

University of Groningen

Reflexive choice in Dutch and German

Hendriks, Petra; Hoeks, Jacobus; Spenader, Jennifer

Published in:
The Journal of Comparative Germanic Linguistics

DOI:
[10.1007/s10828-014-9070-x](https://doi.org/10.1007/s10828-014-9070-x)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Final author's version (accepted by publisher, after peer review)

Publication date:
2014

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Hendriks, P., Hoeks, J. C. J., & Spenader, J. (2014). Reflexive choice in Dutch and German. *The Journal of Comparative Germanic Linguistics*, 17(3), 229-252. DOI: 10.1007/s10828-014-9070-x

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

Reflexive Choice in Dutch and German

1. Petra Hendriks*

Center for Language and Cognition Groningen

University of Groningen

P.O. Box 716

9700 AS Groningen

The Netherlands

E-mail: P.Hendriks@rug.nl

Tel. +31-50-3635863

Fax. +31-50-3636855

*Corresponding author

2. John C. J. Hoeks

Center for Language and Cognition Groningen

University of Groningen

P.O. Box 716

9700 AS Groningen

The Netherlands

BCN Neuroimaging Center

University of Groningen

Antonius Deusinglaan 2

9713 AW Groningen

The Netherlands

3. Jennifer Spenader

Artificial Intelligence and Cognitive Engineering

University of Groningen

P.O. Box 407

9700 AK Groningen

The Netherlands

Abstract

Standard Dutch and German have two reflexive forms: a weak form (*zich* in Dutch and *sich* in German) and a strong form (*zichzelf* in Dutch and *sich selbst* in German). The choice between the two reflexive forms in Dutch has been explained by the selectional restrictions of the verb, distinguishing between three verb classes: inherently reflexive verbs, accidentally reflexive verbs and transitive verbs. The same three verb classes can be distinguished in German, suggesting that the factors governing reflexive choice in Dutch and German are similar. However, several studies have pointed out that Dutch *zich* is more restricted in its use than German *sich*. We used a forced-choice task to test adult Dutch and German participants on their preference for the weak versus strong reflexive form with various verb classes and sentence types. Comparing similar sentences across the two languages, we observe an overall preference for the strong reflexive in Dutch but an overall preference for the weak reflexive in German. Looking at the participants' reflexive choices within each language, we found effects of verb class, syntactic structure (transitive versus ECM constructions) and semantic features. Whereas the semantic feature habituality affected reflexive choice in neither language, intentionality did so in Dutch only, and tense and possibly focus affected reflexive choice in both languages. These observations seem problematic for the syntactically motivated dual-entry account of reflexive choice, but are consistent with the likelihood account.

Keywords: Reflexives, verb class, ECM construction, habituality, intentionality

1 Introduction

The closely related languages Dutch and German each have at least two reflexive forms. Both languages have a SE or weak reflexive (*zich* in Dutch and *sich* in German) and a morphologically more complex SELF or strong reflexive (*zichzelf* in Dutch and *sich selbst* in German). This situation contrasts with languages such as English, where there is only one reflexive form.¹ The choice between strong and weak reflexives is generally believed to be a lexical property of the verb (e.g., Haeseryn et al. 1997; Vat 1980). In Dutch, some verbs have been claimed to only occur with the weak SE form, e.g. (1), while other verbs seem to require the strong SELF form, e.g. (2). A third group of verbs can occur with both, as is illustrated by (3). The examples in (1)-(3) as well as their judgments are taken from the literature on reflexives.

- (1) Max schaamt *zich*/**zichzelf*. (Williams 2003)
 Max is.ashamed *SE/SELF*
 ‘Max is ashamed’
- (2) Max haat **zich*/*zichzelf*. (Reinhart and Reuland 1993)
 Max hates *SE/SELF*
 ‘Max hates himself’
- (3) Max wast *zich*/*zichzelf*. (Williams 2003)
 Max washes *SE/SELF*
 ‘Max washes himself’

In the current study we want to answer several questions. First, because Dutch and German are closely related Germanic languages, we would expect their weak and strong reflexives to be used in a similar fashion.² However, several studies have pointed out that this is actually not the case and that German *sich* has a much wider distribution than its Dutch counterpart (Oya 2010; Reinhart and Reuland 1993; Reinhart and Siloni 2005; Steinbach 2002). This may be related to the observation that German *sich*, in contrast to its Dutch counterpart *zich*, can receive stress (e.g., Oya,2010). We add to this discussion by presenting experimental evidence from a forced-choice questionnaire in Dutch and German. Based on the results of this questionnaire, we can quantifiably characterize the ways in which the Dutch and German use of the strong and weak reflexive differ.

A second aim of this study is to find out what lexical, syntactic and semantic features govern reflexive choice in Dutch and German. Do the same factors play a role in both languages? The existing theoretical literature makes claims based on the intuitions of the authors and perhaps a handful of informants. How do these intuitions measure up when a large number of native speakers is sampled? We investigate a number of factors:

¹ Note that Romance languages have reflexive clitics that seem to contrast with full reflexives in ways that may be similar to the contrast between strong and weak forms in Dutch and German.

² We make a fundamental assumption in the current work: that the Dutch and German reflexives represent the same categories. Given their historical relationship, their similar syntactic behavior and their similar semantics, we feel this is an uncontroversial assumption, consistent with most typological work on cross-linguistic categories.

the influence of verb class, the influence of syntactic structure by comparing simple transitive sentences to Exceptional Case Marking constructions, and the semantic features of habituality, intentionality and tense.

Certainly, there are many additional factors that influence reflexive choice. Many researchers have identified focus, in particular contrastive focus (Veraart 1996), as playing a role, as well as the tendency for an action to be other-directed or self-directed (Veraart 1996; Geurts 2004; Haspelmath 2008; see also the corpus results of Smits, Hendriks and Spenader 2007; Spenader and Bouma 2009) We discuss our results in relation to these factors as well, although we do not investigate them directly.

Third, we discuss the question whether or not two theoretical proposals about reflexive choice can account for our results. The standard syntactic account of the choice between the weak and strong reflexive form attributes it to two different entries of the verb in the lexicon. This dual-entry account, among others proposed by Reinhart and Reuland (1993), has been a subject of much theoretical discussion. An alternative to this account explains the choice between the two reflexive forms as tendencies based on the likelihood of an event being reflexive (e.g., Haspelmath 2008; Geurts 2004; see also Veraart 1996). In contrast to the dual-entry account, the likelihood account is probabilistic and predicts variation between sentences. We will show how our results seem problematic for the dual-entry account and sketch how they are consistent with the likelihood account.

In the next section, we discuss the theoretical literature on reflexive choice in Dutch and German in more detail and formulate several hypotheses on the basis of this literature. In Section 3, we present our forced-choice experiment, which aims to test these hypotheses. Section 4 discusses the results of this experiment. In Section 5 we summarize our results and discuss how they relate to the dual-entry and likelihood accounts.

2 Background

In this section, we first discuss the role of verb class on reflexive choice in Section 2.1. In Section 2.2, the effects of syntactic structure are considered, in particular the difference between simple transitive sentences and Exceptional Case Marking (ECM) constructions. We end this section with an overview of the semantic and pragmatic factors taken to influence reflexive choice in Section 2.3.

2.1 Lexical factors influencing reflexive choice

In standard Dutch, the SE reflexive is *zich* and the SELF reflexive is *zichzelf*. In standard German, the SE reflexive is *sich* while the SELF reflexive is generally considered to be *sich selbst*. As explained above, theoretical work on languages that have two reflexive forms, such as Dutch and German, has often distinguished between three different classes of verbs occurring with reflexives (see the examples in (1)-(3)). In Dutch, these classes are particularly salient because the membership of a given verb in one of the classes can be determined, or so it is claimed, simply by looking at the distribution of arguments with which the verb can occur. Inherently reflexive verbs like (1) are claimed to never occur with a non-reflexive argument and only occur with the weak reflexive SE form. Accidentally reflexive verbs like (3) can occur with non-reflexive arguments and both the SE and SELF forms. Finally, non-reflexive or transitive verbs like (2), also called naturally disjoint verbs, can occur with a non-reflexive argument or with the strong reflexive SELF form, but never occur with SE.

In German, simply looking at the distribution of possible verbal arguments does not lead to a three-way classification. The German simple reflexive *sich* is always possible, and the *sich selbst* form is never obligatory.

These features allow us to identify inherently reflexive verbs along the same lines as in Dutch. These are also verbs that can never occur with non-reflexive arguments and only occur with SE reflexives. Accidentally reflexive verbs and non-reflexive verbs in simple active sentences in German have the exact same argument possibilities; they can occur with non-reflexive arguments and with both SE and SELF reflexives. However, they can be distinguished by looking at their passivization possibilities with reflexive arguments. Most languages, including Dutch (see (4)), do not allow the passivization of reflexive events. German does allow both accidentally reflexive verbs and inherently reflexive verbs to be passivized (Schäfer 2013), as illustrated in the German examples (5)-(6). Transitive verbs when used with a reflexive argument do not permit passivization (7), giving us a syntactic environment where German accidentally reflexive verbs and transitive (non-reflexive) verbs differ.

- (4) * Hier werd zich gewassen.
here was SE washed
 ‘People washed here’
- (5) Hier wurde sich gewaschen.
here was SE washed
 ‘People washed here’
- (6) Hier wurde sich geirrt.
here was SE mistaken
 ‘People made mistakes here’
- (7) * Hier wurde sich gemalt.
here was SE painted
 ‘People painted here’

These three classes can therefore be motivated to be syntactically distinct in German as well, and they also share semantic features. The literature on reflexives also recognizes other potentially relevant semantic subclasses. One of the most discussed sets of verbs is that of grooming verbs (e.g. Haeseryn et al. 1997; Oya 2010). Grooming verbs like *wash* and *shave* and verbs denoting change in body posture like *sit down* (see Kemmer 1993, for a list of 13 possible subclasses of accidentally reflexive verbs³) represent a fairly uniform semantic subclass, and because they can occur with reflexive as well as non-reflexive arguments they fall into the class of accidentally reflexive verbs according to the syntactically based classification above. However, there is reason to believe that the distribution of arguments with grooming verbs differs from other accidentally reflexive verbs. For one thing, these verbs have been repeatedly identified as being more likely to describe self-directed actions than other-directed actions. In Dutch as well as German, grooming verbs normally occur with the weak form (Oya 2010). They can occur with the strong form, but this is argued to generate a contrastive implication that one did not wash or shave somebody else (Oya 2010, who attributes this observation to Donaldson 1997:205).

³ Kemmer (1993) actually discusses these verbs as semantic subclasses of the middle voice. Middle voice constructions and reflexive constructions are closely related and it is often not clear if and how they can be distinguished from each other. See Kemmer (1993) for discussion.

Furthermore, Everaert (1986) has argued that grooming verbs are semantically more similar to transitive verbs. Based on the observation that in languages such as English grooming verbs tend to pattern with inherently reflexive verbs (John shaves, John errs) and that both verb classes can be passivized in German, some researchers have emphasized that grooming verbs are more similar to inherently reflexive verbs (see the discussion in e.g. Kemmer 1993 and Geurts 2004).

The above discussion suggests that we should examine the choice of reflexive for grooming verbs separately in our investigation. If we see different patterns of reflexive choice in grooming verbs compared to other accidentally reflexive verbs, this would be evidence that they form an independent subclass.

Theoretically, an important question is what causes the distribution of weak and strong reflexives. One influential proposal comes from Reinhart and Reuland (1993). Reinhart and Reuland argue that inherently reflexive verbs are those that cannot take an object that is distinct in reference from the subject and in the mental lexicon are marked as such. These are the verbs that only occur with SE reflexives. Transitive verbs, on the other hand, are used with objects that are distinct in reference from the subject. Such verbs occurring with a SELF reflexive are cases of transitive predicates that have been given a reflexive interpretation because the SELF reflexive is an operator capable of coercing a reflexive interpretation from a non-reflexive lexical entry. Thus when a verb form occurs with *zich*, it is the inherently reflexive predicate. When the same verb form occurs with *zichzelf*, it is the transitive predicate given a reflexive interpretation. Therefore, in Reinhart and Reuland's view, accidentally reflexive verbs that allow both SE and SELF reflexives are the result of two entries in the mental lexicon.

There are three problems with this proposal. First, it would be preferable not to duplicate entries in the lexicon by having both a reflexive and a non-reflexive version, in accordance with Occam's razor. Second, the proposal still seems to remain a stipulation: it does not actually give us any way to predict under what conditions an accidentally reflexive verb will occur with SE or SELF. The choice is simply a reflection of an underlying choice made in the lexicon. The why and how of that choice is unexplained. Third, the verb classes are fixed, and there is no explanation for any differences in reflexive choice within these classes.

Still, there are a number of predictions that follow from the dual-entry account that can be investigated empirically. First, the dual-entry account predicts that, if a verb is categorized as inherently reflexive because it cannot take an object distinct in reference from the subject, the verb does not allow SELF reflexives. This is because for these verbs there is no transitive entry. Without such a transitive entry, the SELF reflexive cannot be used. Second, for transitive (non-reflexive) verbs, SE reflexives should never be possible according to the dual-entry account, regardless of the context. This is because these verbs are not marked as reflexive in the lexicon. If a speaker does want to use the transitive verb to express a coreferential meaning, the SELF reflexive is available.⁴ If we find that speakers choose SELF reflexives for inherently reflexive verbs or SE reflexives for transitive verbs in certain contexts, the only possibility in the dual-entry account is to add transitive and reflexive entries, respectively, for those verbs to the lexicon. This would seem to seriously weaken the dual-entry account, because it in effect removes the distinctions that differentiated the three verb classes. Because the

⁴ Throughout the paper we limit the use of the term 'coreferential meaning' exclusively to cases of self-directed events where the object is coreferential with the subject.

dual-entry account is a categorical account rather than a probabilistic one, if most verbs can occur with both SE and SELF, the dual-entry account ends up with very little predictive power.

Other work has attempted to ground the class membership of verbs in other features besides reflexive choice, in particular, likelihood. An intuition expressed in the literature (e.g., Haspelmath 2008) is that reflexive choice with accidentally reflexive verbs is influenced by the likelihood of the event denoted by the verb to be self-directed or other-directed. The more likely a given action is to be self-directed, the more likely it is to occur with the SE form of the reflexive. Conversely, the more likely an action is other-directed, the more likely it is to be used with the SELF reflexive. This proposal has been studied empirically in a large corpus study by Bouma and Spenader (2009). They extracted all occurrences of verbs with objects and third person subjects that occurred at least 50 times in the 470 million word Twente News Corpus of Dutch newswire (Ordelman et al. 2007). Reflexive uses are in general infrequent: among the 12 million verb-object occurrences found, 1.6% had a SE object and 0.2% had a SELF object, with the remaining objects being non-reflexive. Building on previous work by Smits et al. (2007), Bouma and Spenader found that the relative frequency with which a given verb was used for self-directed events (marked by SE or SELF) compared to its use with other-directed events with a pronominal object correlated positively ($r^2=0.33$) with the particular reflexive form used for that verb. That is, a verb that is frequently used for self-directed events will have a greater chance of occurring with a SE reflexive than with a SELF reflexive, and vice-versa. This suggests that there are predictable variations in the choice between SE and SELF even within the same class of verbs. Bouma and Spenader also found that most inherently reflexive verbs overwhelmingly occurred with SE, appearing only once or twice with SELF in the entire dataset. However, there was a small group of inherently reflexive verbs that did occur with SELF several times, suggesting that the categories, while clear, are not absolute.

Bouma and Spenader's results are problematic for the dual-entry account because they propose that the likelihood with which a verb is used for self-directed versus other-directed events corresponds to the rate of SE and SELF reflexives, respectively. If the verb form used with SE is based on a completely different lexical entry than the verb form used with SELF, it is difficult to explain why there would be a correlation between the ratio of reflexive objects to non-reflexive objects for a given verb and the ratio of SE reflexives to SELF reflexives for this verb.

While Bouma and Spenader's results seem to capture an intuition about when SE and SELF are used, they only do so for a large sample, and can only make very general predictions about which reflexive will be used in an individual case. Similarly, the dual-entry proposal cannot predict which reflexive is most likely in a given instance for accidentally reflexive verbs. There is a consensus that, for a given accidentally reflexive verb, there is a fundamental bias for the SE or SELF reflexive. However, this fundamental bias of a verb towards the SE or SELF reflexive is not sufficient to account for reflexive choice in individual cases. Instead, based on observations in the earlier discussed theoretical literature, it may be that there is a basic tendency that can be strengthened or weakened by the presence of syntactic, semantic and contextual factors that make one reflexive form more or less preferred. These are the factors that we wish to investigate empirically in the current study.

2.2 Syntactic factors influencing reflexive choice

A well-known example of a syntactic factor that is relevant for reflexive choice is the difference between a simple transitive construction and a so-called Exceptional Case Marking (ECM) construction. Whereas the weak

reflexive *zich* is not allowed as the object of the transitive verb *hoorde* ‘heard’, as (8) shows, it is allowed in ECM constructions, illustrated by (9) (examples and judgments are from Reinhart and Reuland 1993):

- (8) Henk hoorde **zich/zichzelf*.
 Henk heard SE/SELF
 ‘Henk heard himself’
- (9) Henk hoorde *zich/zichzelf* zingen.
 Henk heard SE/SELF sing
 ‘Henk heard himself sing’

In (8), the subject and the reflexive object are arguments of the same verb, *hoorde*. In (9), in contrast, the reflexive is the subject of the complement clause of the verb *hoorde* and is not an immediate argument of this verb.

This difference between transitive constructions such as (8) and ECM constructions such as (9) has been used to distinguish between various theoretical accounts of pronominal binding. Chomsky’s (1981) binding principles in their original formulation regulate the complementary distribution of pronouns and reflexives, with Principle A requiring that reflexives are bound in their local domain and Principle B requiring that pronouns are free in the same local domain. These binding principles apply in (8) as well as (9). Because they do not make a distinction between SE and SELF reflexives, however, they fail to account for the difference in acceptability in (8).

Reinhart and Reuland (1993) propose a revision of Chomsky’s binding principles in which their Condition B, requiring reflexively interpreted predicates to be reflexive-marked, applies in (8) but not in (9). When two arguments of the same predicate are interpreted reflexively, as in (8), Reinhart and Reuland’s Condition B demands that either the verb is inherently reflexive (which is marked as such in the lexicon) or one of the arguments is realized as a SELF anaphor (thus marking the predicate as reflexive at the syntactic level). This explains why *zichzelf* must be used with the transitive predicate in (8) and *zich* is not possible. In (9), on the other hand, Condition B does not apply because *zichzelf* and *Henk* are arguments of different predicates. As a consequence, under Reinhart and Reuland’s account both *zich* and *zichzelf* are allowed in (9).

Note that Reinhart and Reuland’s account also predicts that both *zich* and *zichzelf* are allowed as arguments of inherently reflexive verbs such as *schamen* ‘be ashamed’. To explain why *Jan schaamt zich* ‘Jan is ashamed’ nevertheless is much better than *Jan schaamt zichzelf* ‘Jan is ashamed’, they resort to principles of economy (Reinhart and Reuland 1993:fn. 15): because *schamen* is an inherently reflexive verb and therefore already marks the predicate as reflexive, there is no need to mark the predicate as reflexive a second time by using a SELF anaphor.

So Reinhart and Reuland’s syntactic reflexivity account predicts that *zich* is not allowed with transitive verbs, but is strongly preferred with inherently reflexive verbs for reasons of economy. Furthermore, their account predicts that *zich* and *zichzelf* are both acceptable in ECM constructions. Because there is no reflexively interpreted predicate in ECM constructions such as (9), Condition B does not apply. As a consequence, there is no need to mark the predicate as reflexive by using a SELF anaphor. Hence, a SE anaphor can be used, although a SELF anaphor is independently allowed in this position by Condition A.

If economy plays a role here too, as with inherently reflexive verbs, *zich* should in fact be strongly preferred in ECM constructions too. This latter prediction, however, is challenged by observations from Veraart (1996). She presents several examples where there is a clear preference for either *zich* or *zichzelf* in ECM constructions, depending on the plausibility of a self-directed or other-directed action. We therefore also investigate ECM constructions in Dutch and German to see if there is any evidence of a preference for one of the two reflexive forms.

2.3 Semantic and pragmatic factors influencing reflexive choice

Several theoretical studies have argued that semantic and pragmatic factors can also influence reflexive choice (e.g., Ter Meulen 2000; Geurts 2004; Veraart 1996).

A first semantic factor that might affect preferences for the strong or weak reflexive is habituality. Habituality relates to the typicality or commonality of the event and the participants in that event. Geurts (2004) points out that when verbal predicates that typically occur with disjoint arguments are used to express a coreferential meaning, the self-directed event becomes surprising. This surprising or atypical usage then requires the use of the strong reflexive form. However, if circumstances are manipulated so that a typically other-directed event is presented as typically self-directed, then the weak reflexive form will become possible. One way to portray a typically other-directed event as actually self-directed is by suggesting that the participants frequently perform the self-directed action. For example, simply adding adverbial particles such as *weer eens* ‘yet again’ to suggest that the self-directed action is habitual improves the felicity of a weak reflexive, see (10) and (11) (adapted from Geurts 2004:4):

- | | | | | | |
|------|-----------------------------------------|----------------|--------------|-------------|-------------------|
| (10) | Betty diende | *zich/zichzelf | opium | toe. | |
| | <i>Betty administered</i> | <i>SE/SELF</i> | <i>opium</i> | <i>PART</i> | |
| | ‘Betty administered herself opium’ | | | | |
| (11) | Betty dient | zich/zichzelf | weer | eens | opium toe. |
| | <i>Betty administers</i> | <i>SE/SELF</i> | <i>again</i> | <i>once</i> | <i>opium PART</i> |
| | ‘Betty administers herself opium again’ | | | | |

If this is a general effect, then perhaps adding adverbs that signal habituality, such as *incessantly*, will increase the number of SE responses.

Another semantic feature that might affect reflexive choice is intentionality. Some events do not have an intentional agent playing an active role in the event. For example, Ter Meulen (2000) has pointed out that with a Dutch psych verb like *schamen* ‘to be ashamed’, as in *Jan schaamt zich* ‘Jan is ashamed’, the verb denotes Jan’s passive mental state which was caused by some unnamed external event. These kinds of verbs tend to occur only with the weak reflexive. This contrasts with other psych verbs like *haten* ‘to hate’, which do involve the subject’s intentional mental activity and tend to occur with the strong form. Oya (2010:249) actually identified a major subclass of Dutch inherently reflexive verbs called ‘anticausatives’ (Oya 2010:249) that all share the feature of having non-intentional subjects. These verbs include attitude verbs or psych verbs such as Dutch *zich herinneren* ‘to remember’ and *zich schamen* ‘to be ashamed’, and German *sich freuen* ‘to be pleased’ and *sich wundern* ‘to be surprised’, that express attitudes or states evoked in an individual without making the

cause of the attitude explicit in any way, similar to passivization. Inchoative or change of state verbs have also been recognized as a subclass of inherently reflexive verbs that frequently denote events without making explicit the instigator or cause. One example is the verb *zich verspreiden* ‘to spread’ (as in ‘the rumor spread’), where the spreading event is not controlled by any named agent. These verbs all tend to be used almost exclusively with the weak form. These different subclasses suggest that non-intentional events as well as agentless actions or events (which are non-intentional by definition) all tend to occur only with the weak reflexive form.

In sum, some reflexive verbs seem inherently unintentional, and these seem to prefer the weak reflexive, while for constructions and verbs that express an intentional action the strong form seems to be preferred. This then suggests that if we increase the intentionality of an event, for example by adding an adverbial phrase expressing intentionality such as *on purpose*, we predict the preference for SELF to increase. We also predict that if we decrease the intentionality of an event by adding the adverbial phrase *by accident*, the preference for SELF will decrease.

Finding an effect of habituality or intentionality would not be expected under the dual-entry account of reflexive choice, such as proposed by Reinhart and Reuland (1993). Under this proposal we would not expect a simple context manipulation to shift preferences from SELF to SE. For transitive verbs, showing that in certain situations the verb can occur with SE effectively means we would be positing another entry for the verb in the lexicon. If the effect is a general one, this would then mean that all verbs have two entries: one for self-directed actions and one for other-directed actions. For inherently reflexive verbs, showing that increasing intentionality makes SELF more felicitous would be completely unexpected, as the entry for the verb is already reflexively marked. This would require postulating the existence of a transitive entry, which would be difficult to defend if the verb cannot be used with a non-reflexive object. In contrast, the observation of semantic influences on reflexive choice would not be at odds with the likelihood account.

Focus has also been argued to affect reflexive choice. Dutch and German weak reflexives differ with respect to focus. German *sich* can be stressed and can occur as the conjunct of a coordination, but Dutch *zich* can do neither of these things. For Dutch, observations about the interaction between focus and reflexive choice have been used as an argument against the dual-entry hypothesis. Veraart (1996) manipulated contrastive focus in sentences with verbs that have *zichzelf* as their preferred reflexive. Unexpectedly, when a sentence is extended to create a contrastive focus between two verbs, it becomes possible to use *zich* as the reflexive object. Compare (12a) to (12b), where contrastively focusing the verbs *despise* and *like* improves the use of *zich*, which is otherwise impossible. Similarly, inherently reflexive verbs that should only occur with *zich* seem to allow *zichzelf* if the reflexive is contrastively focused (compare (13a) with (13b)).

- (12) a. ?* Jan veracht zich.
 Jan despises SE
 ‘Jan despises himself’
- b. ?? Jan veracht zich, in plaats van zich graag te
 Jan despises SE instead of SE well to
 mogen.
 like
 ‘Jan despises himself instead of liking himself’

- (13) a. * Jan schaamt zichzelf.
Jan is.ashamed SELF
 ‘Jan is ashamed’
- b. Jan kan Piet niet schamen, hij kan alleen
Jan can Piet not be.ashamed he can only
 zichzelf schamen.
SELF be.ashamed
 ‘Jan cannot be ashamed of Piet, he can only be ashamed of himself’

The judgments here are Veraart’s. Although (12b) is not perfect and (13b) is a metalinguistic utterance, according to Veraart the b-sentences are much more acceptable than the a-sentences. These examples show that preferences for predicates to occur with *zich* or *zichzelf* can be influenced by manipulating focus, either by forcing stress to appear on another constituent and thereby removing the possibility that the reflexive will be focused, as in (12b), or by contrasting the reflexive argument with some other constituent, which then forces the use of *zichzelf*, as in (13b). This means that stress possibilities can influence the choice between a SE or SELF reflexive, and that materials testing reflexive choice will need to take this into account.

Given our methodology of a written questionnaire, we are not in the best position to investigate focus effects. Veraart’s examples were evidence of effects of contrastive focus, which would best be studied by an experiment that manipulated context. However, her observations do raise the question of whether presentational focus (also called ‘informational focus’) will also have an effect on reflexive choice. Presentational focus is the default pattern for sentence stress. Unlike contrastive focus, presentational focus generally is realized on discourse-new material that is not contrasted (e.g., Selkirk 2007). In simple transitive sentences, sentence stress due to presentational focus will tend to occur on the rightmost argument of the verb, which also explains why it generally falls on the final position in a sentence (see for example Gussenhoven 1983 and Féry and Herbst 2004). Stress on the rightmost argument can mark focus on this argument, but due to focus projection can also mark focus on the entire verb phrase (e.g., Selkirk 1984, 1995).

When the verbal argument cannot be stressed, either because it is unstressable or because the verb is intransitive and there is no argument, stress tends to shift to the verb itself. For Dutch, this is regardless of the position of the verb in the sentence (modified and extended from Gussenhoven 1983:17):

- (14) a. Ik zie JAN.
I see Jan
 ‘I see Jan’
- b. Ik heb JAN gezien.
I have JAN seen
 ‘I saw Jan’
- c. Ik ZIE hem.
I see him
 ‘I see him’
- d. Ik heb hem geZIEN.

I have him seen
'I saw him'

In (14c) and (14d) we see that when the object is a pronoun, stress shifts to the verb because stressed pronouns that are not contrastive are infelicitous. Because *zich* cannot be stressed, when a verb phrase demands focus, it is predicted that either stress shifts to the verb, or *zichzelf* is used instead of *zich*.

If verb classes that overwhelmingly prefer *zich* are able to allow *zichzelf* for contrastive focus reasons, as Veraart's examples suggest, then we might also expect to find instances of *zichzelf* with inherently reflexive verbs when the verb phrase demands stress because of presentational focus. For example, *hij schaamt zichzelf* 'he is-ashamed SELF' might be said in a situation where focus is on the entire verb phrase. Note that this would be completely unexpected under a dual-entry account because an inherently reflexive verb is already reflexive-marked.

As a final note, because German *sich* can be stressed, whereas Dutch *zich* cannot, we expect focus features to have a stronger effect on reflexive choice in Dutch than in German. However, it is not our intention to explore the interaction of reflexive choice with focus here in detail; this is certainly a topic that needs more study. Instead we will simply keep focus as a potential explanation in mind when discussing our results.

3 Forced-choice task

To investigate the factors involved in reflexive choice in Dutch and German, we conducted an online forced-choice task. In this task, native speakers of Dutch and German were asked to choose between the SE and SELF reflexive form in various sentence contexts.

3.1 Participants

57 Dutch adults and 60 German adults participated in the study. The participants were recruited by email. Speakers of Dutch who were also native in Frisian were excluded because the Frisian dialects have other reflexive forms than standard Dutch.

3.2 Methods and design

Participants received an online forced-choice task in their native language, in which they were presented with one sentence at a time and were asked which word fit better in the sentence: *zich* or *zichzelf* in the Dutch task, and *sich* or *sich selbst* in the German task. Although in the west and central parts of the Netherlands, in Frisia and in Flanders several other SE and SELF forms are used, among others *zijn eigen* 'his own' and *hemzelf* 'himself' (Barbiers and Bennis 2004), Standard Dutch only has the two reflexive forms *zich* and *zichzelf*. For German, there is an informal SELF form, *sich selber*, that is generally not used in written German. We limit our study to the standard written forms in the two languages. Examples of test items are given in (15) and (16):

(15) Alfred kietelt ____ (Dutch)

Alfred tickles

(16) Alfred kitzelt ____ (German)

Alfred tickles

All items were presented online in random order, with each item presented separately. Before the test, biographical information was collected about age, gender, nationality, where the participant grew up, and what other languages they knew. For the test session, participants could take as much time as they wanted to make their choice but they could not go back to previous items to review or change answers.

3.3 Materials

The lists for Dutch and German consisted of 98 sentences each. The two lists were constructed similarly. The proper names in subject position were kept constant across the two lists and were chosen in such a way that they were commonly occurring names in Dutch as well as German. Each list consisted of 30 sentences with transitive non-reflexive, non-grooming verbs (17), 10 sentences with inherently reflexive verbs⁵ (18), 10 sentences with grooming verbs (19), 8 Exceptional Case Marking constructions (20), 8 sentences with a habitual adverb (21) and 8 parallel sentences with the same verb but a non-habitual adverb (22), 8 sentences with an intentional adverb (23) and 8 parallel sentences with the same verb but a non-intentional adverb (24), and 8 sentences in present perfect rather than simple present tense (25).

(17)	Benjamin	slaat ____		(transitive verb)
	<i>Benjamin</i>	<i>hits</i>		
(18)	Michael	schaamt ____		(inherently reflexive verb)
	<i>Michel</i>	<i>is.ashamed</i>		
(19)	Tobias	wast ____		(grooming verb)
	<i>Tobias</i>	<i>washes</i>		
(20)	Thomas	ziet ____ dansen		(ECM construction)
	<i>Thomas</i>	<i>sees dance</i>		
(21)	Karin	snijdt ____	voortdurend	(habitual adverb)
	<i>Karin</i>	<i>cuts</i>	<i>incessantly</i>	
(22)	Paul	snijdt ____	nu	(non-habitual adverb)
	<i>Paul</i>	<i>cuts</i>	<i>now</i>	
(23)	Alfred	snijdt ____	opzettelijk	(intentional adverb)
	<i>Alfred</i>	<i>cuts</i>	<i>on.purpose</i>	
(24)	Claudia	snijdt ____	per ongeluk	(non-intentional adverb)
	<i>Claudia</i>	<i>cuts</i>	<i>accidentally</i>	
(25)	Yvonne	heeft ____	gewassen	(present perfect tense)
	<i>Yvonne</i>	<i>has</i>	<i>washed</i>	

⁵ The original lists contained 100 verbs in total and included 12 inherently reflexive verbs. Among these 12 inherently reflexive verbs were 2 verbs that permit non-reflexive direct objects (albeit with a different meaning), namely *ergeren/ärgern* ‘be annoyed’ and *vervelen/langweilen* ‘be bored’. As we could not control for the way participants interpreted these verbs in the experiment, we removed these two verbs from our analyses. Note, however, that leaving these verbs in our analyses would not give rise to different results.

The grooming verbs and transitive verbs were common verbs chosen mainly from studies on the acquisition of pronouns and reflexives (e.g., Philip and Coopmans 1996; Ruigendijk 2008; van Rij et al. 2010; Spenader et al. 2009; Vasić 2006). The verbs with intentional versus non-intentional adverbs and the verbs with habitual versus non-habitual adverbs were selected on the basis of the plausibility of the verb with both readings. The verbs in present perfect tense, which were included to compare with verbs in present tense, were taken from two verb classes: Half of the verbs in present perfect tense were chosen from the class of transitive verbs, and the other half from the class of grooming verbs. See the Appendix for the complete set of verbs in Dutch and German.

4 Results and discussion

We conducted a Repeated-Measures ANOVA on the arcsine-transformed proportions of SELF responses, calculated per participant. *Condition* (transitive, inherently reflexive, grooming, Exceptional Case Marking, habitual adverb, non-habitual adverb, intentional adverb, non-intentional adverb, present perfect) was considered a within-participants factor, *Language* a between-participants factor. See Figure 1 for a graphical display of the percentages of SELF responses. To guard against possible violations of the statistical assumption of sphericity, the Huynh-Feldt correction was used whenever the factor Condition was involved in the analysis (Stevens 1992). We report the actual degrees of freedom (rounded to the nearest integer) that were used in the statistical test.

(INSERT FIGURE 1 ABOUT HERE)

Table 1 P-values for the pairwise comparisons (Bonferroni corrected) between all conditions; upper panel: Dutch, lower panel: German; bold=not significant at $p < .05$

Dutch	Transitive	Inherent	Grooming	ECM	Habitual	Non-Habitual	Intentional	Non-Intentional
Transitive								
Inherent	.000							
Grooming	.000	.000						
ECM	.000	.000	.000					
Habitual	.000	.000	.000	.000				
Non-Habitual	.001	.000	.000	.000	1.000			
Intentional	1.000	.000	.000	.000	.003	.006		
Non-Intentional	.018	.000	.000	.000	1.000	1.000	.087	
Present Perfect	.000	.000	.000	.000	.000	.008	.000	.001

German	Transitive	Inherent	Grooming	ECM	Habitual	Non-Habitual	Intentional	Non-Intentional
Transitive								
Inherent	.000							
Grooming	.000	.000						
ECM	.000	.000	.000					
Habitual	.000	.000	.000	.000				
Non-Habitual	.000	.000	.000	.000	1.000			
Intentional	.000	.000	.000	.000	.000	.000		
Non-Intentional	.000	.000	.000	.000	.967	.041	.170	
Present Perfect	.000	.000	.000	.000	1.000	.072	.171	1.000

There was a main effect of Condition ($F(6,714)=242.4$; $p<.001$), and also a main effect of Language ($F(1,122)=176.8$; $p<.001$), indicating that, overall, German participants were less likely to produce SELF responses (27%, $SE=1.6$) as compared to Dutch language users (60%, $SE=1.7$). These main effects were qualified by a significant interaction between Condition and Language ($F(6,714)=31.3$; $p<.001$). Three types of follow-up analyses were subsequently done: 1) independent sample t-tests per type of condition to see whether there are significant differences between the two languages; 2) pairwise comparisons between conditions, for Dutch and German separately; 3) theoretically motivated a priori comparisons. All comparisons use Bonferroni correction.

4.1 Dutch versus German

There was a significant main effect of language. The Dutch speakers had an overall preference for SELF, while the German speakers had an overall preference for SE. Furthermore, follow-up analyses showed that all comparisons between Dutch and German were significantly different ($p<.005$), including the comparison with the class of transitive sentences which we use as a baseline for some of the other conditions.

A first result is that, even in Dutch, transitive verbs do not exclusively occur with SELF reflexives. Below we look at the other conditions for Dutch and German separately. Table 1 shows which conditions are significantly different within each language and which are not.

4.2 Inherent reflexivity

Our results confirm that inherently reflexive verbs are generally not used with the SELF form. However, German and Dutch do show a slight but significant difference: While the SELF reflexive was chosen only three times for the German inherently reflexive verbs, for each of the ten inherently reflexive verbs tested in Dutch at least one participant chose the SELF reflexive. Consequently, inherently reflexive verbs occur with SELF more often in Dutch than in German.

For German, the small number of SELF forms allows the argument that they are simply errors. But looking more closely we also see that the two inherently reflexive verbs that did occur with the SELF form in German differed from the other eight in that the reflexive was used with a prepositional object, so that the reflexive was not in sentence-final position but mid-sentence, e.g. *Renate freut sich/sich selbst darüber* ‘Renate was excited about something’ and *Claudia erinnert sich/sich selbst an nichts* ‘Claudia recalled nothing’. If this is the explanation for the observed difference, the participants must have intended *selbst* as an intensifier.⁶ However, given that there were only three cases, it is also possible that these were simply errors.

The Dutch results are harder to dismiss as mistakes because there were multiple cases and they occurred with every item. This difference between Dutch and German may be evidence that the Dutch category of inherently reflexive verbs, in contrast to the German category, is not an absolute category and the claim that inherently reflexive verbs only occur with the SE form is simply too strong. This is consistent with other work. Smits et al. (2007) used a forced-choice questionnaire similar to the one in the current study. Results showed that 6.3% of verbs identified as necessarily reflexive by ANS actually were combined with SELF reflexives by participants. Further, the corpus analysis of Bouma and Spenader (2008) found that of the 163 inherently reflexive verbs in the data set, 112 (68.7%) occur with *zich* 99% of the time, often with only one or two occurrences of *zichzelf*. These cases could be attributed to errors or poor editing. However, there were also 51 verbs that occurred with *zichzelf* more frequently and are thus harder to argue away. This suggests that the SELF form is not completely excluded for inherently reflexive verbs in Dutch: it indicates a minor yet perceptible flexibility in this category that is not yet recognized or understood.

4.3 Grooming verbs

Pairwise comparisons between conditions revealed that reflexive choice in Dutch and German with grooming verbs differs significantly from reflexive choice with transitive verbs, and also differs significantly from reflexive choice with inherently reflexive verbs. Whereas inherently reflexive verbs hardly ever (Dutch) or almost never (German) occur with SELF forms, transitive verbs have a preference in the opposite direction and occur with SELF in the large majority of cases (Dutch) or in just over half of the cases (German). Grooming verbs fall in between these opposites in the two languages and mostly occur with SE but do allow occurrences with SELF. This indicates that, in addition to the semantic reasons mentioned earlier, there is distributional evidence to treat grooming verbs as a separate subclass. It is also remarkable that despite the overall difference between Dutch and German, the distributional patterns for this subclass are similar in the two languages.

4.4 ECM constructions

Comparison between the transitive construction and the ECM construction shows that reflexive choice in the two syntactic constructions significantly differs in both languages. However, whereas in Dutch ECM constructions have an even stronger preference for SELF than transitive constructions and almost exclusively

⁶ An anonymous reviewer made the helpful suggestion that discourse particles such as *ja* and *doch* could be used to distinguish between an intensifier use of *selbst* and a strong reflexive use, e.g. *Claudia erinnert sich ja selbst an nichts* seems possible while *ja* is unacceptable in *Claudia erinnert (*ja) sich selbst (*ja) an nichts*, suggesting *selbst* is actually an intensifier in this case.

occur with SELF, in German the effect of syntactic construction is in the opposite direction. That is, SELF was chosen somewhat less often in German in ECM constructions than in transitive constructions.

None of the theoretical accounts of reflexive choice predicts the almost exclusive use of SELF in Dutch ECM constructions, nor the difference between Dutch and German reflexives in subject position. According to Reinhart and Reuland's (1993) account, both SE and SELF should be possible in ECM constructions. If there is a preference, this preference should be for SE because of economy reasons. Moreover, because the reflexives appear in subject position in ECM constructions and Reinhart and Reuland's dual-entry account was introduced to explain differences in object choice, it is unclear how this account is able to explain the observed difference between Dutch and German. The alternative account discussed here, the likelihood account, also seems unable to explain the observed pattern. As the meanings of the sentences are comparable in the two languages, it is highly unlikely that the observed difference between Dutch and German is due to the difference in plausibility between the self-directed versus other-directed action that has been argued to be a major factor in reflexive choice in Dutch (Bouma and Spenader 2009).

4.5 Habituality

There was no effect for habituality within each language, contrary to our expectation that adding a habitual adverb to a transitive verb would increase its ability to occur with a SE reflexive. There was a significant difference between Dutch and German, but this can simply be ascribed to the greater general tendency for Dutch to use SELF reflexives.

4.6 Intentionality

First, comparing the category of intentional sentences (with intentional adverbs) to the category of transitive sentences (with no adverbs), we found that there was no difference in Dutch between these two categories. On the other hand, the non-intentional sentences (with non-intentional adverbs) in Dutch were significantly less likely to occur with SELF than the transitive sentences. This is in line with the prediction that decreasing the intentionality of an event correlates with a decrease in the use of SELF. In German the result is somewhat surprising. Both intentional sentences and non-intentional sentences were significantly less likely to occur with the SELF form than transitive sentences were. This suggests that intentionality influences reflexive choice in German differently than it does in Dutch.

As a follow-up analysis, we compared the sentences with intentional and non-intentional adverbs to the eight corresponding transitive sentences that were included in the general category of transitive sentences (see Figure 2). The transitive sentences had the same verbs as the intentional and non-intentional sentences (see the Appendix for the list of verbs) but did not end with an adverb. For Dutch, we thus compared sentences such as *David snijdt zich(zelf)* 'David cuts himself' (No Adverb) with *Alfred snijdt zich(zelf) opzettelijk* 'Alfred cuts himself on purpose' (Intentional) and *Claudia snijdt zich(zelf) per ongeluk* 'Claudia cuts herself accidentally' (Non-Intentional).

(INSERT FIGURE 2 ABOUT HERE)

The interaction *Intentional Type* x *Language* is significant $F(2,244)=17.8$; $p<.001$; follow-up analyses show that for Dutch, Intentional is different from both No Adverb and Non-Intentional (p -values $< .01$); No Adverb and Non-Intentional do not differ significantly ($p=1.0$); for German, No Adverb differs from both Intentional and Non-Intentional ($p < .001$); these latter two do not differ ($p=1.0$).

For Dutch, the results of the follow-up analysis confirm our initial finding: Sentences with non-intentional adverbs are less likely to occur with SELF than sentences with intentional adverbs. In contrast, for German intentionality does not seem to influence reflexive choice, but the presence of a sentence-final adverbial does. Sentences with an (intentional or non-intentional) adverb behave alike, both being less likely to occur with SELF.

In German sentences with adverbials, there is a choice between the orders Adverbial-Reflexive and Reflexive-Adverbial.⁷ The order Adverbial-Reflexive practically forces a reading of the reflexive as narrow contrastive focus and thus may create a preference for the SELF form. This may imply that conversely the order Reflexive-Adverbial is more likely to be read as non-contrastive, which results in a decrease in the use of SELF. In sentences without an adverb, no such word order cue is present, since there is no alternative order, and the choice between a contrastive and neutral reading is more open. However, we are not sure this can be the explanation for the difference between Dutch and German, as the alternative word order seems possible in Dutch too if the reflexive is a SELF form (e.g., *Claudia snijdt per ongeluk zichzelf* ‘Claudia cuts herself accidentally’), with the same meaning effect as in German (Claudia accidentally cuts herself and does not accidentally cut someone else).

4.7 Tense

To determine the effects of tense on reflexive choice, we did a follow-up analysis comparing the verbs in simple present tense with eight corresponding sentences in present perfect tense. Half of these verbs were transitive verbs and half were grooming verbs. Figure 3 shows the pattern of reflexive choice for these two categories of sentences in the two languages.

(INSERT FIGURE 3 ABOUT HERE)

The interaction *Tense* x *Language* is not significant ($F<<1$). The main effect of *Tense* is significant ($F(1,22)=7.2$; $p<.01$): Present Perfect gives rise to fewer SELF responses (Mean=44%; SE=2%) than Simple Present (Mean=48%; SE=2%). There is also a main effect of *Language*: German participants give fewer SELF responses (Mean=36%; SE=2%) than Dutch participants (Mean=57%; SE=2%).

Recall that in Dutch and German sentences with present perfect tense, the past participle appears in sentence-final position and the reflexive appears in pre-final position, as in the Dutch sentence *Yvonne heeft zich(zelf) gewassen* ‘Yvonne has washed herself’. In simple present tense, on the other hand, the finite verb appears in second position and the reflexive appears in sentence-final position, as in *Tobias wast zich(zelf)* ‘Tobias washes himself’. The main stress typically falls on the rightmost argument of the verb in Dutch and

⁷ Thanks to one of the anonymous reviewers for pointing this out.

German. The pre-final position of the reflexive argument in present perfect tense sentences results in fewer occurrences of SELF than the final position in simple present tense sentences, both in Dutch and in German.

This effect could be caused by the difference in meaning brought about by the different tense forms, but our intuition is that it is more likely an effect of the different word order and focus preferences determined by word order.⁸ Because presentational focus tends to stress the direct object of the verb, which often is the final constituent in a main clause, the effects of objecthood and word order usually coincide. In the sentences with simple present tense, the reflexive object is also the final constituent in the sentence. A verb that would occur with SE in this sentence either needs to switch to SELF or shift stress to the verb. Because we see a higher rate of SELF in sentences with simple present tense, it suggests that these might be cases of switching from SE to SELF, which would allow the speaker to maintain final constituent stress.

In general, we then expect the rate of SELF usage to increase in positions that typically have stress. In the present perfect tense sentences, the object of the verb and the final constituent do not coincide. Switching from SE to SELF allows object stress, but not final constituent stress. Shifting from object stress to verbal stress would retain the final constituent stress pattern and SE can be used. This might be an explanation for why in the present perfect tense sentences we see a decrease in SELF reflexives relative to the simple present tense sentences.

However, this is all speculation that needs further study, and the examples differ not only in the position of the reflexives but also in their tense and aspect. It could be that the difference in reflexive choice instead originates in the habitual interpretation inherent in the present tense sentences.⁹ Note however that habituality is predicted by the theoretical literature to increase the usage of SE reflexives, which is the opposite of what we found. Recall also that reflexive choice in our examples with habitual adverbs did not differ significantly from the same sentences without habitual marking.

Our results suggest that reflexive choice in Dutch and German is sensitive to some difference inherent in the simple present tense versus the present perfect tense. Whether this difference is word order interacting with focus preferences or some semantic feature related to tense or habituality, we find a higher rate of SELF forms in the simple present tense condition, where the reflexive occurs in sentence-final position. Clearly more study is needed.

5 General discussion

In a forced-choice experiment, we examined which factors influence reflexive choice in Dutch and German. Confirming some existing observations in the literature, we found a large difference between Dutch and German. Whereas the Dutch speakers had an overall preference for SELF, the German speakers had an overall preference for SE. This difference between reflexive choice in Dutch and German was found across all nine conditions in our experiment.

⁸ One of the anonymous reviewers makes the excellent suggestion that using embedded clauses would put the verb in final position both in the present and perfect tense, so that there is no longer a word order difference. This is a natural extension of our work and a potential direction for future research.

⁹ We thank one of the anonymous reviewers for this suggestion.

With respect to the factors influencing reflexive choice, our study confirmed some suggestions made in the literature, disconfirmed other suggestions, and also revealed influences that have not been mentioned before. First of all, we found that verb class has a major influence on reflexive choice in both languages: Inherently reflexive verbs do not occur with SELF in German, but they sometimes do in Dutch, albeit very infrequently. Transitive verbs preferably occur with SELF in Dutch and about half of the time in German. Grooming verbs are not just semantically definable, but showed a different distribution of reflexive use than transitive verbs and inherently reflexive verbs. The distributional difference between grooming verbs and transitive verbs has a natural explanation under the likelihood account: grooming is relatively more likely to be done to oneself than other transitive actions, and therefore is predicted to have a higher rate of SE. The dual-entry account does not have a ready explanation for these distributional differences.

Furthermore, an influence of syntactic structure was observable in the stronger preference for SELF in ECM constructions in Dutch compared to transitive constructions. Surprisingly, the preference in German was in the opposite direction, with a stronger preference for SELF in transitive constructions than in ECM constructions. Looking at the semantic/pragmatic factors of habituality, intentionality and tense, we found that habituality did not influence reflexive choice in either language, in contrast to what Geurts (2004) argues. Intentionality did, but only in Dutch: Sentences with intentional adverbs had a stronger preference for SELF in Dutch. The position of the reflexive in the sentence appeared to influence reflexive choice in Dutch as well as German: More SELF was chosen when the reflexive occurred in sentence-final position than when the reflexive occurred in a non-final position, shown in a comparison of simple present tense versus present perfect tense. This could have either to do with word order and focus preferences or with tense and habituality.

Our observation of syntactic, semantic and pragmatic influences on reflexive choice sheds doubt on the dual-entry account of reflexive choice that is widely accepted in the literature on reflexivity. If non-lexical factors can influence the choice between SE or SELF for almost all verbs, simply positing two lexical entries for these verbs (one as an inherently reflexive verb and another as a transitive verb) does not provide an adequate explanation of reflexive choice in Dutch and German. The dual-entry account loses its explanatory power if all verbs have dual entries. Rather, a more sophisticated account seems to be required that is able to combine and integrate the various factors involved in reflexive choice. The likelihood account seems to be compatible with our findings, because this account claims that there are general tendencies in the language that influence reflexive choice, and further seems to be able to make more fine-grained predictions about reflexive choice, which can even differ within a given verb class (such as the class of accidentally reflexive verbs).

Concluding, we found that Dutch has an overall preference for SELF reflexives, whereas German has an overall preference for SE reflexives. For Dutch, we found effects of verb class, syntactic construction, intentionality and perhaps focus on reflexive choice. For German, effects were found of verb class, syntactic construction and possibly focus, which however differed in some respects from the effects of these same factors in Dutch.

Acknowledgements

The authors thank Lucas Champollion, Scott Grimm, Theres Grüter, Bart Hollebrandse, Sven Lauer, Beth Levin, Emar Maier and the Semantics Research Seminar at Stanford University for their helpful comments and suggestions. We also received many helpful suggestions from the four anonymous reviewers. Finally, Petra

Hendriks thanks the Netherlands Organisation for Scientific Research (NWO) (grant no. 277-70-005) for financial support.

References

- Barbiers, Sjef and Hans Bennis. 2004. Reflexieven in dialecten van het Nederlands: Chaos of structuur? In *Taeldeman, man van de taal, schatbewaarder van de taal*, eds. Johan de Caluwe, Georges De Schutter, Magda Devos, and Jacques Van Keymeulen, 43-58. Gent: Academia Press and Vakgroep Nederlandse Taalkunde Universiteit Gent.
- Bouma, Gosse and Jennifer Spenader. 2009. The distribution of weak and strong object reflexives in Dutch. In *Proceedings of the seventh workshop on Treebanks and Linguistic Theory (TLT 7)*, eds. Frank van Eynde, Anette Frank, Koenraad de Smedt, and Gertjan van Noord, Groningen.
- Chomsky, Noam. 1981. *Lectures on Government and Binding*. Dordrecht: Foris.
- Donaldson, Bruce. 1997. *Dutch: A comprehensive grammar*. London: Routledge.
- Everaert, Martin. 1986. *The Syntax of Reflexivization*. Dordrecht: Foris.
- Féry, Caroline and Laura Herbst. 2004. German sentence accent revisited. In *Interdisciplinary Studies on Information Structure (ISIS) 1*, eds. Shinichiro Ishihara, Michaela Schmitz, and Anne Schwarz, 43-75. Potsdam: Universitätsverlag Potsdam.
- Geurts, Bart. 2004. Weak and strong reflexives in Dutch. In *Proceedings of the ESSLLI workshop on semantic approaches to binding theory*, eds. Philippe Schlenker and Ed Keenan.
- Gussenhoven, Carlos. 1983. Focus, mode and the nucleus. *Journal of Linguistics* 19: 377-417.
- Haeseryn, Walter, Kirsten Romijn, Guido Geerts, Jaap de Rooij, and Maarten C. van den Toorn. 1997. *Algemene Nederlandse Spraakkunst*. Groningen: Martinus Nijhoff and Deurne: Wolters Plantyn.
- Haspelmath, Martin. 2008. A frequentist explanation of some universals of reflexive marking. *Linguistic Discovery* 6(1): 40-63.
- Kemmer, Suzanne. 1993. *The middle voice*. Amsterdam: John Benjamins.
- Ter Meulen, Alice. 2000. On the economy of interpretation: Semantic constraints on SE-reflexives in Dutch. In *Interface Strategies*, eds. Hans J. Bennis, Martin Everaert, and Eric Reuland, 239-255. Amsterdam: KNAW.
- Ordelman, Roeland, Franciska de Jong, Arjan van Hessen, and Henri Hondorp. 2007. TWNC: a multifaceted Dutch news corpus. *ELRA Newsletter*, 12(3/4): 4-7.
- Oya, Toshiaki. 2010. Three types of reflexive verbs in German. *Linguistics* 48(1): 227-257.
- Philip, William and Peter Coopmans. 1996. The double Dutch Delay of Principle B Effect. In *Proceedings of the 20th Boston University Conference on Language Development*, eds. Andy Stringfellow, Dalia Cahana-Amitay, Elizabeth Hughes, and Andrea Zukowski, 576-587. Somerville, MA: Cascadilla Press.
- Reinhart, Tanya and Eric Reuland 1993. Reflexivity. *Linguistic Inquiry* 24: 657-720.
- Reinhart, Tanya and Tal Sioni 2005. The Lexicon-Syntax parameter: reflexivization and other arity operations. *Linguistic Inquiry* 36: 389-436.
- van Rij, Jacolien, Hedderik van Rijn, and Petra Hendriks. 2010. Cognitive architectures and language acquisition: A case study in pronoun comprehension. *Journal of Child Language* 37(3): 731-766.

- Ruigendijk, Esther. 2008. Pronoun interpretation in German Kindergarten children. In *Proceedings of GALA 2007*, eds. Anna Gavarró Algueró and M. João Freitas. Newcastle upon Tyne, UK: Cambridge Scholars Publishing.
- Schäfer, Florian. 2013. On passives of reflexive verbs and the nature of (natural) reflexivity. In *Proceedings of NELS 41 (the Forty-First Annual Meeting of the North East Linguistic Society)*, eds. Yelena Fainleib, Nicholas LaCara, and Yangsook Park, 205-218. University of Pennsylvania, Oct. 22-24, 2010. GLSA (Graduate Linguistics Student Association).
- Selkirk, Elisabeth. 1984. *Phonology and Syntax: The Relation Between Sound and Structure*. Cambridge, MA: MIT Press.
- Selkirk, Elisabeth. 1995. Sentence prosody: Intonation, stress, and phrasing. In *The Handbook of Phonological Theory*, ed. John A. Goldsmith, 550-569. London: Blackwell.
- Selkirk, Elisabeth. 2007. Contrastive focus, givenness and the unmarked status of “discourse-new”. In *The Notions of Information Structure*, eds. Caroline Féry, Gisbert Fanselow, and Manfred Krifka, 125-145. Interdisciplinary Studies on Information Structure 6, Potsdam.
- Smits, Erik-Jan, Petra Hendriks, and Jennifer Spenader. 2007. Using very large parsed corpora and judgment data to classify verb reflexivity. In *Anaphora: Analysis, Algorithms and Applications*, ed. António Branco, 77-93. 6th Discourse Anaphora and Anaphor Resolution Colloquium, DAARC 2007, LNAI (Lecture Notes in Artificial Intelligence) #4410, Berlin Heidelberg: Springer-Verlag.
- Spenader, Jennifer, Erik-Jan Smits, and Petra Hendriks. 2009. Coherent discourse solves the Pronoun Interpretation Problem. *Journal of Child Language* 6(1): 23-52.
- Steinbach, Markus. 2002. *Middle voice: A comparative study in the syntax-semantics interface of German*. Amsterdam: John Benjamins.
- Stevens, James P. 1992. *Applied multivariate statistics for the social sciences*. Second edition. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Vasić, Nada. 2006. *Pronoun comprehension in agrammatic aphasia: The structure and use of linguistic knowledge*. Doctoral dissertation, Utrecht: LOT.
- Vat, Jan. 1980. Zich en zichzelf. In *Linguistics in the Netherlands 1980*, eds. Saskia Daalder and Marinel Gerritsen, 127-139.
- Veraart, Fleur. 1996. On the distribution of Dutch reflexives. *MIT Occasional Papers in Linguistics* 10. Cambridge, MA: MIT.
- Williams, Edwin. 2003. *Representation Theory*. Cambridge, MA: MIT Press.

Appendix

Dutch

Transitive verbs (30)

aait ‘pets’, *achtervolgt* ‘chases’, *bedekt* ‘covers’, *bindt vast* ‘ties up’, *bijt* ‘bites’, *draait om* ‘turns around’, *filmt* ‘videotapes’, *fotografeert* ‘takes pictures of’, *hoort* ‘hears’, *kietelt* ‘tickles’, *knijpt* ‘pinches’, *krabt* ‘scratches’, *likt* ‘licks’, *omarmt* ‘hugs’, *pakt vast* ‘holds’, *prikt* ‘pricks’, *raakt aan* ‘touches’, *schildert* ‘paints’, *schopt* ‘kicks’, *slaat* ‘hits’, *snijdt* ‘cuts’, *steekt* ‘stabs’, *streelt* ‘caresses’, *tekent* ‘draws’, *tilt op* ‘lifts up’, *verblindt* ‘blinds’, *wijst aan* ‘points at’, *wijst naar* ‘points to’, *ziet* ‘sees’, *ziet op tv* ‘sees on tv’.

Inherently reflexive verbs (10)

bedrinkt ‘gets drunk’, *concentreert* ‘concentrates’, *gedraagt* ‘behaves’, *herinnert niets* ‘doesn’t remember anything’, *maakt zorgen* ‘worries’, *misdraagt* ‘misbehaves’, *schaamt* ‘is ashamed’, *vergist* ‘errs’, *verheugt erover* ‘is glad about it’, *verslikt* ‘chokes’.

Grooming verbs (10)

droogt af ‘dries’, *kamt* ‘combs’, *kleeft aan* ‘dresses’, *maakt op* ‘makes beautiful’, *maakt schoon* ‘cleans’, *scheert* ‘shaves’, *schminkt* ‘puts make-up on’, *smeert in* ‘rubs in’, *wast* ‘washes’, *zeep in* ‘soaps’.

Verb combinations used in ECM constructions (8)

hoort eten ‘hears eating’, *hoort huilen* ‘hears crying’, *hoort klappen* ‘hears applauding’, *hoort zingen* ‘hears singing’, *ziet dansen* ‘sees dancing’, *ziet lachen* ‘sees laughing’, *ziet lopen* ‘sees walking’, *ziet zwaaien* ‘sees waving’.

Verbs used with habitual versus non-habitual adverbs (8)

bijt ‘bites’, *filmt* ‘videotapes’, *krabt* ‘scratches’, *prikt* ‘pricks’, *slaat* ‘hits’, *snijdt* ‘cuts’, *wast* ‘washes’, *ziet op tv* ‘sees on tv’.

Verbs used with intentional versus non-intentional adverbs (8)

bindt vast ‘ties up’, *bijt* ‘bites’, *filmt* ‘videotapes’, *krabt* ‘scratches’, *prikt* ‘pricks’, *raakt aan* ‘touches’, *slaat* ‘hits’, *snijdt* ‘cuts’.

Verbs used in present perfect (8)

aangekleed ‘dressed’, *gebeten* ‘bitten’, *gefotografeerd* ‘taken a picture of’, *geschminkt* ‘put make-up on’, *geslagen* ‘hit’, *gewassen* ‘washed’, *ingesmeerd* ‘rubbed in’, *op tv gezien* ‘seen on tv’.

German

Transitive verbs (30)

streichelt 'pets', *verfolgt* 'chases', *deckt zu* 'covers', *bindet fest* 'ties up', *beißt* 'bites', *dreht um* 'turns around', *filmt* 'videotapes', *fotografiert* 'takes pictures of', *hört* 'hears', *kitzelt* 'tickles', *kneift* 'pinches', *kratzt* 'scratches', *leckt* 'licks', *umarmt* 'hugs', *hält* 'holds', *sticht* 'pricks', *berührt* 'touches', *malt* 'paints', *tritt* 'kicks', *schlägt* 'hits', *schneidet* 'cuts', *sticht* 'stabs', *liebkost* 'caresses', *zeichnet* 'draws', *hebt hoch* 'lifts up', *blendet* 'blinds', *zeigt auf* 'points at', *deutet auf* 'points to', *sieht* 'sees', *sieht im Fernsehen* 'sees on tv'.

Inherently reflexive verbs (10)

betrinkt 'gets drunk', *konzentriert* 'concentrates', *benimmt* 'behaves', *erinnert an nichts* 'doesn't remember anything', *macht Sorgen* 'worries', *benimmt schlecht* 'misbehaves', *schämt* 'is ashamed', *irrt* 'errs', *freut darüber* 'is glad about it', *verschluckt* 'chokes'.

Grooming verbs (10)

trocknet ab 'dries', *kämmt* 'combs', *zieht an* 'dresses', *macht zurecht* 'makes beautiful', *putzt* 'cleans', *rasiert* 'shaves', *schminkt* 'puts make-up on', *reibt ein* 'rubs in', *wäscht* 'washes', *seift ein* 'soaps'.

Verb combinations used in ECM constructions (8)

hört essen 'hears eating', *hört weinen* 'hears crying', *hört klatschen* 'hears applauding', *hört singen* 'hears singing', *sieht tanzen* 'sees dancing', *sieht lachen* 'sees laughing', *sieht gehen* 'sees walking', *sieht winken* 'sees waving'.

Verbs used with habitual versus non-habitual adverbs (8)

beißt 'bites', *filmt* 'videotapes', *kratzt* 'scratches', *sticht* 'stabs', *schlägt* 'hits', *schneidet* 'cuts', *wäscht* 'washes', *sieht im Fernsehen* 'sees on tv'.

Verbs used with intentional versus non-intentional adverbs (8)

bindet fest 'ties up', *beißt* 'bites', *filmt* 'videotapes', *kratzt* 'scratches', *sticht* 'stabs', *berührt* 'touches', *schlägt* 'hits', *schneidet* 'cuts'.

Verbs used in present perfect (8)

angezogen 'dressed', *gebissen* 'bitten', *fotografiert* 'taken a picture of', *geschminkt* 'put make-up on', *geschlagen* 'hit', *gewaschen* 'washed', *ingerieben* 'rubbed in', *im Fernsehen gesehen* 'seen on tv'.

Fig. 1 Percentages SELF ('zichzelf' or 'sich selbst') responses per condition per language

Fig. 2 Percentages SELF ('zichzelf' or 'sich selbst') responses for the same set of items without adverb (No Adverb), with intentional adverb (Intentional), or with non-intentional adverb (Non-Intentional), per language

Fig. 3 Percentages SELF ('zichzelf' or 'sich selbst') responses for the same set of items with simple present tense (Simple Present), or with present perfect tense (Present Perfect), per language