[12] It mainly offers information on the existence or non-existence of particular features and only occasionally provides an complementary example or comment. Although being of great service, the material presented on the SSWL webpage would therefore not have sufficed as a sole source for the purposes of this study.

4.4 Language Sample

The language sample compiled for this study is a convenience sample (Dahl 2000: 6): it consists of the language data that was available at the time of creation and with the resources at hand. Nevertheless, it was striven for a sample as areally and genealogically diverse as possi-

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[11]The original SSWL database can be accessed at http://sswl.railsplayground.net. Note that at the time of writing (February–May 2018), SSWL is merging with the *Terraling* database, which can be accessed at http://test.terraling.com/groups/7, accessed on 2018-05-13.

[12]Note that, to a certain extend, this is also true for the language data gathered by means of the questionnaire discussed in section 4.3.1.

ble (Dryer 1989; Miestamo 2005). There is, however, no claim for statistical significance of the results it yields (Perkins 1989; Rijkhoff & Bakker 1998).

At the end of the data collection, the sample came to include forty-eight languages. The languages of the sample were grouped according to the six macro-areas determined in Dryer (1989), as presented in table 11.

Area	Number of languages
Africa	7
Australia-New Guinea	1
Eurasia	23
North America	0
South America	7
Southeast Asia & Oceania	10
Total	**48**

Table 11: Total language sample arranged according to six macro-areas

There are two major linguistic areas that are poorly represented: North America and Australia-New Guinea. This is not a result of a lack of attention or effort from my part but rather due to a scarcity of descriptive sources. Languages from North America and Australia-New Guinea share the same fate: They are highly endangered and show a threatening low number of active speakers. Furthermore, there have only been few language documentation projects in the past. This makes it especially challenging to get access to language data from these linguistic areas.

4.5   Limitations of the Study

One of the major difficulties in cross-linguistic research is the composition of a language sample that fulfils the requirement of representativeness. A weakness of the sample used in this study is its size. A sample of 48 languages is rather small, particularly as compared with the 7,097 known living languages, which the sample is supposed to reflect.[13]

Another weakness of the sample that should be addressed is its distribution. As mentioned above, it is a convenience sample, i.e. compiled from the information that was available at the time of creation. Therefore, it is not as balanced as striven for. A consequence of this is that it loses in representativeness. Moreover, as discussed in section 4.4, the sample lacks data on languages from North America as well as Australia-New Guinea. This is of course a serious deficit and causes the sample to be fairly incomplete. Further, it is biased towards Eurasia, since almost half of the languages in the data are spoken in this area.

The sample's quality and quantity is a result of a constrained time schedule and limitations in resources available for this study. With its limitation in mind, some cross-linguistic tendencies can nevertheless be extrapolated. In the following section, the results of the study are presented.

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[13]See last count on Ethnologue at https://www.ethnologue.com/world, accessed on 2018-03-05.

5 Results

Three different systems have been discussed: echo, polarity and truth. In previous studies, it has been observed that some languages exhibit more than one answer strategy, essentially showing a combination of the above described systems (see sections 2.4 and 4.2). Speakers of Hungarian, for example, make use of either a polarity system or an echo system in responses to polarity questions (see also Rounds 2008: 266–268). This is illustrated in example 17, in which both answer strategies are not only acceptable but also common.

(17) Hungarian [hun] (questionnaire data)

Q. *Meg-érkezett már János?*
PFV-arrived already John

'Did John arrive?'

A.a. *Meg. / Igen.*
PFV   yes

'Yes.'

A.b. *Még nem. / Nem.*
PFV   NEG   NEG

'No.'

Languages with only one strategy to answer polarity questions are described as having a *simple system.* In contrast, languages that show more than one answer strategy are described as having a *mixed system.* Altogether, there are four possible combinations of mixed systems. All possible combinations of answer systems are illustrated in table 12.

Possible Types	
simple	polarity
	truth
	echo
mixed	polarity-truth
	echo-polarity
	echo-truth
	echo-polarity-truth

Table 12: Possible types

A further distinguishing answer strategy are systems with a special particle that expresses objection to negative questions, i.e. systems with a polarity-reversing particle (see section 4.2). It is conceivable that polarity-reversing particles occur in simple as well as in mixed systems. All possible combinations are illustrated in table 13.

In sections 5.1 and 5.2, the frequency of the above described systems within the language sample are presented. In section 5.3, a cross-linguistic overview of the occurring answering systems is offered.

	Possible Types
simple	REV-polarity
	REV-truth
	REV-echo
mixed	REV-polarity-truth
	REV-echo-polarity
	REV-echo-truth
	REV-echo-polarity-truth

Table 13: Possible types with a polarity-reversing particle

5.1 Simple and Mixed Systems

Table 15 provides a list of the languages from the sample showing either a polarity, truth or echo system. Table 14 summarizes the information in table 15 and expresses the frequency of the three simple systems in figures. It indicates that, among the simple types across the language data, the polarity system is clearly the most frequently observed option.

System	Number of Languages (%)
polarity	17 (35%)
echo	8 (17%)
truth	8 (17%)
Total	33 (69%)

Table 14: Cross-linguistic frequency of simple answering systems

Table 17 provides a list of the languages from the sample that show a mixed answering system of either polarity-truth, echo-polarity, echo-truth or echo-polarity-truth. Interestingly enough, all four combination possibilities are found across the language data. Table 16 reports the frequency of the mixed systems from table 17. It shows that the echo-polarity system is the preferred option among the mixed types.

Table 18 presents a summary of the data discussed above and gives the number of languages per linguistic area that show a simple or a mixed type. It indicates that thirty three languages, i.e. 69% of the language sample, show a simple system. In contrast, fifteen languages, i.e. 31% of the language sample, show a mixed system. In other words, simple systems are more frequent across the language data than mixed systems. Nevertheless, approximately one-third of the languages in the sample show a mixed system.

System	ISO	Language	Area
polarity	tir	Tigrinya	Africa
	run	Kirundi	Africa
	cat	Catalan	Eurasia
	deu	German	Eurasia
	eus	Basque	Eurasia
	fas	Persian	Eurasia
	fra	French	Eurasia
	hat	Hatian Creole	Eurasia
	kat	Georgian	Eurasia
	nld	Dutch	Eurasia
	swe	Swedish	Eurasia
	tam	Tamil	Eurasia
	mkt	Vamale	Oceania
	plv	Southwest Palawano	Oceania
	tgl	Tagalog	Oceania
	pav	Wari'	South America
	yrl	Nheengatú	South America
truth	afb	Gulf Arabic	Africa
	hau	Hausa	Africa
	swh	Swahili	Africa
	mal	Malayalam	Eurasia
	pan	Punjabi	Eurasia
	kto	Kuot	Papua New Guinea
	jpn	Japanese	Southeast Asia
	kor	Korean	Southeast Asia
echo	cym	Welsh	Eurasia
	gla	Scottish Gaelic	Eurasia
	phl	Palula	Eurasia
	cbi	Cha'palaa	South America
	ese	Ese'eja	South America
	bfu	Bunan	Southeast Asia
	kaf	Khatso	Southeast Asia
	tha	Thai	Southeast Asia

Table 15: Languages showing a simple answering system

System	Number of Languages (%)
echo-polarity	9 (19%)
polarity-truth	3 (6%)
echo-polarity-truth	2 (4%)
echo-truth	1 (2%)
Total	15 (31%)

Table 16: Cross-linguistic frequency of mixed answering systems

System	ISO	Language	Area
polarity-truth	aka	Akan	Africa
	khw	Khowar	Eurasia
	udm	Udmurt	Eurasia
echo-polarity	azj	Azerbajani	Eurasia
	ces	Czech	Eurasia
	fin	Finnish	Eurasia
	hun	Hungaria	Eurasia
	lav	Latvian	Eurasia
	por	Brazilian Portuguese	Eurasia
	que	Imbabura Quechua	South America
	que	Pataza Quechua	South America
	tba	Aikanã	South America
echo-truth	amh	Amharic	Africa
echo-polarity-truth	cmn	Mandarin	Southeast Asia
	yue	Cantonese	Southeast Asia

Table 17: Languages showing a mixed answering system

Area	Number of language per system		Total
	Simple	Mixed	
Afr	5	2	7
ANG	1	-	1
EurA	15	8	23
NAm	-	-	0
SAm	4	3	7
SAO	8	2	10
Total	**33**	**15**	48
(%)	(69%)	(31%)	(100%)

Table 18: Cross-linguistic frequency of simple and mixed types

5.2 Systems with Polarity-reversing Particles

Table 19 gives a list of the languages from the sample exhibiting a polarity-reversing particle. What becomes immediately evident is that these languages are all spoken within the Eurasian area. In table 20, it can be observed that five out of six are affiliated to the Indo-European language family. Note also that, in turn, three out of these five belong to the Germanic subgroup.

System		ISO	Language	Area
	REV-polarity	nld	Dutch	Eurasia
	REV-polarity	fra	French	Eurasia
simple	REV-polarity	deu	German	Eurasia
	REV-polarity	fas	Persian	Eurasia
	REV-polarity	swe	Swedish	Eurasia
mixed	REV-echo-polarity	hun	Hungarian	Eurasia

Table 19: Languages showing systems with a polarity-reversing particle

Affiliation	ISO	Language	REV
Indo-European, Germanic	nld	Dutch	*jawel*
Indo-European, Germanic	deu	German	*doch*
Indo-European, Germanic	swe	Swedish	*jo*
Indo-European, Iranian	fas	Persian	*cerā*
Indo-European, Italic	fra	French	*si*
Uralic, Ugric	hun	Hungarian	*de*

Table 20: Languages with a polarity-reversing particle

System		Number of Languages (%)
	REV-polarity	5 (10%)
simple	REV-truth	-
	REV-echo	-
	REV-polarity-truth	-
mixed	REV-echo-polarity	1 (2%)
	REV-echo-truth	-
	REV-echo-polarity-truth	-
Total		6 (12%)

Table 21: Frequency of systems with a polarity-reversing particle

Concerning the frequency, it can be said that the polarity system is without doubt the preferred combination option. All languages listed in table 19 exhibit either a simple polarity system or a polarity system in combination with an echo system (i.e. echo-polarity system). As a matter of fact, the data suggest that polarity-reversing particles only occur in combination with a (simple or mixed) polarity system.

System	polarity	echo-polarity
with REV	5 (10%)	1 (2%)
without REV	12 (25%)	8 (17%)
Total	17 (35%)	9 (19%)

Table 22: Frequency of polarity-reversing particles per occurring system

Table 21 shows that six languages, i.e. 12% of the entire sample, exhibit a system with a polarity-reversing particle. It is indicated that five languages, i.e. 10% of the language exhibiting a polarity-reversing particle, show a simple polarity system. The only language in the sample described as having a polarity-reversing particle and a mixed system is Hungarian. Note that Hungarian differs from the other languages with a polarity-reversing particle not only by having a mixed system but also by its affiliation to a language family other than Indo-European.

In table 22 the proportion of languages having a polarity-reversing particle, with regard to the answering system their exhibiting, is presented. It indicates that five out of seventeen of the languages with a polarity system, i.e. 10% of the entire language sample, also show a polarity-reversing particle. That is only a minority of the languages exhibiting a polarity system complete the system with a polarity-reversing particle. The same finding is observed for the system of REV-echo-polarity. Only one out of nine languages in the sample with a echo-polarity system, i.e. 2% of the entire language sample, also show a polarity-reversing particle.

5.3 Overview

Table 23 illustrates in decreasing order of their frequency the occurring answering systems across the language sample. It indicates that a proportion of 35% of the entire language sample exhibits a polarity system, suggesting that, among all the systems in use, it is the preferred variant. It also shows that, across the data, a mixed system of echo-polarity is found more often than a truth system and an echo system.

System	Macro-area						Number of languages (%)
	Afr	ANG	EurA	NAm	SAm	SAO	
polarity	2	-	10	-	2	3	17 (35%)
echo-polarity	-	-	6	-	3	-	9 (19%)
echo	-	-	3	-	2	3	8 (17%)
truth	3	1	2	-	-	2	8 (17%)
polarity-truth	1	-	2	-	-	-	3 (6%)
echo-polarity-truth	-	-	-	-	-	2	2 (4%)
echo-truth	1	-	-	-	-	-	1 (2%)
Total	7	1	23	0	7	10	48 (100%)

Table 23: Cross-linguistic frequency of answering systems

In terms of distribution, some interesting patterns can be observed. The data in table 23 indicates that in the Eurasian area answering strategies forming either a polarity, an echo

system or both are clearly preferred. The same holds for South America, where this pattern is even more striking.

Another interesting observation is that the data of macro-area of Southeast Asia and Oceania, when divided, demonstrate a clearcut distribution of answering systems: While the Southeast Asian languages in the sample exhibit different systems, the languages of Oceania show an apparent preference for the polarity system. Table 24 reflects the distribution of answering systems in languages of Southeast Asia and Oceania. Note also that the two only languages seemingly exhibiting a system of three, i.e. echo-polarity-truth, are both found in Southeast Asia and belong to the same family (i.e. Sino-Tibetan, Chinese).

System	ISO	Language	Area
polarity	plv	Southwest Palawano	Oceania
polarity	tgl	Tagalog	Oceania
polarity	mkt	Vamale	Oceania
truth	jpn	Japanese	Southeast Asia
truth	kor	Korean	Southeast Asia
echo	bfu	Bunan	Southeast Asia
echo	kaf	Khatso	Southeast Asia
echo	tha	Thai	Southeast Asia
echo-polarity-truth	yue	Cantonese	Southeast Asia
echo-polarity-truth	cmn	Mandarin	Southeast Asia

Table 24: Distribution of answering systems in Southeast Asia & Oceania

System	ISO	Language	Affiliation
polarity	tir	Tigrinya	Afro-Asiatic, Semitic
polarity	run	Kirundi	Niger-Congo, Atlantic-Congo
truth	hau	Hausa	Afro-Asiatic, Chadic
truth	afb	Gulf Arabic	Afro-Asiatic, Semitic
truth	swh	Swahili	Niger-Congo, Atlantic-Congo
echo-truth	amh	Amharic	Afro-Asiatic, Semitic
polarity-truth	aka	Akan	Niger-Congo, Atlantic-Congo

Table 25: Distribution of answering systems in Africa

Among the languages of Africa, truth-based response strategies show a slightly higher frequency than polarity-based strategies. Table 25 reports the distribution of the answering systems in Africa. A tendency towards systems with truth-based answers is recognizable. Interestingly enough, although otherwise quite popular among languages, the systems echo and echo-polarity are absent in the African language data (see table 23).

Regarding the remaining parts of the world, it can be observed in table 15 that the Papua New Guinean language Kuot exhibits a truth system. Since there is too little data, no general patterns can be observed for the macro-area Australia-New Guinea. The same holds for North America.

6 Discussion

In what follows, the results presented in section 5 are discussed and compared with the findings from previous research. Sections 6.1 and 6.2 deal with the examination of the frequency of answering systems. The distribution of answering systems is treated in sections 6.3 and 6.4. In section 6.5, some difficulties in the classification of answering strategies are addressed.

6.1 Simple and Mixed Systems

The results presented in section 5.1 indicate that simple systems are more frequent than mixed systems (cf. table 18). This finding seems reasonable, since generally languages avoid redundancy and cherish economical structures. Most answering systems ensure that all four polarity relations between questions and answers are expressed without ambiguity. The only system established, in which there is likely to be ambiguity, is the polarity system.

From this reasoning follows that a polarity system is most likely to be enhanced either by a polarity-reversing particle or by another system. As is demonstrated in table 23, this can be observed in the data. In order of their frequency, the most common combinations of systems found are: echo-polarity, polarity-truth and echo-polarity-truth. Mixed systems of echo-polarity, as exhibited in Hungarian (see example 17), are found considerably more often than the two latter ones (19% vs. 6% and 4% respectively) and, interestingly, even more often than the truth and the echo system (cf. table 23).

This also means that the mixed system of echo-truth is expected to be low in frequency of occurrence. The results obtained confirm this expectation. There is only one language in the data described as exhibiting an echo-truth system, namely Amharic. Its answering strategies are illustrated in example 18.

(18) Amharic [amh] (SSWL)[14]

    Q.a. *Mkasa al-mätt'a-m?*
        Kasa   NEG-come.PFV.3M.SG-NEG

        'Didn't Kasa come?'

    A.a. *awo al-mätt'a-m*
        yes   NEG-come.PFV.3M.SG-NEG

        'No he didn't (lit. yes, he didn't)'

    Q.b. *Kasa yɨ-mt'a?*
        Kasa 3M.SG-come.JUS

        'Shall Kasa come?'

    A.b. *yɨ-mt'a*
        3M.SG-come.JUS

        'Yes (lit. let he come)'

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[14]see http://sswl.railsplayground.net/browse/languages/Amharic, accessed on 2018-05-03.

In fact, although showing an affirmative echo response in 18A.b, Amharic's answering system might just be a simple case of a truth system. This classification is proposed in Jones (1999: 11, 307) and in Holmberg (2016: 142). The echo response in 18A.b would then be a case of language-internal variation.

This view is opposed to the classification by the Amharic informant at SSWL, who specifies:

> Affirmative answer by bare verb is not possible when the verb is in the perfective and imperfective aspects. In these aspects the verb always needs an auxiliary [...]. Affirmative answer by bare verb form is okay when the verb is in a jussive mood [...] and with the copula n- and the auxiliary all- 'to exist'. (Girma Demeke, SSWL)[15]

Regardless of how the answering system of Amharic is classified, the fact remains that an echo-truth system is highly improbable and extremely low in frequency, since the responses in echo and truth systems leave no room for ambiguity.

As introduced, a polarity system is also found to be enhanced with a polarity-reversing particle. Only a small proportion of the languages with a polarity system also show a polarity-reversing particle. Based on the data in table 22, seventeen languages, i.e. 35% of the languages in the sample, exhibit a polarity system; only five of them, i.e. 10% of the languages in the sample, also show a polarity-reversing particle. Thus, a simple polarity system is the most frequently found answering system among all occurring systems and across all languages of the sample.

This result is highly interesting – and surprizing at the time – considering that the polarity system is the only one, among the seven occurring answering systems, in which the answer forms are ambiguous in their expression of the polarity relations with the questions. It is, thus, suggested that the ambiguity arising in the answers to negative questions is not experienced as disturbing by speech participants as it might be expected. In general, negative polarity questions are estimated to be fairly rarely used in interaction, especially in contexts where ambiguity is avoided (i.a. Raymond 2003: 956–961).

6.2   Systems with a Polarity-reversing Particle

The data indicate that polarity-reversing particles in general occur in simple systems and in particular together with polarity systems. This follows a logic: The function of polarity-reversing particles is expressing disagreement in response to a negative question. They are therefore predominantly required in polarity systems to exclude doubt about the polarity of the response in specific (and otherwise ambiguous) cases. In echo and truth systems, there is no need for a particle with this specific function. Thus, the tendency observed leaves to suggest that polarity-reversing particles are a feature particular to simple polarity systems.

Holmberg obtained similar findings. He reports that fourteen languages out of seventy in his sample are found to have a polarity-reversing particle. He further states that "[...] there is a correlation between having such a particle and not following the truth-based system, as 'no' can unambiguously disconfirm the negative alternative of a negative question in the truth-based system" (2016: 203f).

Deviation from this tendency, however, occurs. In the data presented in section 5.2, Hungarian shows a polarity-reversing particle together with a mixed echo-polarity system. Example 17 (see section 5, repeated below) illustrates echo and polarity response strategies in

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Hungarian. Example 19 shows the use of the polarity-reversing particle in response to a negative question.

(17, repeated)   Hungarian [hun] (questionnaire data)

Q. *Meg-érkezett már   János?*
   PFV-arrived   already John

   'Did John arrive?'

A.a. *Meg. / Igen.*
     PFV   yes

   'Yes.'

A.b. *Még nem. / Nem.*
     PFV NEG   NEG

   'No.'

(19)   Hungarian [hun] (questionnaire data)

Q. *Ők nem beszélnek angolul?*
   3PL no   speak.3PL english

   'They don't speak English?'

A.a. *De*
     yes

   'Yes, they do.'

A.b. *Nem*
     no

   'No, they don't.'

According to Jones (1999: 38–41), Korean as well as Mandarin Chinese – which do not exhibit a polarity system – show evidence of a particle with the function of disagreeing with a negative question. He reports that the polarity-reversing particle for Korean is *mace*, for Mandarin Chinese it is the form *shi(de)*. No evidence for this is found in my data.

The analysis of the evidence exposed in Jones (1999) can be questioned. In the case of Korean, it is not clear whether the particle *mace* suffices as a stand-alone response, which is a basic property for polarity-reversing particles. Regarding Mandarin Chinese, the form *shi(de)* is actually the copula (*shi*) together with a particle for emphasis (*de*) expressing 'this is the case' (Li & Thompson 1989: 562). It is debatable whether these forms should be considered polarity-reversing particles. Moreover, they seem to be mere alternatives to more common response strategies.

Variation will always be found within languages. There is no explanation advanced for such answering systems in the literature. It will most likely either be traced back to arbitrariness or, possibly, language contact. In fact, a situation of language contact might be the cause for the occurrence of the polarity-reversing particle in Hungarian (see section 6.3).

6.3 Distribution of Polarity-reversing Particles

In the literature (Sadock & Zwicky 1985: 190; Jones 1999: 37; Da Milano 2004: 34), few languages are mentioned having a polarity-reversing particle. They are listed in table 26.[16] Strikingly, six of these seven languages are affiliated to the Germanic subgroup. This suggests a peculiarly high frequency of languages with a polarity-reversing particle within the Germanic group.

This tendency is congruent with the results in section 5.2. In my data, three out of six languages are Indo-European and belong into the Germanic subgroup (i.e. Dutch, German, Swedish). The only languages with a polarity-reversing particle in my data that are affiliated to the Indo-European but not to the Germanic family are French (Italic) and Persian (Iranian). Note that, Hungarian, which does not belong into the Indo-European but Uralic family, also exhibits a polarity-reversing particle in my data (see table 20).

The infrequency of a polarity-reversing particle in languages outside the Germanic subgroup is congruent with the overall tendency observed within the Mediterranean area. According to Da Milano (2004: 29), only a minority of the languages in her sample exhibit a polarity-reversing particle. Specifically, Da Milano identifies three languages showing a polarity-reversing particle, namely French and Provençal as well as in Slovene.

The occurrence of a polarity-reversing particle in Hungarian, Slovene and French is likely a result of contact with German over an extended period of time. The forms of the polarity-reversing particles in the Germanic languages do not suggest to be cognates of some common etymological origin. The function of these forms appear to have been renewed. It would be highly interesting to investigate and compare the etymologies of these particles.

Affiliation	ISO	Language	Source
Indo-European, Balto-Slavic,	slv	Slovene	Da Milano 2004: 34
Indo-European, Germanic	dan	Danish	Jones 1999: 37
Indo-European, Germanic	deu	German	i.a. Sadock & Zwicky 1985: 190
Indo-European, Germanic	isl	Icelandic	Sadock & Zwicky 1985: 190
Indo-European, Germanic	nld	Dutch	Jones 1999: 37
Indo-European, Germanic	nor	Norwegian	Jones 1999: 37
Indo-European, Germanic	swe	Swedish	Jones 1999: 37
Indo-European, Italic	fra	French	i.a. Da Milano 2004: 34
Indo-European, Italic	prov1235	Provençal	Da Milano 2004: 34

Table 26: Languages with a polarity-reversing particle according to previous studies

6.4 Areal Distribution

Regarding the distribution of answering systems within particular linguistic areas, only slight tendencies are discernable. Within the Eurasian data, a pronounced preference is observed for systems of polarity, echo and echo-polarity. This is illustrated in table 27 below. Moreover, it was found that a majority of Eurasian languages in the sample favor the polarity system over systems involving echoing responses. These findings are congruent with previous studies (see Holmberg 2016: 145).

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[16]There is no ISO 639-3 available for Provençal. As an alternative the Glottocode is provided; see http://glottolog.org/resource/languoid/id/prov1235, accessed on 2018-05-17.

In her study of the Mediterranean area, Da Milano observes that all languages examined unanimously show a polarity system (2004: 33). She, nevertheless, notes that some of them – i.e. Greek, Albanian and Serbo-Croatian – also exhibit echoing answer strategies (Da Milano 2004: 28).

Within the Eurasian area, the echo system appears to be most prominent in the Celtic and Uralic languages (cf. table 27). In Irish Gaelic as well as Scottish Gaelic, Welsh and Breton repetition of the verb is the predominant way to answer a polarity question (Jones 1999: 28–30). Within the Uralic family, echoing one of the constituent of the question is also a highly productive answer strategy. It has been demonstrated that, in certain cases, both Hungarian and Finnish make use of stand-alone answer particles to respond to polarity questions (cf. table 27; Hakulinen 2001; Karlsson & Chesterman 1999; Rounds 2008). In addition to an echo system, they, thus, also show a polarity system (i.e. echo-polarity).

System	Affiliation	ISO	Languages
polarity	Basque	eus	Basque
	Dravidian, Tamil-Malayalam	tam	Tamil
	Indo-European, Indo-Iranian	fas	Persian
	Indo-European, Italic	hat	Hatian Creole
	Indo-European, Germanic	swe	Swedish
	Indo-European, Germanic	deu	German
	Indo-European, Germanic	nld	Dutch
	Indo-European, Italic	fra	French
	Indo-European, Italic	cat	Catalan
	Kartvelian, Georgian	kat	Georgian
echo-polarity	Turkic, Southern	azj	Azerbajani
	Indo-European, Baltic	lav	Latvian
	Indo-European, Italic	por	Brazilian Portuguese
	Indo-European, Slavic	ces	Czech
	Uralic, Finnic	fin	Finnish
	Uralic, Ugric	hun	Hungarian
echo	Indo-European, Celtic	cym	Welsh
	Indo-European, Celtic	gla	Scottish Gaelic
	Indo-European, Indo-Iranian	phl	Palula
truth	Dravidian, Tamil-Malayalam	mal	Malayalam
	Indo-European, Indo-Iranian	pan	Punjabi
polarity-truth	Indo-European, Indo-Iranian	khw	Khowar
	Uralic, Permian	udm	Udmurt

Table 27: Distribution of answering systems in Eurasia

The distribution of answering systems in South America show the tendencies observed for Eurasia in an even more pronounced manner. Only the three systems polarity, echo and echo-polarity are identified. There is no evidence for a truth system nor for mixed truth systems in South America (see table 23).

According to Holmberg, a verb-echo answer strategy is not only fairly frequent but also geographically widespread. He states that approximately half of the world's languages exhibit a verb-echo system (2016: 96, 136). Holmberg's data indicate that a fairly high proportion of the languages examined show a verb-echo together with a particle system (2016: 68). This

tendency has also been observed in section 5.3 above. It was found that the echo-polarity system is more frequent than the echo system (see table 23).

Concerning the distribution of the systems with answer particles (i.e. polarity, truth), Holmberg makes a West-East distinction on the basis of the results he obtained.

> There is a clear geographical distribution of the two systems in that all languages in my database east of India – at least as far as, and including, New Guinea – follow the truth-based system, while nearly all languages in Eurasia from India westwards principally follow the polarity-based pattern, although systematic variation can also occur within a language [...]. (Holmberg 2016: 204)

According to Holmberg (2001: 141), the truth system is predominant in the Eastern part of the world with India as the point of reference. A one-to-one comparison with the data in this study is problematic, because of differences in categorization of the answering systems. Whereas in this study a total of seven categories were used considering simple and mixed systems (see sections 4.2 and 5), Holmberg classified his data with respect to the categories "polarity-based" vs. "truth-based system", and "verb-echo" vs. "non verb-echo category" (Holmberg 2016: 4, 70f).

System	ISO	Language	Area
	afb	Gulf Arabic	Africa
	hau	Hausa	Africa
	swh	Swahili	Africa
truth	mal	Malayalam	Eurasia
	pan	Punjabi	Eurasia
	kto	Kuot	Papua New Guinea
	jpn	Japanese	Southeast Asia
	kor	Korean	Southeast Asia

Table 28: Distribution of the truth system

Table 28 presents a list of all the languages from the sample exhibiting a truth system. According to the data from this study, the truth system seems fairly widespread. Nevertheless, it can be observed that there are no languages with a truth system in the sample for South America. As mentioned before, South American languages show a clear preference for the polarity system. In terms of a East-West distinction, the results obtained in this study are, however, inconclusive.

With regard to truth response strategies, a preference for simple and mixed truth systems has been identified among the African languages. This can also be observed in table 28 above. Additionally, it has been noted that, compared to the cross-linguistic tendencies, a strikingly low frequency of echo answer systems is found in the African area (see table 23). This has also been reported in Holmberg (2016: 71).

In the macro-area of Southeast Asia and Oceania, it can be observed that all languages exhibiting a polarity system are found within Oceania. Southeast Asian languages show a truth system, an echo system or a mixed system of echo-polarity-truth (see section 5.3, table 24). The latter answering system is only found in Cantonese and Mandarin Chinese. Example 20 illustrates the mixed system observed in Mandarin Chinese.

(20) Mandarin Chinese [cmn] (questionnaire data)

    Q. *jīn tiān bù rè ma?*
       today   NEG hot Q

    'Isn't it hot today?'

    A.a. *rè / bù*
        hot NEG

    'Yes, it is hot.'

    A.b. *bù rè / bù / shì*
        NEG hot NEG be

    'No, it is not hot.'

The answers in 20A.a express disagreement with the proposition of the question. In 20A.b, the answers all express agreement with the proposition of the question. Example 20 indicates that echo responses as well as answer particles are used. Note that, whereas the short answer *bù* in 20A.a is used to express disagreement (as found in a truth system), it is used to express agreement in 20A.b. Similar answer strategies are observed in Cantonese (Jones 1999: 26, 307).

6.5 Arbitrariness of Responses

Classifying the answer strategies of languages into systems is problematic. English, for example, has commonly been classified as exhibiting a polarity system (see i.a. Sadock & Zwicky 1985; Jones 1999; Gaszewski 2008). However, not all varieties of English fall in that category. According to Jones (1999: 11), speakers of English varieties of Africa demonstrate a truth system when answering a negative question. This is illustrated in example 21. The reason for this, he explains, is the influence of indigenous languages, i.e. language contact.

(21) African English (Jones 1999: 11)

    Q. Hasn 't the President left for Nairobi yet?

    A. Yes, the President hasn't left for Nairobi yet.

The choice of answer is highly dependent on the respondents, i.e. their beliefs and the situations their in at the moment of speaking (see i.a Pope 1976: 105; Raymond 2003: 955). In my data from the questionnaires, I have also observed some variation in answer strategies used in Dutch. Many written sources on the language evidence that Dutch has a polarity-reversing particle *jawel*. In the data from the questionnaire however, there is no indication for it. Instead the informant answered the question with the positive particle *ja*. An example from the data is given in 22. Idiolectal preference in the usage of answer strategies have also been observed in previous studies (Jones 1999: 37).

(22) Dutch [nld] (questionnaire data)

Q. *Spreken ze   geen Engels?*
   speak   they no   English

   'They don't speak English?'

A.a. *Ja (ze   spreken Engels)*
    yes they speak   English

    'Yes (they speak English).'

A.b. *Nee (ze spreken geen Engels)*
    no   the speak   no   English

    'No (they don't speak English).'

Variation in answer strategies within a language can be traced back to idiolectal preferences, dialectal variation and/or language contact. In many cases, the classification of answering strategies is subject to alternative analyses.

7 Conclusion

To recapitulate: this study investigates the answers strategies found in the world's languages, thereby, seeking to fill the gap identified in previous research. Specifically, it aims to answer the following questions:

 (i) Is the typology offered by Sadock & Zwicky (1985) accurate?
     Are there additional types to the ones determined by Sadock & Zwicky (1985)?
 (ii) What is the cross-linguistic distribution and frequency of the types identified?
     Are there discernible patterns? If so, how can they be explained?

The three answering systems identified in Sadock & Zwicky (1985) have been very useful in describing the answer strategies encountered in this study. It was found that the majority of the languages in the sample exhibited either a polarity, an echo or a truth system. In addition to these simple answering systems, approximately a third of the languages in the sample exhibit more than one answering system. Moreover, it was observed that the mixed system of echo-polarity is more frequently found than the simple systems of echo or truth (cf. sections 5 and 6.1). In conclusion, the typology offered by Sadock & Zwicky (1985) is applicable to the majority of languages. However, evidence suggests that additional types, consisting of a combination of the identified types, are fairly widely found and should, therefore, not be neglected in a typology.

The frequency of the systems determined in this study can be observed in table 23 and have been discussed in detail in section 6.1. The preferred answer strategy among all occurring answering systems and across all languages of the sample is the polarity system. It was noted that this is unexpected, because in this particle system ambiguity in the responses arises with negative polarity questions. Further, only a small minority of the languages exhibiting a polarity system avoids ambiguity by means of a polarity-reversing particle.

Regarding systems with a polarity-reversing particle, the study showed that polarity-reversing particles are only found in languages exhibiting a polarity system. This suggests that polarity-reversing particles are a feature particular to the polarity system. Moreover, it was highlighted that polarity-reversing particles are most commonly found in Eurasia and in particular in Germanic languages. The forms of these particles, however, are not indicative of sharing a common etymological origin. The function of these forms appears to be an innovation.

With regard to the distribution of answering systems, several discernible patterns can be identified in the data. Within Eurasia a preference for the systems of polarity, echo and echo-polarity was noted. It was argued that the echo system appears most prominent in Celtic languages. Uralic languages show a tendency towards an echo-polarity system. Nevertheless, a majority of the languages opt for a simple polarity system. The tendency in answering system noted in Eurasia is also observed in South America. The languages in the data either show a polarity, an echo or an echo-polarity system. No occurrence of a truth system was found in South America. In the macro-area of Africa, however, an opposite tendency is observed. The African data indicate a relatively high frequency of truth-based responses and, in contrast, a strikingly low frequency of echoing responses. In the macro-area of Southeast Asia and Oceania, a distinct distribution of answering systems is identified. While Southeast asian languages exhibit the systems of echo, truth and even echo-polarity-truth, all languages from Oceania exhibit a polarity system. Further, it was demonstrated that, within the sample, the echo-polarity-truth system is found in Chinese languages only.

With this study, I have endeavoured to fill gaps identified in previous studies on answer strategies to polarity questions (see i.a. section 1). Along with Holmberg (2016), this investi-

gation is one of the few studies to offer some estimates about the cross-linguistic distribution and frequency of the answering systems identified in Sadock & Zwicky (1985). Beyond that, it is the first study to provide an account of additional mixed types.

Several tendencies have been determined in this study that could be further examined in future research. As mentioned in sections 6.2 and 6.3, polarity-reversing particles show interesting properties. A more detailed investigation of these particular particles will surely lead to some insights into its origin and its distribution. Moreover, a more comprehensive and wide-ranging typological investigation on answering systems will potentially uncover additional tendencies.

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A   Appendix

Questionnaire: Answers to polarity questions

This questionnaire has been drawn up for a pilot study on the strategies used cross-linguistically to answer polarity questions. The goal is to investigate the validity of the typology offered in Sadock & Zwicky (1985).
The design of this translation questionnaire is inspired by similar methods used in Dahl (1985, 2000), Floyd et al. (2016).

Language   ISO-693 code/Glottocode[1]:

Participant(s)[2]   Name Surname:
                         Age:
                         Gender:
                         Profession:
                         Contact information:

Instruction: Please translate the questions into your language. You will find the space for this next to the symbol [?]. Then, answer the questions in your language. Do not translate "word-for-word", but try instead to make it sound as "natural" as possible. When doable, please provide morpheme by morpheme glossing of the translated sentences or some other explanation of the different elements of the sentence. Write the possible positive answers next to the symbol [✓] and the possible negative answers next to the symbol [✗].
Please use a transcription system, if your language uses a writing system other than the latin script.

---

1. Is it hot today?

?	
✓	
✗	

---

2. Isn't it hot today?

?	
✓	
✗	

3. Isn't it raining?

?	
✓	
✗	

4. Do you see them?

?	
✓	
✗	

5. Wasn't she seen by other people?

?	
✓	
✗	

6. Did John already arrive?

?	
✓	
✗	

7. Is Anna your sister?

?	
✓	
✗	

8. Do you know where the hospital is?

?	
✓	
✗	

9. They don't speak English?

?	
✓	
✗	

10. Is the fruit ripe?

?	
✓	
✗	

11. Haven't the insects bitten you?

?	
✓	
✗	

Comments

Should you have further comments, you may add them in the field below.

Thank you for your help!

If you have any questions, please do not hesitate to contact me (elmo7609@student.su.se).

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B Appendix

Area	ISO	Language	Answer strategies				Main source
			polarity	truth	echo	REV	
Africa	afb	Gulf Arabic	no	yes	no	no	König & Siemund 2007: 321
Africa	aka	Akan	yes	yes	no	no	questionnaire data
Africa	hau	Hausa	no	yes	no	no	Kraft & Kirk-Greene 1973: 67–68
Africa	run	Kirundi	yes	no	no	no	questionnaire data
Africa	swh	Swahili	no	yes	no	no	questionnaire data
Africa	tir	Tigrinya	yes	no	no	no	questionnaire data
Arifca	amh	Amharic	no	yes	yes	no	Leslau 1962: 147
Eurasia	azj	Azerbajani	yes	no	yes	no	questionnaire data
Eurasia	cat	Catalan	yes	no	no	no	questionnaire data
Eurasia	ces	Czech	yes	no	yes	no	Jones 1999: 31f
Eurasia	cym	Welsh	no	no	yes	no	King 2005: 380f
Eurasia	deu	German	yes	no	no	yes	questionnaire data
Eurasia	eus	Basque	yes	no	no	no	questionnaire data
Eurasia	fas	Persian	yes	no	no	yes	Mace 2003: 145f
Eurasia	fin	Finnish	yes	no	yes	no	Karlsson & Chesterman 1999: 167–169
Eurasia	fra	French	yes	no	no	yes	questionnaire data
Eurasia	gla	Scottish Gaelic	no	no	yes	no	questionnaire data
Eurasia	hat	Hatian Creole	yes	no	no	no	questionnaire data
Eurasia	hun	Hungarian	yes	no	yes	yes	questionnaire data; Rounds 2008: 267f
Eurasia	kat	Georgian	yes	no	no	no	questionnaire data
Eurasia	khw	Khowar	yes	yes	no	no	questionnaire data
Eurasia	lav	Latvian	yes	no	yes	no	questionnaire data
Eurasia	mal	Malayalam	no	yes	no	no	König & Siemund 2007: 321
Eurasia	nld	Dutch	yes	no	no	yes	questionnaire data
Eurasia	pan	Punjabi	no	yes	no	no	König & Siemund 2007: 321
Eurasia	phl	Palula	no	no	yes	no	questionnaire data

Area	ISO	Language	Answer strategies			Main source	
			polarity	truth	echo	REV	
Eurasia	por	Brazilian Portuguese	yes	no	yes	no	questionnaire data; Thomas 1974: 18
Eurasia	swe	Swedish	yes	no	no	yes	questionnaire data
Eurasia	tam	Tamil	yes	no	no	no	questionnaire data
Eurasia	udm	Udmurt	yes	yes	no	no	questionnaire data
Oceania	mkt	Vamale	yes	no	no	no	questionnaire data
Oceania	plv	Southwest Palawano	yes	no	no	no	questionnaire data
Oceania	tgl	Tagalog	yes	no	no	no	questionnaire data
Papua New Guinea	kto	Kuot	no	yes	no	no	Lindström 2002: 13f
South America	cbi	Cha'palaa	no	no	yes	no	Floyd *et al.* 2016
South America	ese	Ese'eja	no	no	yes	no	Floyd *et al.* 2016
South America	pav	Wari'	yes	no	no	no	Floyd *et al.* 2016
South America	que	Imbabura Quechua	yes	no	yes	no	Floyd *et al.* 2016
South America	que	Pataza Quechua	yes	no	yes	no	Floyd *et al.* 2016
South America	tba	Aikanã	yes	no	yes	no	Floyd *et al.* 2016
South America	yrl	Nheengatú	yes	no	no	no	Floyd *et al.* 2016
Southeast Asia	bfu	Bunan	no	no	yes	no	Widmer 2014[1]
Southeast Asia	cmn	Mandarin	yes	yes	yes	no	questionnaire data
Southeast Asia	jpn	Japanese	no	yes	no	no	questionnaire data
Southeast Asia	kaf	Khatso	no	no	yes	no	Donlay 2015: 462, 466, 477
Southeast Asia	kor	Korean	no	yes	no	no	questionnaire data
Southeast Asia	tha	Thai	no	no	yes	no	Iwasaki & Ingkaphirom 2005: 285f, 288
Southeast Asia	yue	Cantonese	yes	yes	yes	no	Matthews & Yip 1994: 319–322
Total: 48							

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[1]Manuel Widmer, personal communication, 13 February, 2018

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