Responding to negative assertions in Germanic: On *yes* and *no* in English, Dutch and Swedish[1]

Sophie REPP — *University of Cologne*
A. Marlijn MEIJER — *University of Cologne*
Nathalie SCHERF — *Humboldt-Universität zu Berlin*

Abstract. This paper presents evidence from three acceptability judgement experiments that tested the acceptability of the response particles YES and NO in affirming and rejecting responses to negative assertions in three Germanic languages. The study shows that the acceptability of the particles differs between the three languages, but does not correlate with the availability of a dedicated rejecting particle like German *doch* in the particle system of a language. Furthermore, the experiments revealed that there is considerable inter-individual variation. The paper thus contributes to the ongoing exploration of inter-individual variability in the use and meaning of response particles, which was first explored experimentally for German by Claus, Meijer, Repp and Krifka (2017). The paper discusses current theories of response particles and offers a preliminary account of the findings in the anaphora account of Roelofsen and Farkas (2015).

Keywords: response particles, negation, inter-individual variation, acceptability experiments

1. Introduction

Response particles like English *yes* and *no* may in principle fulfil two functions. On the one hand, they may affirm or reject the truth of the proposition that is expressed in a previous utterance (= the *antecedent*). YES[2]-type particles affirm the truth; NO-type particles reject it. On the other hand, the particles may indicate that the response to the previous utterance has positive or negative polarity. YES-type particles indicate positive polarity; NO-type particles indicate negative polarity. When the proposition expressed in the previous utterance has positive polarity, these functions result in the same response pattern, see (1)(a). However, when the proposition expressed in the previous utterance has negative polarity, these functions come apart, so that in principle either particle can be used to express the intended meaning, see (1)(b).

(1)	*Antecedent*	*Response:* She does.	*Response:* She doesn't.
a.	Li dances.	YES = affirm; positive polarity	NO = reject; negative polarity
b.	Li doesn't dance.	YES = positive polarity NO = reject	NO = negative polarity YES = affirm

It has long been known that languages vary with respect to the preference of assigning one of the two functions to YES and NO (Pope, 1976; Jones, 1999), and that there also are particles that combine particular specifications of these functions. For instance, German and French have a

[1] This research was funded by the Deutsche Forschungsgemeinschaft DFG in the priority program XPrag.de (SPP 1727), project *Affirmative and rejecting responses to assertions and polar questions* (Repp & Krifka). We thank the audiences at the *Xprag.de Annual Meeting*, at the *Linguistischer Arbeitskreis* (Cologne), and at *SuB 23* for valuable comments.

[2] We are using small caps to refer to YES-type / NO-type response particles irrespective of the specific language. We are using italics to refer to English *yes* and *no*, and to the corresponding particles in other languages.

dedicated particle for rejecting negative antecedents like the antecedent in (1)(b): *doch/si she does*. The early accounts of response particle systems assumed that languages choose between truth-based and polarity-based systems for the choice of YES vs. NO. However, in recent years it has become clear that a clean partition into truth-based vs. polarity-based systems is rare (Roelofsen and Farkas, 2015). Preferences for particles often are gradient rather than categorical, which was first observed in literature using single-speaker acceptability judgements (Holmberg, 2013, 2015; Krifka, 2013; Roelofsen and Farkas, 2015; Farkas and Roelofsen, 2018), and which was confirmed in experimental investigations with larger speaker groups for various languages (Brasoveanu, Farkas and Roelofsen, 2013; Meijer, Claus, Repp and Krifka, 2015; Claus et al., 2017; González-Fuente, Tubau, Espinal and Prieto, 2015; Goodhue and Wagner, 2015, 2018; Li, González-Fuente, Prieto and Espinal, 2016). Furthermore, experimental investigations on German (Meijer et al., 2015; Claus et al., 2017) have shown that some of the judgements in the theoretical literature are speaker-specific to the extent that a substantial number of participants in the experiments show the opposite acceptability patterns from those reported in the literature. Therefore, even the more fine-grained analyses that have been proposed to account for gradient judgements (Krifka, 2013; Roelofsen and Farkas, 2015; Farkas and Roelofsen, 2018) have been called into question with respect to details of the analysis. Other strands of theoretical analyses of response particles (Kramer and Rawlins, 2011; Holmberg, 2013, 2015) also have been shown to struggle with the kind of data observed in German (Claus et al., 2017).

The present paper addresses the issue of variation both from the perspective of inter-individual variation and from the perspective of cross-linguistic variation. It presents evidence from acceptability judgement experiments in three Germanic languages: UK English, Netherlands Dutch and Swedish Swedish. The experiments use the same method and materials (translation-equivalent, country localized) as Claus et al. (2017). The goal of the study is to find out if and how the three languages differ from German both in the main acceptability pattern for YES and NO across speakers, and in the individual variation. The languages under investigation have a good potential to shed further light on the meaning and use of response particles because two of them (Dutch and Swedish) have at least one dedicated response particle for rejections of negative antecedents, whereas the third does not (English). In view of the fact that Claus et al.'s (2017) findings differ substantially from what had been reported in the literature on German and on English, we might hypothesize that the difference might be related to the presence of the rejecting particle *doch* in German. Since Swedish has been claimed to show similar preference patterns as English (Holmberg, 2015) but has the rejecting particle *jo* in addition to YES and NO, a comparison of Swedish with English will be very informative regarding this issue.

The paper is organized as follows. Section 2 reviews recent theories of response particles and provides a more detailed discussion of one of them, viz. the anaphoric *feature account* by Roelofsen and Farkas (2015), and Farkas and Roelofsen (2018), as this account seems to be the most promising to explain the data to be presented in this paper. Section 3 discusses the previous empirical observations in the quantitative and non-quantitative theoretical literature on response particles in English, Dutch and German. Section 4 reports three acceptability judgement experiments on these three languages, and discusses the findings for each language. Section 5 discusses the overall results from a cross-linguistic point of view and offers a preliminary theoretical analysis of the findings.

2. Theories of response particles

Theories of response particles fall into two major types: anaphora and ellipsis theories. Note, however, that anaphora theories also have an elliptic component because in these theories it is assumed that there may be a response clause in addition to the response particle, which may be elided. The ellipsis theories by definition are also anaphoric because ellipsis is anaphoric.

2.1. Anaphora theories

Anaphora theories (Krifka, 2013; Roelofsen and Farkas, 2015; Farkas and Roelofsen, 2018) derive the meaning of the particles at the semantics-pragmatics interface. The particles are propositional anaphors or anaphoric operators that pick up a proposition that was introduced by the antecedent. Krifka (2013) proposes a bidirectional optimality theory account. In this account response particles pick up a propositional discourse referent (= *propDR*) that was introduced by the antecedent, and operate on it. YES affirms the propDR, whereas NO negates it. Negative antecedents like *Li doesn't dance* introduce both a negative propDR, $\bar{p}_{DR}$, (= the proposition that is denoted by the entire sentence) and a positive propDR, p_{DR}, (= the proposition that the negation takes scope over). Krifka assumes that p_{DR} is more salient in default contexts than $\bar{p}_{DR}$, arguably because we are usually more interested in what is the case rather than in what is not the case. In negative contexts, e.g. in contexts where *not dancing* is under discussion, $\bar{p}_{DR}$ is more salient than p_{DR}. Krifka proposes that response particles like all anaphoric expressions are sensitive to the salience of potential antecedents. He models this role of salience as an OT constraint which penalizes the use of anaphora that pick up less rather than more salient antecedents. For dialogues with negative antecedents, this results in the following preference pattern for YES and NO. In an affirming response to *Li didn't dance* in a default context, NO negates the more salient p_{DR}, whereas YES affirms the less salient $\bar{p}_{DR}$. So NO should be preferred. In a negative context, the preference pattern is reversed. In a rejecting response to *Li didn't dance* in a default context, NO negates the less salient $\bar{p}_{DR}$, whereas YES affirms the more salient p_{DR}. So YES should be preferred. Again, in a negative context, the preference pattern is reversed. Rejecting particles like German *doch* come with a presupposition concerning the availability of $\bar{p}_{DR}$ and p_{DR}, and the intended meaning of the response. They block particles with the same meaning, which is modelled as an OT constraint, but can be thought of as an instance of *Maximize presupposition* (Heim, 1991), see Claus et al. (2017). There are further OT constraints in this account that pertain to dispreferred conversational moves like disagreeing with an interlocutor, but we will not discuss them here.

Roelofsen and Farkas (2015; henceforth R&F) and Farkas and Roelofsen (2018; henceforth F&R) is an account where the anaphoric aspect comes in the shape of a set of presuppositional features. R&F propose that clauses contain a polarity head *Pol* that takes the TP as complement. Pol hosts the presuppositional features. Absolute presuppositional features presuppose that the polarity of the response clause is positive [+], or negative [–]. Relative presuppositional features presuppose that the polarity of the antecedent and the (elided) response clause is the same [AGREE], or different [REVERSE]. Response particles *realize* the features. Which particle realizes which feature(s) depends on language-specific *feature-mapping rules* (F&R, 2018). For instance, English and German map [+] and [AGREE] to YES, [–] and [REVERSE] to NO. This setup explains the two functions of response particles introduced in Section 1. German

additionally maps the feature combination [+, REVERSE] to *doch*. Other languages might not map a certain feature to any particle. Furthermore, there are language-specific *realization rules*. On the one hand, this means that a language might require certain features to always be realized: if the respective presupposition is fulfilled, e.g. for [REVERSE], a particle must be used to express this meaning component. On the other hand, languages might have preferences for the realization of certain features. A language might map [+] and [AGREE] to YES and [–] and [REVERSE] to NO, but the realization of the absolute features might be preferred so that the feature combination [AGREE, –] preferably is realized by NO, although YES is also acceptable. These realization rules contribute to accounting for the observation that cross-linguistically, the preference patterns for the use of YES and NO are gradient rather than categorical.

According to R&F and F&R, there are further constraints that are relevant for the meaning and use of response particles. A universal markedness constraint is REALIZE MARKED FEATURES. A marked feature is for instance the absolute feature [–] because (arguably) sentences with negation are harder to process than sentences without negation. The relative feature [REVERSE] also is marked because disagreeing is dispreferred in conversation. Finally, [+] is marked if combined with [REVERSE] because the two features do not form a natural class. The markedness constraint says that marked features have higher realization needs: they need to be expressed. For the English dialogue in (1)(b) above, this predicts that in the affirming response, *yes* can be used because it realizes [AGREE] and *no* can be used because it realizes [–]. However, *no* should be preferred because it realizes a marked feature whereas *yes* does not. In the rejecting response, *yes* can be used because it realizes [+] and *no* can be used because it realizes [REVERSE]. Both particles should be equally acceptable because *no* realizes the marked feature [REVERSE] and *yes* realizes [+] in a [REVERSE] response, which makes [+] marked. In addition to the markedness constraint, there are the blocking constraints EXPRESSIVENESS (*Express feature content as much as possible*) and FREQUENCY (*Prefer the use of frequent forms*). The former constraint results in the preferred use of particles that express more features over particles that express fewer features. For instance, German *doch* expresses the feature combination [+, REVERSE], whereas *ja* and *nein* only express one feature each in a response to a negative antecedent. Therefore, *doch* blocks *ja* and *nein*. However, since *ja* and *nein* arguably are more frequent than *doch*, FREQUENCY tempers the blocking effect of *doch*, so that *ja* and *nein* are not completely unacceptable in [+, REVERSE] responses. Finally, there is the general pragmatic constraint AVOID AMBIGUITY, by which expressions that are perniciously ambiguous are to be avoided. As we already saw, both YES and NO qualify as perniciously ambiguous as responses to negative antecedents. All the constraints that F&R discuss operate in a stochastic optimality-theoretic framework (Boersma and Hayes, 2001), which is suitable to model certain micro-variations. In such a framework, constraints are ranked along a continuous scale and the relative ranking of constraints that are close to each other can be perturbed.

The two anaphora accounts were directly juxtaposed in the study by Claus et al. (2017) which forms the blue print for the current study. Since the aim of the current study is to contribute to a systematic cross-linguistic investigation of the meaning and use of response particles, the experimental setup to be presented in Section 4 tests the acceptability of YES and NO in responses to negative antecedents also with respect to a potential influence of default vs. negative contexts (Krifka, 2013). Claus et al. did not find the predicted pattern for German, and the effects of context that were obtained were not relevant in a way that would fit Krifka's basic assumptions. Furthermore, Claus et al. highlighted that to account for the substantial

inter-individual variation in German, one would have to assume that speakers differ with respect to which of the two propDRs that are introduced by a negative antecedent, p_{DR} or $\bar{p}_{DR}$, is more salient for them. Experimental evidence supporting this assumption is not yet available. As the current study did not find any effects of context whatsoever (see below), our theoretical discussion of the experiments in Section 5 will concentrate on the account by R&F and F&R.

2.2. Ellipsis theories

Ellipsis theories (Van Cranenbroek, 2004; Kramer and Rawlins, 2011; Holmberg, 2013, 2015; Servidio, 2014; Servidio, Bocci and Bianchi, 2018) derive the meaning of response particles syntactically. The particles are the remnant of an elliptic clause, which is elided under identity with the antecedent clause. The clause that is elided is usually the TP, and the head that licenses the ellipsis is *Pol* or a similar head. Typically Pol takes the TP as complement. The response particle occupies the head or specifier position of PolP (Kramer and Rawlins, 2011; Servidio et al., 2018), or a position in a higher phrase (Holmberg, 2015). The sentential negation is hosted in the elided part of the clause. In the accounts of Kramer and Rawlins (2011) and Holmberg (2015), the identity of the ellipsis site with the antecedent is mitigated via polarity-related interpretable vs. uninterpretable syntactic features of the particle, of the polarity head and of the sentential negation. For negative-polar syntactic objects, these features are negative. For positive-polar syntactic objects, these features may be positive or (depending on the theory), there might be no polarity feature. Several negative features in the clause enter a feature chain so that only one of the features is interpreted by the semantics. To gain a rough impression, consider a dialogue with a negative antecedent and an affirming response like (2)B/B'. Ellipsis is marked by strike-through. [uNeg] and [iNeg] stand for *uninterpretable* and *interpretable negation feature*, respectively. In the *no*-response in (2)B, the three [Neg] features form a feature chain. In the *yes*-response in (2)B', the particle and the Pol head have no syntactic polarity feature so no feature chain will be formed. In (2)B/B', the TP in the response is identical with the TP of the antecedent clause so it can be elided. Differences between languages arise from differences in the syntax of the negation (Holmberg, 2015).

(2) A: [$_{TP}$ Li did not dance]. B: No$_{[uNeg]}$ [$_{PolP}$ Pol$_{[uNeg]}$ ~~[$_{TP}$ Li did not$_{[iNeg]}$ dance]~~
B': Yes, [$_{PolP}$ Pol ~~[$_{TP}$ Li did not$_{[iNeg]}$ dance]~~

The details of the other ellipsis accounts are different. We do not have the space to discuss them here but, note that e.g. Servidio et al. (2018) assume that the particles carry features that are similar to the presuppositional features in R&F's anaphoric account. Also note that it has been suggested that particles may have different syntactic properties depending on whether they are used as responses to questions vs. assertions. For instance, Holmberg (2015) assumes that English *yes* and *no* are remnants of ellipsis but when used as a response to an assertion, *yes* is a rejoinder like *true/right*, i.e. not a remnant. We cannot do justice to the ellipsis theories in this paper. We would like to point out, though, that such syntactic theories do not naturally lend themselves as an explanation for graded acceptability (cf. Claus et al., 2017). In the above accounts, a structure is derived or it is not. In other words, a response may be grammatical or it may be ungrammatical. To account for something like 'medium' acceptability these accounts must be part of a model that also includes pragmatic or psycholinguistics factors. This is not the place to develop such an account.

3. Previous empirical observations on responses to negative assertions[3]

The empirical observations to be discussed in this section are summarized in Table 1. For English, the existing literature makes rather divergent empirical claims. We already heard that according to R&F, affirmations of negative assertions are best expressed by *no* whereas rejections can be realized equally well by both *yes* and *no*. Krifka (2013) assumes that in default contexts, affirmations of negative assertions are best expressed by *no*, and rejections by *yes*. In negative contexts, affirmations of negative assertions are best expressed by *yes*, and rejections by *no* because of the altered salience of the propDRs introduced by the negative antecedent. Kramer and Rawlins (2011) assume that in responses to negative antecedents the meaning of *yes* and *no* gets neutralized, i.e. the two particles essentially mean the same and thus are equally acceptable both in affirming and in rejecting responses. Holmberg (2015) suggests that in affirmations, *no* is preferred but some speakers might also accept *yes*. For the latter, *yes* is a rejoinder like *true*, for others it is an ellipsis remnant. In rejections, *yes* is used. Previous experimental investigations (Brasoveanu et al., 2013) found for US English that in affirming responses, *no* is rated as more acceptable than *yes*. Goodhue and Wagner (2018) conducted an acceptability study on Canadian English that used the same design as Claus et al. (2017), experiment 2. They found that in affirming responses, *no* is clearly preferred over *yes*, but they found considerable variation for *yes*-affirmations (which they do not describe in detail). For rejections, *no* also seems to be more acceptable than *yes*, but the difference in acceptability between the two particles seems to be smaller. Taking all these observations together, we may hypothesize for our experiment on English (Exp. 1) that in affirming responses to negative assertions there is a preference for *no* over *yes*. Whether *yes* is acceptable at all or whether its acceptability is speaker-dependent is an open issue. If Krifka is right and context plays a role, negative contexts should produce a higher acceptability of *yes* over *no*. For rejections, we do not formulate a hypothesis because the previous empirical claims are very inconsistent.

Turning to Dutch (Netherlands), recall that in addition to YES and NO, i.e. *ja* and *nee*, Dutch has particles and particle combinations that like German *doch* are used in rejections of negative antecedents. Hoeksema (2006) lists *jawel, welles* and *toch wel*. For *nee,* Hoeksema suggests that it is affirming when used as a response to a negative antecedent but can be rejecting if it is followed by a positive response clause. *Ja* cannot be used as a response to negative assertions. As far as we know there has been no quantitative research for Dutch. Neither do we know anything about speaker variation. For our experiment on Dutch (Exp. 2), we hypothesize that in affirmations *nee* is acceptable whereas *ja* is not. In rejections, *nee* should also be acceptable because in the experimental materials the particle was always followed by a response clause. Furthermore, we hypothesize that *nee* is less acceptable in rejections than in affirmations, because for rejections of negative assertions Dutch has specific particles so that some kind of blocking effect is likely to occur. As for speaker variation, we have no expectations.

For Swedish, Holmberg (2015) suggests that it has a robust polarity-based particle system. In other words, *ja* indicates that the response clause is positive and *nej* indicates that the response clause is negative. Swedish also has a dedicated particle for rejections of negative antecedents, *jo*. Holmberg reports that he is not aware of any speaker variation. For our experiment on Swedish (Exp. 3), we hypothesize that in affirmations, *nej* is acceptable whereas *ja* is not. In

[3] We do not discuss responses to negative polar questions because these typically are biased so that the response patterns for them are likely to be different.

rejections, neither particle should be fully acceptable because the particle *jo* must be used. However, *ja* should still be more acceptable than *nej* because *ja* indicates positive polarity, i.e. fits the polarity of the response clause in rejections. There should be no speaker variation.

Table 1. Preference patterns for NO and YES reported in previous literature.

Response	Context	English	Dutch	Swedish
Affirmation *...hasn't*	Positive (Default)	NO > YES (*Krifka; R&F; [Exp]Brasoveanu et al.)* NO = YES (*Kramer & Rawlins)* NO; %YES (*Holmberg, [Exp]Goodhue & Wagner)*	NO *(Hoeksema)*	NO *(Holmberg)*
	Negative	YES > NO (*Krifka)*		
Rejection *...has*	Positive (Default)	YES > NO (*Krifka; Holmberg)* NO = YES (*R&F, Kramer & Rawlins)* NO > YES (*[Exp]Goodhue & Wagner(?))*	(NO) *(Hoeksema)*	– *(Holmberg)*
	Negative	NO > YES (*Krifka)*		

4. Acceptability judgement experiments

As already mentioned, the experiments in this study all used the same method and materials as experiment 2 in Claus et al. (2017) in order to ensure maximal comparability between the languages at issue. The translations contained small localizing adaptations for items that made reference to cultural aspects that did not fit a UK, Netherlands or Sweden context.

4.1. Experiment 1: English

Participants. 48 speakers[4] (18 to 65 years, $M = 35.9$; 26 female) participated in the experiment. They were native speakers of UK English and were recruited via *Prolific* (prolific.ac). Two speakers were from Wales, one speaker was from Scotland, the other speakers were from a variety of dialect regions in England. Six speakers used a second language with varying frequency (1 x Punjabi, 1 x Portuguese (several days per week); 1 x Welsh (several days per month); 2 x Spanish, 1 x Hungarian (less often)).

Materials & Design. There were 48 experimental items, 16 filler items, and one practice item. Each item started with a scene-setting passage followed by a dialogue between two interlocutors. The scene-setting passage introduced the interlocutors and conveyed information about the dialogue's context. It ended with a sentence that included an embedded question with positive or negative polarity, which was intended to induce a salient p_{DR} or a salient $\bar{p}_{DR}$, respectively (= factor CONTEXT).[5] The dialogue consisted of two turns: an assertion and a

[4] This number is the number of participants that entered the statistical analysis. In all experiments, there were additional participants that did not complete the experiment or that did not respond to the verification statement correctly (see below), so they were excluded from the data analysis.

[5] In half of the experimental items, that question established broad VP focus for the assertion (e.g., *[sown the lawn]$_F$* in (3)). In the other half, the embedded question was an object-focus question (e.g., *In the coffee break they are talking about [which animals] the vet has vaccinated already/hasn't vaccinated yet.*)

response to it. In the experimental items, the assertion had negative polarity. In the filler items, it had positive polarity. The response to the assertion always was composed of a response particle, i.e. *yes* or *no* (= factor PARTICLE), and a clause with positive or negative polarity, which made clear whether the response was affirming or rejecting (= factor RESPONSE CLAUSE). Thus, the experiment had a 2x2x2 design resulting in eight experimental conditions, see (3) for a sample item. The items were distributed over eight experimental lists in a Latin square design. The order of experimental items and filler items was pseudorandomized in six different ways.

(3) **Setting:** A couple of weeks ago Leroy and Heather asked their gardener to redo the back garden of their holiday home.

CONTEXT *Negative*: Now they are chatting about what the gardener hasn't done yet.
Positive: Now they are chatting about what the gardener has done already.

Dialogue: Leroy: The gardener hasn't sown the lawn yet. (= assertion)
Heather: *No / Yes*, *he hasn't / he has*
PARTICLE RESPONSE CLAUSE (*affirmation, rejection*)

All embedded questions, assertions, and response clauses were in present perfect tense. The embedded questions and the assertions contained a temporal adverb: *already* or *yet*, depending on the polarity of the sentence. The assertions were transitive sentences. The response clause contained a pronoun and VP ellipsis with or without negation. The sex of the interlocutors was balanced across items. To encourage the participants to read each item carefully, all items were followed by a true or false verification statement. The verification statement was either about the CONTEXT information (eight items), or about other information in the scene-setting passage or in the dialogue. True and false statements were equally distributed over all 64 items.

Procedure. The experiment was run as a web study. Each item was presented on a computer screen. The participants went through the experiment in a self-paced way per mouse-click. The setting, the assertion and the response appeared one by one, one under the other. Assertion and response were placed in a speech bubble, which was tagged by the name of the speaker. Then, a 7-point rating scale appeared, which consisted of a row of unnumbered bullets and the words *very unnatural / very natural* at the two ends of the row. The participants' task was to judge the naturalness and suitability of the response in the given dialogue and context by clicking on a bullet they considered fitting. They were instructed to take into account the information from the scene-setting passage, the assertion and the response. Furthermore, they were told that the response clause expressed the responding person's knowledge about the asserted state-of-affairs. After entering the judgement, the item and the rating scale disappeared from the screen. The verification statement appeared, for which the participants had to choose *false* or *true*. Only data from participants that made the correct choice 80% of the time entered the analysis.

Results. For the statistical analysis the row of bullets was coded as numbers on a rating scale from 1 (very unnatural) to 7 (very natural). We treated the scale as an ordinal scale. All analyses were conducted by using cumulative link mixed models for ordinal data (R package `ordinal`) with random intercepts for participants and items. Some models also contained random slopes for participants (see below). All factors were coded with orthogonal contrasts (1, -1). Table 2 shows the median ratings per condition. Figure 1 shows the proportion of ratings across participants and items, and collapsed over the factor CONTEXT as this factor did not yield any significant results. The results of the statistical analysis are given in Table 3. There were main

effects of RESPONSE CLAUSE and of PARTICLE. Affirmations overall were rated as more acceptable than rejections, *no* overall was rated as more acceptable than *yes*. There also was an interaction of RESPONSE CLAUSE and PARTICLE, which was resolved by RESPONSE CLAUSE (see the lower part of Table 3). In affirmations, *no* was rated as more acceptable than *yes*. In rejections, *yes* was rated more acceptable than *no*.

Table 2: Median ratings per condition in Experiment 1 (English)

	RESPONSE CLAUSE	PARTICLE	Median in negative / positive CONTEXT
Affirmations	negative: *...hasn't*	*no*	7 / 7
		yes	2 / 2
Rejections	positive: *...has*	*no*	5 / 5
		yes	7 / 7

Table 3. Cumulative link mixed model results for Experiment 1 (English)

	Fixed effects	*β*	*SE*	*z*	*p*
Full data set	CONTEXT	-0.03	0.05	-0.70	n.s.
	RESPONSE CLAUSE	0.89	0.16	5.44	***
	PARTICLE	-1.05	0.14	-7.40	***
	CONTEXT × RESPONSE CLAUSE	0.009	0.05	0.20	n.s.
	CONTEXT × PARTICLE	-0002	0.05	-0.05	n.s.
	RESPONSE CLAUSE × PARTICLE	3.46	0.24	14.33	***
	CONTEXT × RESPONSE CLAUSE × PARTICLE	-0.05	0.05	-1.06	n.s.
Affirmations	PARTICLE	-4.36	0.30	14.36	***
Rejections	PARTICLE	2.48	0.28	8.93	***

*Significance codes: *** p < .001, ** p< .01, * p < .05*

The best model that was fitted to the data contained random slopes for the interaction RESPONSE CLAUSE x PARTICLE per participant. Participants differed in the acceptability ratings for the two particles in affirmations vs. rejections. To explore this variation, we determined each participant's median ratings for affirming *no*- and *yes*-responses and for rejecting *no*- and *yes*-responses. The results are plotted in Figure 2. We are interpreting a median of ≥ 6 to signal that the participant found the respective particle acceptable and a median of ≤ 2 that the participant found the particle unacceptable. **For affirmations**, 47 participants (98%)

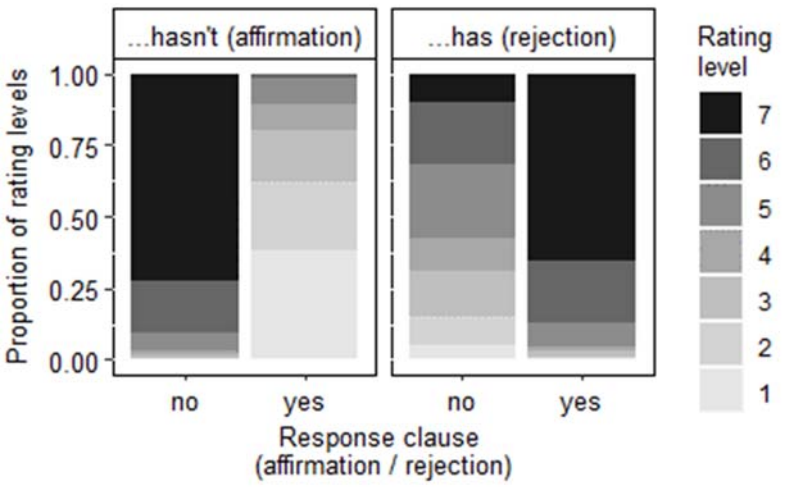

Figure 1. Experiment 1 (English): Proportions of ratings per rating level, ranging from 1 ('very unnatural') to 7 ('very natural') for the factors RESPONSE CLAUSE × PARTICLE.

rated *no* with a median of ≥ 6. No-one rated *yes* with a median of ≥ 6. All participants rated *no* with a higher median than *yes*. For 31 participants (65%) this difference was clear-cut, i.e. *no* had a median of ≥ 6 and *yes* a median of ≤ 2. **For rejections**, 42 participants (87.5%) rated *yes* with a median of ≥ 6. 13 participants (27%) rated *no* with a median of ≥ 6. In sum, 42 participants rated at least one of the particles with a median of ≥ 6, that is 6 participants (12.5%) did not rate any of the particles as acceptable. 43 participants (90%) rated *yes* with a higher rating than *no*. For 3 participants (6%) this difference was clear-cut, i.e. *yes* had a median of ≥ 6 and *no* a median of ≤ 2. 6 participants had the same rating for both particles (1 x 3, 1 x 5, 1 x 6, 2 x 7).

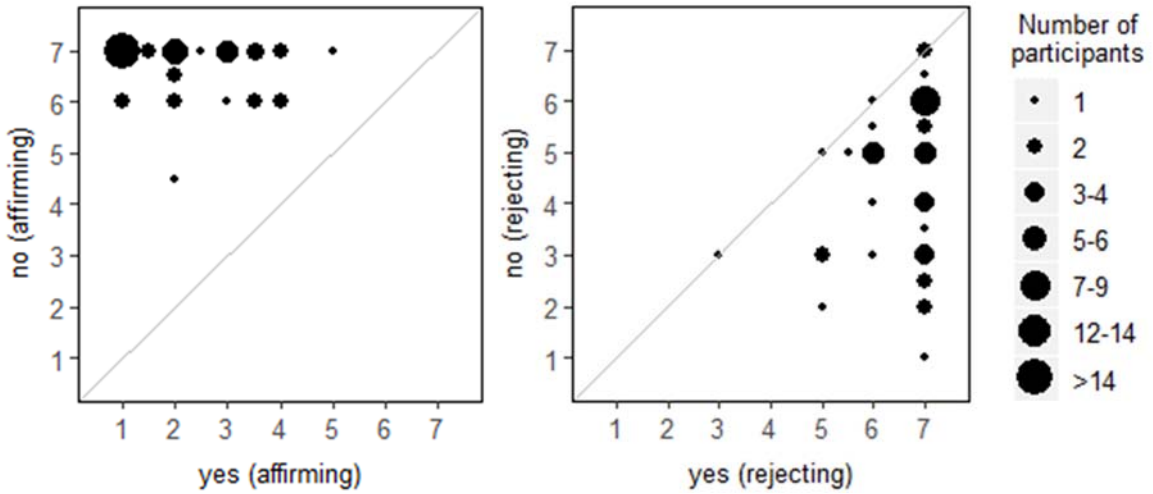

Figure 2a&b. Experiment 1 (English): Each participant's median rating for *yes* plotted against the corresponding median rating for *no* in affirmations (left) and rejections (right). Dot size indicates the number of participants who share the given pair of median ratings.

Discussion. Experiment 1 confirmed our hypothesis for affirmations of negative assertions. *No* clearly is more acceptable than *yes* (cf. Brasoveanu, et al., 2013; Krifka, 2013; Holmberg, 2015; R&F; Goodhue and Wagner, 2018). There was no effect of context: the predictions by Krifka (2013) on this issue were not confirmed. There was little speaker variation. For the majority of participants the difference in acceptability between the particles was substantial. Thus, the speaker variation reported in Holmberg (2015) could not be confirmed. For rejections, the experiment supported Krika's and Holmberg's claims. Overall, *yes* was preferred over *no*. However, there was unpredicted, considerable speaker variation. A quarter of the participants rated *no* as acceptable in rejections. We will evaluate these findings in the General Discussion.

4.2. Experiment 2: Dutch

Participants. 48 (16-53 years, M = 24.5; 16 female) participated in the experiment. They were native speakers of Dutch from a variety of dialect regions in the Netherlands. They were recruited via Prolific. 18 speakers used English on a daily basis, 18 used English several days per week, 6 used English several times per month. This essentially bilingual situation is typical of the Netherlands. English-language television programs are subtitled, and with the new media, English is pervasive throughout. See Section 5 for discussion. Some speakers used a third language: 6 speakers used German (1 x several times per week, 2 x several times per

month, 3 x less often). One person used Cantonese on a daily basis. Some speakers used a third language several times per week in addition to Dutch and English: 1 x Croatian, 1 x Limburgish, 1 x Spanish, 1 x Vietnamese. One person used Japanese several times per month.

Results. See Experiment 1 for the data coding and statistical method. Table 4 shows the median ratings per condition. Figure 3 shows the proportion of ratings across participants and items, collapsed over CONTEXT as this factor did not yield significant results. The results of the statistical analysis are given in Table 5.

Table 4. Median ratings per condition in Experiment 2 (Dutch).

	RESPONSE CLAUSE	PARTICLE	Median in negative / positive CONTEXT
Affirmations	negative: *...hasn't*	*nee*	6 / 6
		ja	5 / 5
Rejections	positive: *...has*	*nee*	5 / 5
		ja	2 / 2

Table 5. Cumulative link mixed model results for Experiment 2 (Dutch).

	Fixed effects	*β*	*SE*	*z*	*p*
Full data set	CONTEXT	-0.01	0.04	-0.35	n.s.
	RESPONSE CLAUSE	-0.73	0.10	-7.14	***
	PARTICLE	-1.02	0.13	-7.62	***
	CONTEXT × RESPONSE CLAUSE	-0.05	0.04	-1.21	n.s.
	CONTEXT × PARTICLE	-0.01	0.04	-0.35	n.s.
	RESPONSE CLAUSE × PARTICLE	-0.36	0.04	-9.01	***
	CONTEXT × REPSONSE CLAUSE × PARTICLE	0.07	0.04	1.70	n.s.
Affirmations	PARTICLE	-0.54	0.06	-9.59	***
Rejections	PARTICLE	-1.87	0.25	-7.35	***

*Significance codes: *** p < .001, ** p< .01, * p < .05*

There were main effects of RESPONSE CLAUSE and of PARTICLE. Affirmations overall were rated as more acceptable than rejections, *nee* overall was rated as more acceptable than *ja*. There was an interaction of RESPONSE CLAUSE and PARTICLE, which was resolved by RESPONSE CLAUSE (lower part of Table 5). Both in affirmations and in rejections *nee* was rated as more acceptable than *ja,* but in rejections this

difference was larger. Since there were convergence problems, models with the interaction of PARTICLE and RESPONSE CLAUSE as slopes for participants could not be tested. Therefore, models with the two factors as main effect were fitted. The analysis of the medians for *nee* and *ja* per participant revealed that there was great inter-individual variation. Figure 4 illustrates this. **For affirmations**, 30 participants (62.5%) rated *nee* with a median of ≥ 6. 16 participants (33%) rated *ja* with a median of ≥ 6. 6 participants had a median of ≥ 6 for both particles. In sum, 38 participants rated at least one of the particles with a median of ≥ 6, that is 10 participants (21%) did not rate any of the particles as acceptable. 29 speakers (60%) rated *nee* with a higher rating than *ja*. For 10 participants (21%) the difference was clear-cut, i.e. *no* had a median of ≥ 6 and *yes* a median of ≤ 2. 13 participants (27%) rated *ja* with a higher median than *nee*. For 2 participants this difference was clear-cut. 6 participants had the same rating for both particles (1 x 3, 1 x 5, 4 x 6). **For rejections**, 25 participants (52%) rated *nee* with a median of ≥ 6. 2 participants (5%) rated *ja* with a median of ≥ 6. In sum, 27 participants rated at least one of the particles with a median of ≥ 6, that is 21 participants (44%) did not rate any of the particles as acceptable. 38 participants (79%) rated *nee* with a higher median than *ja*. For 18 participants (37.5%) the difference was clear-cut. 6 participants (12.5%) rated *ja* with a higher median than *nee*. 4 participants had the same rating for both particles (1 x 2, 1 x 3, 1 x 3.5, 1 x 5.5).

Figure 3. Experiment 2 (Dutch): Proportions of ratings per rating level, ranging from 1 ('very unnatural') to 7 ('very natural') for the factors RESPONSE CLAUSE × PARTICLE.

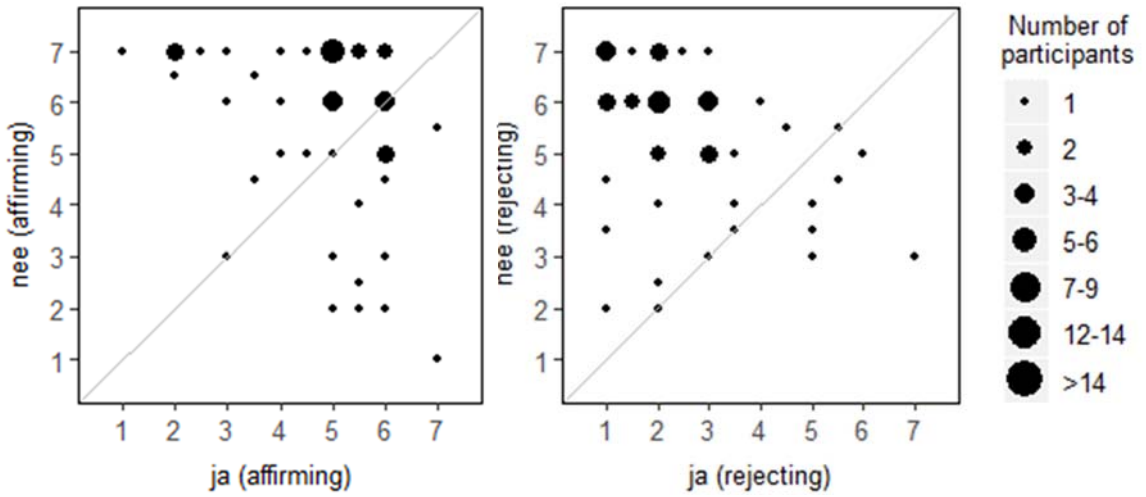

Figure 4a&b. Experiment 2 (Dutch): Each participant's median rating for *ja* plotted against the corresponding median rating for *nee* in affirmations (left) and rejections (right).

Discussion. Experiment 2 overall confirmed our hypotheses for Dutch, which we formulated on the basis of Hoeksema (2006). *Nee* was more acceptable than *ja* both in affirmations and in rejections. However, there were clear differences between affirmations and rejections, and there was substantial speaker variation. In affirmations, *ja* seems to be much more of an alternative for *nee* than in rejections. In affirmations, a quarter of the participants rated *ja* with a higher rating than *nee*, although hardly anybody had a median rating of 7 for *ja*. That is *ja* did not reach the highest acceptability, which *nee* did. Still, *ja* was not totally unacceptable for most speakers, and thus apparently can be used as an affirming particle. In rejections, the difference between *nee* and *ja* was more substantial: *ja* is not acceptable as a rejecting particle. The results also indicate that there is a blocking effect of the rejecting particles (*jawel, toch*

wel, welles): almost half of the participants found neither *nee* nor *ja* truly acceptable in rejections. There were no effects of context, i.e. Krifka's (2013) suggestions regarding context could not be confirmed for Dutch either.

4.3. Experiment 3: Swedish

Participants. 32 speakers (17-49 years, *M* = 19.1; 5 female) participated in the experiment. They were native speakers of Swedish from a variety of dialect regions in Sweden. They were recruited via Prolific. 26 used English as a second language with varying degrees of frequency (9 x on a daily basis, 14 x several times per week, 3 x several times per month). One person used Russian and one person used Spanish several times per week. 6 speakers used a third language. Polish was used on a daily basis by one person in addition to daily English. One person used Arabic several times per month in addition to daily English. One person used French several times per month in addition to English, which was used several times per month. One person used German infrequently in addition to daily English. The two speakers that used Russian and Spanish as a second language used English as a third language on a daily basis. As in the Netherlands, bilingualism with English as a second language is pervasive in Sweden.

Results. See Experiment 1 for the data coding and statistical method. Table 6 shows the median ratings per condition. Figure 5 shows the proportion of ratings across participants and items, collapsed over CONTEXT as this factor did not yield significant results. The results of the statistical analysis are given in Table 7. There were main effects of RESPONSE CLAUSE and of PARTICLE. Affirmations overall were rated as more acceptable than rejections, *nej* overall was rated as more acceptable than *ja*. There was an interaction of RESPONSE CLAUSE and PARTICLE, which was resolved by RESPONSE CLAUSE. Both in affirmations and in rejections *nej* was rated as more acceptable than *ja* but in affirmations, the difference was larger.

Table 6. Median ratings per condition in Experiment 3 (Swedish)

	RESPONSE CLAUSE	**PARTICLE**	**Median in negative / positive CONTEXT**
Affirmations	negative: *...hasn't*	*nej*	7 / 7
		ja	3 / 3
Rejections	positive: *...has*	*nej*	4 / 4
		ja	2 / 2

Table 7. Cumulative link mixed model results for Experiment 2 (Dutch)

	Fixed effects	***β***	***SE***	***z***	***p***
Full data set	CONTEXT	-0.04	0.05	-0.8	n.s.
	RESPONSE CLAUSE	1.69	0.23	7.42	***
	PARTICLE	2.18	0.22	9.78	***
	CONTEXT × RESPONSE CLAUSE	-0.01	0.05	-0.19	n.s.
	CONTEXT × PARTICLE	0.02	0.05	0.46	n.s.
	RESPONSE CLAUSE × PARTICLE	0.58	0.29	2.01	*
	CONTEXT × RESPONSE CLAUSE × PARTICLE	0.08	0.05	1.50	n.s.
Affirmations	RESPONSE PARTICLE	-2.86	0.47	-6.09	***
Rejections	RESPONSE PARTICLE	-1.54	0.26	-6.00	***

*Significance codes: *** p < .001, ** p< .01, * p < .05*

The best model that was fitted to the data contained random slopes for the interaction response clause by response particles per participant, that is participants differed in the acceptability ratings for the two particles in the two speech acts. In order to explore this variation further, we determined each participant's median ratings for affirming *no*- and *yes*-responses and for rejecting *no*- and *yes*-responses. The results are plotted in Figures 6a&b. **For affirmations**, 24 participants (75%) rated *nej* with a median of ≥ 6. 4 participants (12.5) rated *ja* with a median of ≥ 6. 1 participant had a median of ≥ 6 for both particles. In sum, 27 participants rated at least one of the particles with a median of ≥ 6, that is 5 (16%) participants did not rate any of the particles as acceptable. 27 participants (84%) rated *nej* with a higher rating than *ja*. For 10 participants (31%) this difference was clear-cut, i.e. *no* had a median of ≥ 6 and *yes* a median of ≤ 2. 6 participants rated *ja* with a higher median than *nej*. **For rejections**, 10 participants (31%) rated *nej* with a median of ≥ 6. No-one rated *ja* with a median of ≥ 6. Thus, 22 participants (69%) did not rate any of the particles as acceptable. 25 participants (78%) rated *nej* with a higher rating than *ja*. For 5 participants (16%) this difference was clear-cut. 1 participant rated *ja* with a higher median than *nej*. 6 participants had the same rating for both particles (2 x 1, 4 x 2).

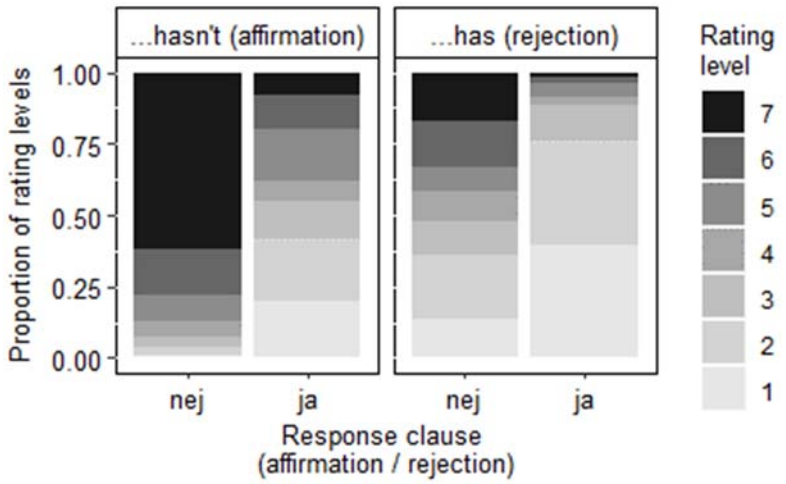

Figure 5. Experiment 3 (Swedish): Proportions of ratings per rating level, ranging from 1 ('very unnatural') to 7 ('very natural') for the factors RESPONSE CLAUSE × PARTICLE.

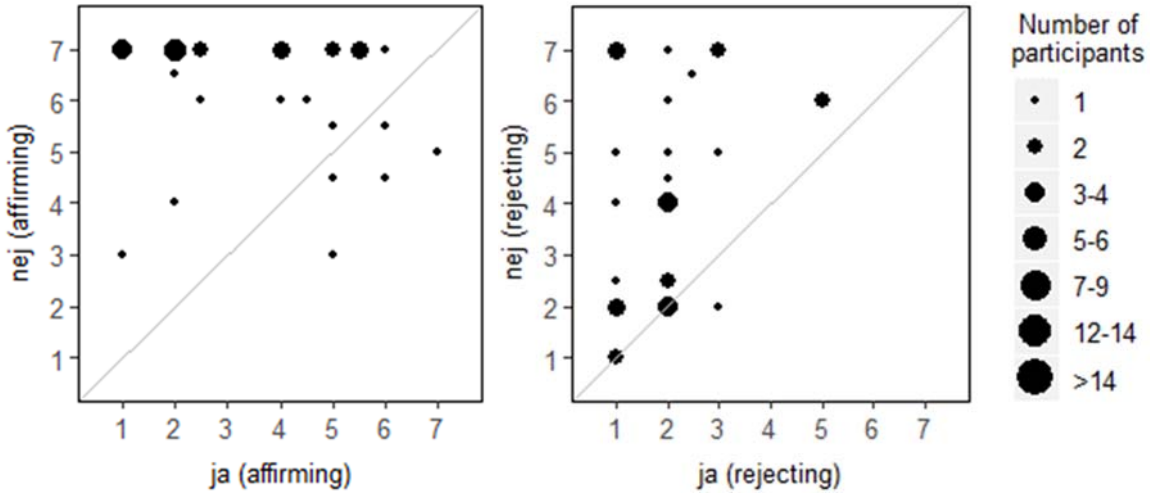

Figure 6. Experiment 3 (Swedish): Each participant's median rating for *ja* plotted against the corresponding median rating for *nej* in affirmations (left) and rejections (right).

Discussion. Experiment 3 overall confirmed our hypotheses for Swedish, which were based on Holmberg (2015), but some of the details differ. As hypothesized, *nej* was highly acceptable

in affirmations, where it indicates the negative polarity of the response. *Ja* was not really acceptable – also as hypothesized. For rejections, we hypothesized that neither particle should be fully acceptable because Swedish has the rejecting particle *jo*. This hypothesis was confirmed for most but not for all speakers. A few speakers gave *nej* high acceptability ratings. We also hypothesized that *ja* might be more acceptable than *nej* because the former indicates positive polarity. This was not confirmed at all. *Ja* was generally rated to be unacceptable in rejections. There were no effects of context, i.e. Krifka's (2013) suggestions regarding context could not be confirmed for Swedish either.

5. General discussion

Table 8 summarizes the results for the three languages under investigation as well as experiment 2 in Claus et al. (2017) with an indication of the inter-individual variation. Recall that no effects were found for context so this factor is not part of the table.

Table 8: Summary of the acceptability patterns for NO and YES in experiments 1-3, with a comparison with German (Claus et al., 2017, exp. 2). Medians are in brackets. *Variation:* Percentage of participants who showed a certain pattern. Grey boxes: Percentage of participants who rated the less acceptable particle with a median ≥ 6; percentage of participants who rated both particles with a median < 6 (at least 5% of participants).

	Affirmations	***Variation***		**Rejections**	***Variation***	
English	NO (7) > YES (2)			YES (7) > NO (5)		
(n = 48)					NO = YES	12.5%
					NO ≥ 6	27%
					Y/N < 6	12.5%
Dutch	NO (6) > YES (5)	YES > NO	27%	NO (5) > YES (2)	YES > NO	12.5%
(n = 48)		YES = NO	12.5%		YES = NO	8%
		YES ≥ 6	33%			
		Y/N < 6	21%		Y/N < 6	44%
Swedish	NO (7) > YES (3)	YES > NO	19%	NO (4) > YES (2)		
(n = 48)					YES = NO	19%
		YES ≥ 6	12.5%			
		Y/N < 6	16%		Y/N < 6	69%
German	YES (6.5) > NO (5)	NO > YES	23%	NO (6) > YES (2)		
(n = 48)		NO = YES	12.5%		YES = NO	10%
(Claus et		NO ≥ 6	42%			
al., 2017)		Y/N < 6	6%		Y/N < 6	40%

We see that the overall acceptability pattern for the languages in Table 8 cannot be predicted from the availability of a dedicated rejecting particle in the particle system of a language – at least not for affirmations of negative assertions. For the majority of English, Dutch and Swedish speakers, NO is more acceptable in affirmations than YES is. German, which like Dutch and Swedish has a rejecting particle, shows the opposite distribution. As for the inter-individual variation in affirmations, the English participants were fairly uniform in their rating scores, whereas a considerable number of Swedish and especially Dutch participants showed an acceptability pattern that either was the opposite from the majority pattern or that did not

differentiate between the particles. For many Dutch speakers, YES seems to be a viable alternative to NO. In German, there also is a considerable number of speakers who diverge from the majority pattern, which in this language is YES > NO.

Turning to rejections, English – the one language in our sample that does not have a dedicated rejecting particle – differs from the other three languages. For the majority of English speakers YES is more acceptable than NO. However, English also is the one language where the particle that overall is rated as the less acceptable one, still is considered by a substantial number of people to be a viable alternative: NO is accepted as a rejecting particle by around a third of the participants. In the other three languages, a substantial percentage of participants finds neither YES nor NO acceptable. This is not surprising because there is a dedicated particle for rejecting negative antecedents in these languages, which should reduce the acceptability of YES and NO. Still, there are differences between the languages. In Swedish, participants clearly dislike YES and NO in rejections, whereas Dutch and German speakers seem to be more lenient. Nevertheless, in all three languages NO is rated as more acceptable than YES. This is noteworthy considering that in English, which has the opposite pattern, NO also is fairly acceptable. These findings suggest that NO overall can be used for rejections, no matter what restrictions the response particle system otherwise might impose on the use of YES and NO.

At present, we have no answer concerning the considerable inter-individual variation that we found for all the languages under investigation. It is obvious that factors like prosody and gesture (e.g. head nods, head shakes), which cannot be tested in a written acceptability study, play an important role in the interpretation and production of responses in real-life conversation (cf. González-Fuente et al., 2015; Li et al., 2016). Furthermore, aspects like speaker intentions and expectations might also play a role. All these are issues for future research. Still, we note that the degree and kind of variation in the acceptability of the two particles differs between the languages. We have not investigated the statistical validity of these cross-linguistic differences because more data are required. We would like to point out, however, that the use of English in the daily life of Dutch and Swedish speakers cannot explain the entire variation: Swedish speakers are fairly consistent in their judgements whereas Dutch speakers are not.

Having pointed out the preliminary character of our data, we will nevertheless model the findings of our study in the framework that we consider to be the most promising account of response particles, viz. Roelofsen and Farkas (2015), and Farkas and Roelofsen (2018). This preliminary effort will give us a better understanding of the various parameters that may be involved in the meaning and use of response particles than the merely impressionistic interpretation above. For reasons of space we will not discuss German here, see F&R for a detailed discussion.

Recall from Section 2.1 that R&F assume that there are absolute polarity features, [–] and [+], as well as relative polarity features, [AGREE, REVERSE], feature-mapping rules and realization preferences, which are all needed to model the meaning and use of response particles. Furthermore, general pragmatic principles like the markedness constraint REALIZE MARKED FEATURES and the blocking constraints EXPRESSIVENESS and FREQUENCY are relevant. The realization preferences and the pragmatic principles are weighed against each other in a stochastic optimality-theoretic constraint ranking that differs between languages.

For English, we follow R&F in assuming that AGREE and [+] are mapped onto *yes,* whereas [REVERSE] and [–] are mapped onto *no*. Furthermore, we assume the constraint ranking in (4) with other constraints being ranked lower. This constraint ranking ensures that the particle realizing the absolute feature is preferred. In affirmations, this is *no* [–]. In rejections, this is *yes* [+]. Due to the constraint REALIZE MARKED FEATURES, *no* also is fairly acceptable in rejections because it realizes the marked feature [REVERSE]. We may also assume, with R&F, that [+] is marked if it is combined with [REVERSE]. This will give *yes* another 'boost' in rejections, i.e. make it the particle of choice.

(4) REALIZE ABSOLUTE FEATURES >> REALIZE MARKED FEATURES (English)

For Dutch we are assuming the same feature mapping as for English. Furthermore, we propose the constraint ranking in (5). The ranking of REALIZE MARKED FEATURES over REALIZE RELATIVE FEATURES explains why in affirmations, *nee* is more acceptable than *ja* for the majority of speakers: *nee* realizes marked [–]. The observation that *ja* is still fairly acceptable in affirmations is captured by REALIZE RELATIVE FEATURES, which is ranked below REALIZE MARKED FEATURES: *ja* realizes relative [AGREE]. For speakers with a different acceptability pattern this ranking might be perturbed. The details of this need to be worked out. The high ranking of EXPRESSIVENESS in Dutch ensures that the dedicated rejecting particles / particle combinations (*jawel, welles, toch wel*) are preferred in rejections of negative assertions: they realize a combination of features, [+, REVERSE], and not just one feature as *ja* or *nee* do. This assumption explains the observation that many speakers do not accept *ja* or *nee* in rejections. For some speakers the ranking of these constraints may be perturbed as they have high ratings for *ja* and *nee* in rejections.

(5) EXPRESSIVENESS >> REALIZE MARKED FEATURES >> REALIZE RELATIVE FEATURES (Dutch, Swedish)

For Swedish, which is quite similar to Dutch but with less inter-individual variation, we assume the same feature mapping rules and the same constraint ranking as for Dutch. It is interesting that the assumed blocking effect of EXPRESSIVENESS, which can explain the low acceptability of *ja* and *nee/nej* in rejections should be stronger for Swedish *jo* than for the Dutch rejecting particles. A potential explanation is that Swedish *jo* seems to be the one particle that is used in [+, REVERSE] responses, whereas in Dutch, there are various particles and particle combinations available. As a consequence, *jo* is likely to be more frequent than any of the Dutch particles, which might result in a stronger blocking effect. This can be captured in a high ranking of FREQUENCY.

The current study has corroborated the insight gained in earlier quantitative studies on response particles (esp. Claus et al., 2017), that speakers do not only assign the particles YES and NO graded acceptability in responses to negative assertions, but that they differ substantially in their judgements. We observed this for all three languages under investigation. This means that empirical claims about the meaning and use of response particles must be based on quantitative studies. What the precise source of the variation is is a matter of future research. Crucially, despite the inter-individual variation, languages also differ from each other. These differences can be captured in an account that takes established pragmatic principles into consideration and can explain graded acceptability as a consequence of the interaction of these principles.

References

Boersma, P. and B. Hayes (2001). Empirical tests of the gradual learning algorithm. In *Linguistic Inquiry* 32, 45-86.

Brasoveanu, A., D. Farkas and F. Roelofsen (2013). N-words and sentential negation: evidence from polarity particles and VP-ellipsis. In *Semantics and Pragmatics* 6, 1-33.

Claus, B, A. M. Meijer, S. Repp and M. Krifka (2017). Puzzling response particles: an experimental study on the German answering system. *Semantics and Pragmatics* 10(19), 1-52.

Cranenbroeck, J. van (2004). *The Syntax of Ellipsis: Evidence from Dutch Dialects.* OUP.

Farkas, D. and F. Roelofsen (2018). Polarity particles revisited. Ms. https://semanticsarchive.net/Archive/DUxN2JhM/paper.pdf

González-Fuente, S., S. Tubau, M. Espinal and P. Prieto (2015). Is there a universal answering strategy for rejecting negative propositions? Typological evidence on the use of prosody and gesture. In *Frontiers in Psychology* 6(899), 1-16.

Goodhue, D. and M. Wagner (2015). It's not just what you say, it's how you say it: Intonation, *yes* and *no*. *Proceedings of the North East Linguistics Society (NELS) 45*.

Goodhue, D. and M. Wagner (2018). Intonation, *yes* and *no*. *Glossa: A Journal of General Linguistics*, 3(1), 5. DOI: http://doi.org/10.5334/gjgl.210

Heim, I. (1991). Artikel und Definitheit [Articles and Definiteness]. In A. von Stechow and D. Wunderlich (Eds.), *Semantik/Semantics*, pp. 487-535. Berlin: de Gruyter.

Hoeksema, J. (2006). Hij zei van niet, maar knikte van ja: Distributie en diachronie van bijwoorden van polariteit ingeleid door *van*. *Tabu 35*(3-4), 135-158.

Holmberg, A. (2013). The syntax of answers to polar questions in English and Swedish. *Lingua* 128, 31-50.

Holmberg, A. (2015). *The Syntax of* yes *and* no. Oxford: Oxford University Press.

Jones, B. M. (1999). *The Welsh Answering System*. Berlin: de Gruyter.

Kramer, R. and K. Rawlins (2011). Polarity particles: an ellipsis account. *Proceedings of the North East Linguistic Society (NELS) 39*.

Krifka, M. (2013). Response particles as propositional anaphors. *Proceedings of the 23rd Semantics and Linguistic Theory Conference*.

Li, F., S. González-Fuente, P. Prieto and M. T. Espinal (2016). Is Mandarin Chinese a truth-based language? Rejecting responses to negative assertions and questions. *Frontiers in Psychology* 7(1967), 1-10.

Meijer, A. M., B. Claus, S. Repp and M. Krifka (2015). Particle responses to negated assertions: Preference patterns for German *ja* and *nein*. In T. Brochhagen, F. Roelofsen and N. Theiler (Eds.), *Proceedings of the 20th Amsterdam Colloquium*, pp. 286-295.

Pope, E. (1976). *Questions and Answers in English*. The Hague: Mouton.

Roelofsen, F. and D. Farkas (2015). Polarity particle responses as a window onto the interpretation of questions and assertions. *Language* 91, 359-414.

Servidio, E. (2014). *Polarity Particles in Italian. Focus, Fragments, Tags.* PhD thesis. University of Siena.

Servidio, E., Bocci, G., & Bianchi, V. (2018). (Dis)agreement, polarity, and focus: answering negative polar questions in Italian. *Glossa: A Journal of General Linguistics,* 3(1), 3. DOI: http://doi.org/10.5334/gjgl.360