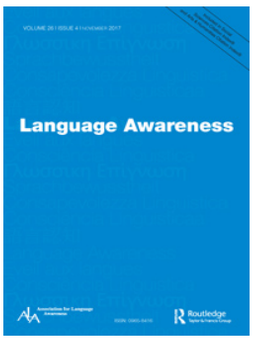

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Bridging the gap between linguistic theory and L1 grammar education – experts' views on essential linguistic concepts

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ABSTRACT

L1 grammar education is internationally criticised because of its pedagogy and its curriculum content. There is a gap between linguistic theory and school grammar in which the latter rarely makes use of possibly relevant insights from the former. At the same time, linguistics itself has never seriously undertaken attempts to identify the fundamental, theory-neutral conceptual knowledge of the field. Instead, most linguists spend time on defining the boundaries between different linguistic theories, making it harder for language teachers to take advantage of insights that linguistics has to offer. This paper, therefore, aims (1) to establish a theory-neutral foundation for sentential syntax and semantics and (2) to explore the role this foundation should play in language education according to linguists. The experts were asked to articulate the most important linguistic concepts for both the domain of linguistic theory and the domain of grammar education. Twenty-six concepts were identified and ranked in a Delphi study for relative importance in both domains. The importance of the concepts correlated strongly for both domains, making it feasible to bridge the gap between linguistics and school grammar. The Dutch context is taken as a frame of reference, although the study's relevance is likely to be broader.

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Introduction

Why teach grammar? In recent history, this has been an overarching question in an international controversy over L1 grammar teaching (Fontich & Camps, 2014; Locke, 2010). Discussions on the rationale for grammar teaching usually involve arguments such as teaching grammar supports students' language proficiency development, grammar has cultural value, it potentially enhances critical thinking, and it is beneficial for L2 learning.

Locke (2010, preface) considers the proficiency argument the central one: 'At the simplest level, the battle can be reduced to the question: Does the explicit knowledge of language contribute positively and productively to a learner's developing repertoire of textual practices as readers (viewers) or composers (makers) of texts?' Although Locke (2010) takes a positive viewpoint, the answer to this question is usually negative: explicit

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grammatical knowledge is generally considered merely relevant to one of many sub-processes of writing, whereas most other sub-processes (like planning and reflection) have little to do with linguistic structure (Van Gelderen, 2010, p. 119) – cf. Hayes and Flower's (1980) and Bereiter and Scardamalia's (1987) frequently cited models. However, there is also a growing body of evidence in favour of a more positive viewpoint (Myhill, 2016). Myhill, Jones, Lines, and Watson (2012), for instance, showed that contextualised grammar teaching shows a significantly positive impact on writing development.

The second argument, that knowledge of grammar and language has a cultural value, is based on ideology rather than being supported by empirical evidence. However, many teachers adhere to this cultural perspective, which sees increasing language awareness and insight as a reasonable goal in itself (cf. Hulshof, 2013). According to Hulshof (2013, p. 264), those who adhere to this perspective strive to make language interesting and meaningful to pupils, irrespective of possible effects on written communication or other forms of language proficiency. Since this type of grammar teaching makes no direct claims about such effects, Hulshof states that empirical evidence is less called for in this line of thinking.

It has frequently been assumed that grammar is an effective means to enhance students' thinking skills: 65% of Dutch language teachers believe so (cf. Bonset & Hoogeveen, 2010, p. 29). To our knowledge, there is no evidence supporting this claim, although recently, researchers have started exploring this relationship empirically (e.g. by investigating the role of 'languaging' in student's understanding of voice in French (cf. Brooks, Swain, Lakpin, & Knouzi, 2010) and theoretically (e.g. by relating grammatical thinking to the Theory of Reflective Judgement (King & Kitchener, 1994; cf. Wijnands, 2016)).

Lastly, the relationship between L1 grammar education and L2 grammar education has been investigated before (e.g. Hall & Cook, 2012; Lyster, Collins, & Ballinger, 2009). The argument that explicit teaching grammar in L1 contexts benefits L2 contexts only appears to be valid under stringent conditions such as a similar use of grammatical terminology in L1 and L2 grammar lessons, a synchronised L1–L2 curriculum, and the involvement of teachers actively pointing out the similarities between grammatical structures in the different languages. (See Tordoir & Damhuis's (1982) analysis of L1 and L2 teacher's logs on grammar teaching and teaching methods.)

In short, international research into the effects of L1 grammar teaching is limited (Andrews, 2010, p. 92; Hudson & Walmsley, 2005, p. 593) and it produces mixed results, or results that are only valid under certain stringent conditions. This holds especially for the relationship between grammar teaching and writing.

Based on the aforementioned arguments and beliefs, certain paradigms in language teaching emerge on two levels in Van den Akkers's (2003) well-known curriculum typology: the *intended curriculum* (mainly concerning vision and ideology) and the *implemented curriculum* (mainly concerning the teacher's interpretation of the curriculum, which includes the actual process of teaching and learning). We will briefly discuss these paradigms, taking most of our examples from the Dutch L1 curriculum.

Paradigms in language teaching: the intended curriculum

In his *History of Western Linguistics*, Seuren (1998) notes that two main views of language can be distinguished throughout history: an *analogistic* view, aiming at establishing general rules for the practical purpose of mastering a foreign language, and an *anomalistic*

view, focusing on comprehending the nature of language by studying special, often irregular constructions (Seuren, 1998, p. 4). This dichotomy can still be observed in modern linguistics (Seuren, 1998, p. 4, pp. 26–27), emerging in an educational context as the opposition between *prescriptivists* (whose perspective is mainly analogistic) and *descriptivists* (operating from an anomalistic perspective). Other oppositions, like the distinction between an *instrumental perspective* (viewing grammar teaching as a means to developing reading and writing skills) and a *cultural perspective* on language education (which considers knowledge of language and grammar as a valuable goal in itself; cf. Hulshof, 2013, p. 264), can be traced back to the same source. The instrumental perspective seems to be the dominant one since a worldwide paradigm shift was observed in the second half of the twentieth century, towards a *communicative paradigm*. In this shift, the educational focus changed from grammatical and literary skills to functional, communicative skills (Bonset & Rijlaarsdam, 2004), following new developments in linguistics, such as the emergence of sociolinguistics and pragmatics. In the Netherlands, as in many other countries, this communicative paradigm gave rise to a dominant instrumental vision of language education (Hulshof, Kwakernaak, & Wilhelm, 2015; Kroon, 1985; Van de Ven, 1996, p. 346), strengthening the already firm association between traditional grammar and prescriptivism, because grammar is only judged by its usefulness in prescriptive matters.

Educational practice: the implemented curriculum

Most L1 and L2 teachers consider grammar education to be an indispensable part of the curriculum (Gartland & Smolkin, 2015; Graus & Coppen, 2015). Subsequently, in the Netherlands, it generally makes up a large portion of the language curriculum (Tol-Verkuyl, 2001, p. 177). In other countries, a similar picture can be found. Although grammar education seemed dispensable in the UK, since it was practically removed from the national curriculum from the 1960s until about 2000, it has made a strong comeback in the first half of the twenty-first century (Hudson & Walmsley, 2005, p. 594). According to Kolln and Hancock (2005), roughly the same holds for the grammar teaching situation in the United States, where it is getting acknowledged more and more that ignoring grammar has had negative consequences in education.

The implemented curriculum is greatly influenced by *teacher beliefs*. Research has shown that these beliefs are most powerfully influenced by teachers' own experiences as learners (Borg, 2011; Phipps & Borg, 2009, p. 381). This explains in part why grammar teaching in many countries still mainly consists of decontextualised parsing exercises (Bonset & Hoogeveen, 2010, pp. 35–36; Lefstein, 2009, p. 380; Van Gelderen, 2010, p. 110; Watson, 2015a, 2015b). This form-focused approach commonly adopted by teachers is mainly characterised by rules of thumb that do not lead to any real insight or linguistic awareness (Berry, 2015; Coppen, 2009).[1] An example is that in the Netherlands, students learn to ask an 'audit' question for finding parts of speech such as the direct object ('who or what + predicate + subject'), but if learning to ask a question is the only pedagogy that is employed, it should come as no surprise that students do not really understand what a direct object actually is. They only learn how to locate it most of the time, but without conceptual understanding, thus the relevance of such isolated exercises is questionable (Coppen, 2009). Furthermore, rules of thumb do not stimulate critical thinking and incorrectly treat grammatical analysis as a puzzle for which there is a unique solution (Coppen, 2009).

Teachers firmly believe in form-focused approaches to grammar education, either from a cultural or an instrumental perspective (to improve language proficiency). But in fact, grammar education seems to serve neither of these perspectives well because rules of thumb take the place of more linguistically grounded concepts (Myhill, Jones, & Watson, 2013; Watson, 2015a).

Comparing the intended curriculum (focusing on a communicative perspective) and the implemented curriculum (based on teacher beliefs about the value of grammar exercises), we can conclude there is a mismatch between the two. We agree with Watson (2015a) that mismatches of this kind are a main factor contributing to the poor practice of L1 grammar teaching mentioned above.

Hypothetically, one solution to address the problem of ineffective grammar education would be to remove grammar teaching from the L1 curriculum altogether. This view has been around for a long time, but is not widely accepted. Another possible solution was illustrated by attempts aimed at *replacing* traditional grammar pedagogy with modern linguistics in the Netherlands (Hulshof, 1971; van Dort-Slijper, Klooster, & Luif, 1975), which had little success. A less radical possibility would be to *enrich* school grammar by basing it on (meta) concepts (e.g. *predication* or *complementation*) from modern linguistics. Hulshof (2013, p. 270) and Fontich and Camps (2014, p. 601) argue for more empirical research into this enrichment, by asking which linguistic concepts should be used within L1 grammar education. The present study aims to provide this empirical research.

It might be expected that linguistic theory provides valuable insights into this question, but although academic discussions about the foundations and principles of linguistic theory have been plentiful, the conceptual basis for linguistics education has never been discussed in detail, nor have linguists ever come to a general agreement on what would be the most important concepts (Van Rijt, 2015, p. 206). This is also recognised by Hudson and Walmsley (2005, p. 619), who claim that regarding the role of linguistics in curricula and syllabi, 'there is a far greater mismatch between what experts think and what is purveyed in schools' than there is in other school domains. For example, in history education (cf. Havekes, Coppen, Luttenberg, & Van Boxtel, 2012) as well as in the experimental sciences, no such mismatch exists (cf. van Breukelen, De Vries, & Schure, 2016).

The conceptual basis for grammar education

One of the problems in establishing a conceptual basis of grammar education is undoubtedly the multitude of different linguistic theories. Generative grammar alone (Chomsky, 1965, 1981, 1995) consists of a myriad of different theories, with the *Principles and Parameters* approach as the dominant one (Den Dikken, 2013, p. 6). Other linguistic approaches are also common, such as cognitive linguistics (cf. Garcia & Butler, 2006), which does not even present itself as a theory, but rather as 'a movement or an enterprise consisting of a multitude of overlapping and sometimes even conflicting theories and principles' (Evans & Green, 2006, p. 3). Since a lot of effort was put into defining the boundaries and similarities between approaches within and between theories, until now a conceptual common basis for education has been overlooked.

Hulshof (2002, p. 25) and Hudson and Walmsley (2005) assert that linguists themselves are partly to blame for this, since 'the overwhelming majority of linguists simply do not see any link between their research and school-level education' (Hudson and Walmsley, 2005,

p. 608). For example, influential linguists like Chomsky denied that linguistics should ever have educational relevance (Olson, Faigley, & Chomsky, 1991, p. 30). However, Steven Pinker, another influential linguist, takes a different position: 'Students should know the difference between grammatical categories, grammatical functions and semantic categories; they should know the major examples of each; and they should understand the hierarchical nature of phrase structure and the existence of long-distance dependencies' (S. Pinker, personal communication, 24 October 2015).

In the Netherlands, the only example of a linguistic journal article trying to put linguistic knowledge to use in the classroom is Janssen (2003). Although linguists indeed participated in government committees discussing the role of linguistics in L1 education (cf. Van der Aalsvoort, 2016), this involvement did not result in significant linguistic journal publications on the matter.

A closer analysis of the methods and content of grammar education in the Netherlands (Hulshof, 1985) has revealed that it goes back to a school grammar from the late nineteenth century (Den Hertog, 1892), and that since then little has changed (Van Rijt, 2015, p. 203). This static nature of grammar pedagogy does not only hold for the Dutch situation, but instead is more universal (Fontich & Camps, 2014, p. 609). The fact that traditional school grammar makes no use of recent insights from linguistic theory is surprising for two reasons: first, modern linguistics is built upon the concepts from traditional grammar (cf. Allan, 2007), so connections should be feasible; and second, because linguistics has yielded a wealth of knowledge about language that could be used to enrich traditional grammar education (cf. Denham & Lobeck, 2010; Van Rijt, 2015; Zwart, 2010).

As mentioned above, school methods trying to incorporate current linguistic theory have not been very successful in the Netherlands. In several countries, such as the UK and Australia, other, more contextualised approaches (e.g. Christie & Martin, 1997; Halliday, 1985; Wilkins, 1976) have tried to connect certain linguistic insights with school grammar. However, these approaches, much like traditional grammar, are not based on a linguistic consensus on central concepts.

Although the gap between academia and grammar education in the Netherlands has been discussed several times (cf. Hulshof et al., 2015, p. 290), the call to bridge the gap has largely been ignored (Hulshof, 2013, p. 270).

In the UK's National Curriculum, a limited list of linguistic terms and rules such as 'formation of past tense' and 'use of demonstrative pronouns' has been proposed[2] (Hudson & Walmsley, 2005, p. 614). Likewise, in the Dutch curriculum, a list of 'necessary concepts for language education' has been identified (Werkgroep Taal/Expertgroep Doorlopende Leerlijnen Taal en Rekenen, 2008). However, these lists seem to be strongly motivated by their relevance for language proficiency or grammatical correctness, rather than by linguistic concerns.

Research question

Taking up Hulshof's (2013) and Fontich and Camps' (2014) challenge, we investigated to what extent a consensus about the linguistic conceptual basis of language education can be reached. To this end, we have interviewed linguistic experts about their views on the concepts essential to linguistic theory, and their importance in education. We have restricted the study to concepts related to sentential syntax and semantics. This has been

done for two reasons: first, as argued above, it is likely that fundamental teacher beliefs on form-focused grammar education and the communicative paradigm (with its focus on meaning) can be brought together in this domain, and second, school grammar traditionally focuses on this level. Linguistic knowledge, of course, greatly exceeds the syntax–semantics interface; it also encompasses domains such as phonology, morphology, pragmatics, and psycholinguistics. Some of the concepts identified in this study also touch on other linguistic domains, such as morphology or discourse-related linguistics.

The main research question of the present study was: *which linguistic concepts from the syntax-semantics interface are considered most important by linguistic experts*? We have answered this question by tackling two sub-questions. First, we investigated which linguistic concepts from the syntax–semantics interface linguistic experts considered most important for the domain of theoretical linguistics (i.e. which concepts are considered corner stones of linguistic theory?). Second, we asked the experts which concepts they considered the most important for the domain of secondary education. We intentionally left the interpretation of 'importance' open to the experts. This matter will be addressed in the discussion paragraph.

Research design

We explored the research question in a Delphi study consisting of three rounds, aiming to reveal a consensus amongst linguistic experts on the relevant concepts for linguistic theory and linguistic education. The general outline is depicted in Figure 1. We followed a mixed-method design throughout, combining quantitative and qualitative analyses. Specific methodological issues will be discussed for each round.

First round: interviews

Selection of participants

In order to take inventory of the relevant concepts from modern linguistics, linguistic experts were interviewed in an exploratory study (n = 12). We defined linguistic experts in the following way: the participants were full professors of theoretical or Dutch linguistics, or could otherwise be considered experts based on important publications within the field. In total, 10 full professors (one emeritus), 1 assistant professor, and 1 other expert were interviewed. In the selection of experts, their linguistic background was taken into account in order to broadly cover linguistic theories and approaches.

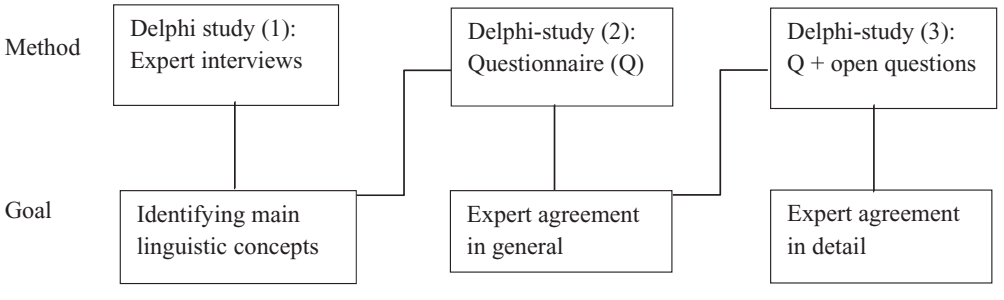

Figure 1. Main research design of the present study.

Method

A semi-structured interview was conducted with each of the experts about the concepts that they felt were most relevant in modern general linguistics. The interviews were fully transcribed and qualitatively analysed, using an open coding method in a grounded theory approach (cf. Cohen, Manion, & Morrison, 2011; Strauss & Corbin, 1990). The first author did most of the initial coding, and discussed a consensus coding with the second author and peers.

In order to ensure that the experts judged the relevance of concepts from their own linguistic perspective, they were not informed on the discussions about, or content of linguistic education in secondary schools, nor did they receive any documentation on the dominant paradigms in that field. Since the purpose of the interviews was to identify as many relevant linguistic concepts as possible and to reach an agreement between experts, we confronted them with (anonymous) statements from other experts who were interviewed earlier. Depending on their area of expertise, experts were asked to respond to different quotations from other experts. This way, we stimulated them to take a stand in a comparison of (meta) concepts, thus also enhancing the validity of the coding.

Results

All experts agreed that *form* and *meaning* were the two main meta concepts that apply to all formal linguistic concepts. As one of the experts stated: '[Thinking in terms of form and meaning] is so crucial. The entire phenomenon of language boils down to that, including their interrelation.' Because of this general agreement, we considered *form* and *meaning* to be two linguistic concepts *hors concours*.

In a qualitative analysis of the expert interviews, all possible concepts they mentioned were marked in the transcripts. Next, in a process of constant comparison, these concepts were reduced by sorting them into a total of 20 meta concepts. In alphabetical order, these were *agreement, animacy, aspect/aktionsart, case (marking), complementation/modification, compositionality, constituent structure, idiomatic connections, information structure, main syntactic categories (NP, VP, AP, PP), modality, predication, recursion, semantic roles, syntactic functions, tense, valency* (cf. Figure 3).

Coding the interviews was done as theory-neutral as possible. In many cases, multiple terms exist for a similar concept, because different linguistic theories prefer a distinct term to talk about the same phenomenon. In these cases, when possible, we chose to use coding terms that are not strongly associated with any particular linguistic theory. For example, the concept of *construction* was mentioned several times. Even though constructions 'have been the basis of major advances in the study of grammar since the days of the ancient stoics' (Goldberg, 2006, p. 3), they are also highly associated with a particular linguistic theory (construction grammar). Therefore, the more neutral term *idiomatic connection* was chosen, capturing *constructions* as well as and *collocations*, which was mentioned as well.

Another example concerns all sorts of anaphoric relations brought forward, including concepts like *long-distance dependencies,* or specific instantiations of this term, such as *Wh-movement*. These topics have received much attention within generative grammar (Den Dikken & Lahne, 2013, pp. 655–697), which tried to unify concepts of movement, displacement, and island phenomena ('binding and bounding,' cf. Chomsky, 1981). To capture all of these, the relatively theory-neutral term *locality* was chosen. Although this term

is somewhat associated with generative grammar, it does incorporate the relevant concepts, including (*successive-cyclical*) long-distance dependencies (Schippers, 2012). Likewise, the theory-neutral term *predication* was chosen to capture concepts like *small clause* (most commonly known from generativism), *subject predicate construction*, and *predicative relation*. In three cases, we grouped two concepts into one without using a single term. This was the case with *aspect* and *Aktionsart*, which are both concepts within temporal semantics. Experts consistently used the terms in combination, indicating that they consider it as one concept. Similarly, *complementation* and *modification* were grouped together, because both were identified as syntactic operations combining new elements with a verb. A similar argumentation was applied to *the syntactic categories NP*, *VP*, *AP*, *PP*, which were always mentioned in combination.

The concept of *case (marking)* was chosen as a neutral term. In linguistic research, the term *case* is commonly used for a morphological marking on words to indicate the grammatical function of a specific phrase (e.g. dative or accusative case). However, in generative grammar (Chomsky, 1981), it is often utilised in a more technical sense for an abstract feature of syntactic elements (sometimes indicated by morphological means). In the interviews, experts generally used the term in the neutral sense. We decided not to split them into two separate concepts.

There was some discussion about concepts we grouped as *valency*. According to some experts, *transitivity* was the relevant concept: 'Transitivity is a property of sentences, […] of the whole, and cannot be attributed to one aspect of a sentence, it is a compositional phenomenon. *Valency* however, is a property of the building bricks' (i.e. verbs). Other experts preferred *valency* over *transitivity*, judging the latter as an instantiation of the former. Still others preferred *subcategorisation*. And finally, some experts considered the specific relationship between the two terms irrelevant. We ultimately chose *valency* because it seems the most prevailing term (Perini, 2015), and also because it is an emerging concept in Dutch secondary school context (Van Rijt, 2013, 2016).

All concepts were either spontaneously mentioned or validated by all experts. For example, the concept of *animacy* was not mentioned by everyone, but when confronted with it, they all agreed on its importance, which is also confirmed in the linguistic literature, stating that animacy is a notion very likely to be expressed by functional categories (Muysken, 2008, p. 246). One of the experts commented: 'A lot of research is being conducted into [animacy], in that sense it is central in linguistic research.' Specifically, the relationship between animacy and grammatical form is central in current research (e.g. De Swart, 2014; Lamers & De Hoop, 2014).

Second round: questionnaire

Selection of participants

For the second study, 26 experts were invited, 23 of whom participated (11 of them also engaged in the first study). Attention was paid to the heterogeneity of participants, which is considered an important aspect of Delphi research (Linstone & Turoff, 2002, p. 4). Even more so than in the interviews, linguists with different areas of expertise were involved (covering phonology, morphology, syntax/semantics), as well as linguists with different linguistic signatures (e.g. generativism, cognitivism, construction grammar).[3] Every

university in the Netherlands with a Dutch or linguistics department was represented, as well as two Belgian and two German universities.

Method

In order to validate and sort the concepts identified in the first round, experts were asked to judge the relative importance of the twenty concepts for (1) linguistics in general, and (2) linguistic education, by rating them on a five-point Likert scale.

To indicate a concept's relative importance for linguistic theory, the following Likert scale was used:

Every linguistic expert should:

(1) Possess at least fragmentary knowledge of the concept
(2) Be able to create new examples of the concept
(3) Be able to explain the concept to others
(4) Be able to provide a valuable contribution to a discussion of the concept with other linguists[4]
(5) Be able to understand an international paper on the concept in general

Experts were told that two more levels on the high end of the scale were conceivable, namely

(6) Possess a general knowledge of the current linguistic literature on the concept
(7) Be able to personally contribute to the academic linguistic literature on the concept

These last two points were left out of the scale because it would be unrealistic to assume these can apply to *every* linguist. A group of experts (n = 6) gave extensive feedback on an earlier version of the scale.

To measure the experts' perceptions of the relative importance of a concept for secondary education, another scale was developed. This time, the scale had to reflect different levels of general knowledge rather than categories of *expert* knowledge. Therefore, we based the scale on Biggs & Collins' SOLO taxonomy (1982) as well as on the widely accepted cognitive taxonomy of Bloom (1956), later revised by Anderson and Krathwohl (2001) – see Figure 2. According to Moseley et al. (2005, p. 54), Bloom's taxonomy 'still acts as an important stimulus to thinking about curriculum design, teaching, learning, and assessment', and the SOLO taxonomy is 'particularly helpful when applied to challenging aspects of learning, such as the understanding of concepts and problem solving' (Collins & Romberg, 1991, as cited in Moseley et al., 2005, p. 88).

Two remarks have to be made concerning this scale. First, experts were given the ability to choose an option that is not linked to any of Bloom's knowledge levels, namely that 'the student requires no knowledge of this insight'. After all, it is not unthinkable that some concepts are deemed of little or no importance for students. This dimension is represented in the SOLO taxonomy by the term *prestructural*, which is generally described as a phase in which 'students are simply acquiring bits of unconnected information, which have no organisation and make no sense' (Moseley et al., 2005, p. 87).

The second remark concerns the fact that two of the scale points from Figure 2 (4 and 5) cover two levels in the Bloom (1956) and Anderson and Krathwohl (2001) taxonomy.

Knowledge level in Bloom (1956) and Anderson & Krathwohl (2001)	Likert scale point involved to measure student knowledge	Knowledge level in Biggs & Collins (1982)
	1. The student requires no knowledge of this insight	Prestructural
Remember	2. The student can reproduce knowledge of this insight	Unistructural
Understand	3. The student understands this insight	Multistructural
Apply	4. The student is able to apply this insight within the analysis of language phenomena	Relational
Analyse		
Evaluate	5. The student is able to integrate this insight with other language phenomena	Extended abstract
Create/synthesis		

Figure 2. A comparison between the scale points used on the one hand and the taxonomies of Anderson and Krathwohl (2001), Biggs and Collins (1982), and Bloom (1956) on the other.

Since some of the boundaries of this taxonomy are described as indistinct (Moseley et al., 2005, p. 52), we felt that in these cases, combining scale points and Bloom levels would make it easier for the experts to decide. Some researchers have for instance argued that the 'create/synthesis' level is not really more complex than 'evaluate' (Kreizer & Madaus, 1994, as cited in Moseley et al., 2005, p. 52). To facilitate the experts' interpretation of the scale points, illustrative descriptions were added (Appendix 1). Six experts provided feedback on this scale.

In order to make sure that experts' judgements were based on the same scale, *Z*-scores were calculated for the outcome, and classified in three sets of concepts: a set of six most important concepts, a set of six less important concepts, and a group of eight, the importance of which was less clear. Additionally, experts were asked whether concepts were lacking in the set. New concepts mentioned by at least three experts were included in the third round (*definiteness*, *negation*, *sentence types*, and *grammaticalisation*).

Results

Cronbach's α showed high internal consistency for both scales (linguistic theory-scale: α = .96; grammar education-scale, α = .85). Additionally, the conceptual rankings for the domain of linguistic theory and grammar education correlated positively and strongly (Pearson's $r = 0.89$, $p < 0.001$, two-tailed).

Based on the mean of the *Z*-scores per domain, we determined a combined ranking of concepts (cf. Figure 3).[5] In this ranking, we identified a group of seven concepts with a predominantly positive *Z*-score (>0) for both domains (*word order*, *syntactic functions*, *constituent structure*, *main syntactic categories*, *complementation/modification*, *negation* and *recursion*).[6] The concept ranked 8th (*word structure*) was the first one with a non-positive *Z*-score for the importance in a linguistic domain.

Next, a second group of relatively low scoring concepts was determined. Six concepts had a non-positive Z-score (<0) on both domains, or a mean *Z*-score below zero (*aspect/Aktionsart*, *compositionality*, *grammaticalisation*, *tense*, *animacy*, and *valency*). The concept of *Information structure* was the last with a positive *Z*-score (educational domain). *Compositionality* was also slightly positive in the educational domain, but was ranked much lower

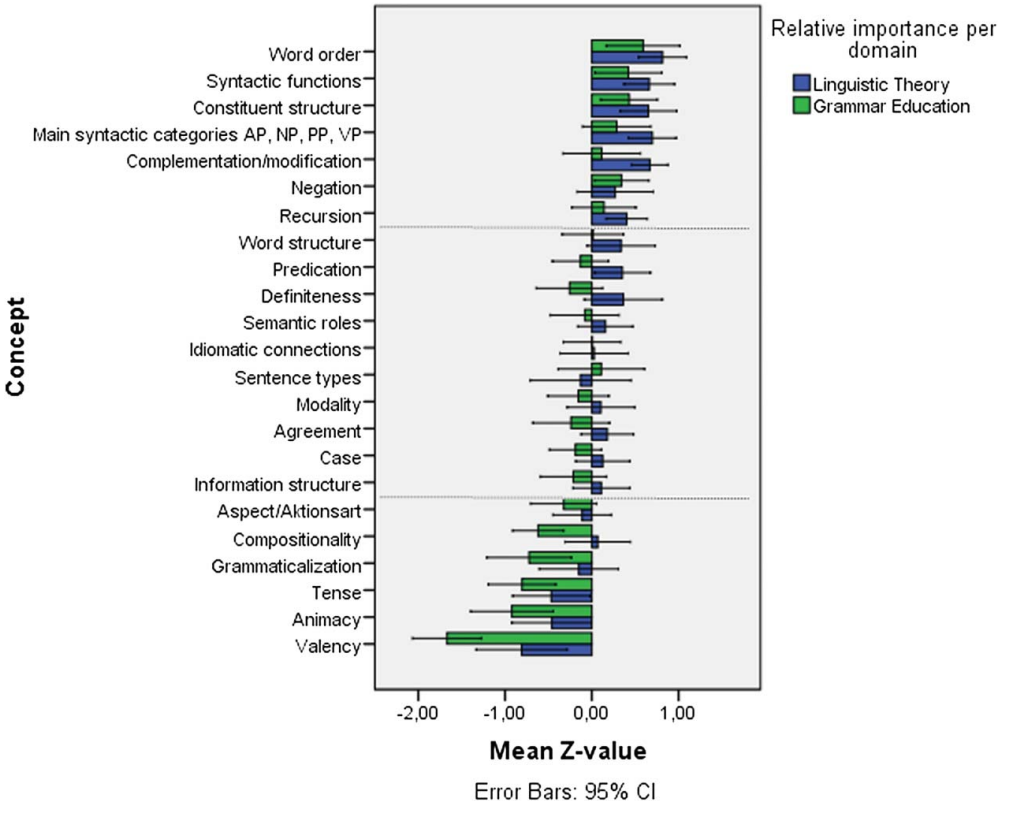

Figure 3. The mean *Z*-scores per concept for linguistic theory and for grammar education.

because of a considerably lower score on linguistic domain. Not included in Figure 3 is the concept of *locality,* which scored in the lower group, but was later removed for reasons explained below. This left a middle group of eight concepts with mainly mixed results on both domains, or a mean Z-score of approximately zero (*word structure*, *predication*, *definiteness*, *semantic roles*, *idiomatic connections*, *sentence types*, *modality*, *agreement*, *case*, and *information structure*). This group was further investigated in round 3.

In Figure 3, three main groups can be distinguished. The figure shows the *Z*-scores for the concepts from round 2 and 3. A positive value indicates a higher level of importance, according to the experts. Error bars indicate standard deviations, blue bars indicate importance for linguistic theory and green bars indicate importance for grammar education.

Third round: mixed and open questions

Selection of participants

The same 23 participants from the second round participated in the third round.

Method

The first two rounds identified a distinct group of important concepts and a clear group of less important concepts. The middle group was less evident. We investigated whether the middle position was a result of mixed opinions about the concept's importance, or if it

was the result of different interpretations of the concepts by the experts. In order to do so, we asked the linguists to pick the concepts from the middle group which they considered more important than the others, again for both domains. Moreover, they were asked to judge the new concepts generated in the second round with the Likert scale questions previously used. Finally, in an open question, experts were asked to clarify their judgement on some concepts that seemed important in the first round, but scored low in the second. This applied to *locality* and *valency*.

Results

From the middle group of concepts (*word structure, predication, semantic roles, idiomatic connections, modality, agreement, case, information structure*) experts were to pick four concepts they considered more important than the other four, both in a linguistic and educational context. In Table 1 an overview is given of the number of times concepts were chosen for both contexts. From these, *semantic roles* emerged as the most important concept (mentioned 18 times for the linguistic theory domain and 10 times for the grammar education domain).

Rankings were comparable for linguistic and educational domains (difference < 4), except for two cases: *semantic roles* was chosen eighteen times as a concept important for linguistic experts, but only ten times as important for students. For *predication,* almost the opposite was the case: it was considered important for students twelve times, but only eight times for linguistic experts. Interestingly, in the second round the mean *Z*-score for *predication* was much higher in the linguistic context than in the educational context.

Rankings also compared to the original rankings from the second round (difference <3 places), with the exception of *information structure*, which was ranked second place in this round, whereas it scored last of the middle group in round 2.

With respect to *locality,* experts noted in the open questions that instantiations of *locality* are often related to specific linguistic theories: 'There are certainly differences that are related to differences in theoretical orientation: long-distance dependencies and all sorts of 'movement phenomena' pose an important research topic within formal, generative approaches – in other approaches, these enjoy relatively little attention.' They also argued that *locality* is a purely syntactic notion, only relating to *form* and not to *meaning*: 'Anaphoric relations (pronouns, but also discourse relations) are mainly interesting from a semantic or pragmatic point of view, but *locality* presupposes a purely syntactic view (less interesting)'. Finally, some experts remarked that many less common concepts that can be grouped under *locality* were already covered by one of the other concepts: 'Locality after all relates to all relations in language, and if these have already been attributed to

Table 1. Conceptual ranking of the middle group concepts for experts and students.

Concept	Linguistic domain	Educational domain	Ranking in third round	Ranking in second round
Semantic roles	18	10	1	3
Information structure	14	13	2	8
Agreement	13	14	3	6
Word structure	12	14	4	1
Predication	8	12	5	2
Modality	11	8	6	5
Idiomatic connections	7	9	7	4
Case	5	8	8	7

common denominators (such as *agreement*), locality may be dwarfed by other concepts.' Because of this, we removed it from Figure 3.

With respect to *valency,* many experts were surprised about the low ranking and could not explain it. Some remarked that the term has an old-fashioned flavour to it: 'Valency is an outdated metaphor from chemistry for how verbs select their arguments', and in hindsight preferred other terms like *argument structure*: '[…] 'argument structure' for instance, […] would seem a bit fancier and I could imagine scores would be higher [if that term had been used instead].' Some also noted that the concept was covered already by similar notions: 'Perhaps [the score is low] because it was already covered by *thematic* or *semantic roles*?'

Valency was not removed from Figure 3 because its importance is underlined in both linguistic and educational literature (Perini, 2015; Van Rijt, 2013, 2016). Not having a concept like valency in a figure of key concepts would, therefore, be somewhat strange. One of the experts remarked on the concept's importance in the interviews: 'It would be hard to talk about any language without using *valency*. Impossible, actually.'

Finally, experts were asked to evaluate the importance of the new concepts the second round had generated (*definiteness*, *negation*, *sentence types*, and *grammaticalisation*), using the same Likert scales as before. These concepts were added to the ranking from round 2 (cf. Figure 3). Of these, *negation* scored in the highest group and *grammaticalisation* in the lowest.

Discussion

In this study, we investigated which linguistic concepts experts consider most important, both in a theoretical linguistic domain and in an educational domain. We deliberately left the interpretation of 'important' open to these experts. In our view, the present study revealed that they related 'importance' to concepts needed to effectuate or increase language insight and awareness, consistent with the goals of descriptive linguistics.

Looking at the twenty-four concepts (Figure 3) from a linguistic perspective, we see that five concepts concern more structural properties of language, four concepts involve aspects that relate to meaning and fifteen are more relational in that they refer to relations between linguistic elements. Hence, we divided them into three linguistic groups:

(1) *Structural concepts*: This group consists of the concepts *syntactic functions, constituent structure, main syntactic categories (NP*, *VP*, *AP*, *PP), word structure, recursion*. These concepts all relate to word or sentence structure.
(2) *Semantic concepts*: the concepts *tense, aspect/Aktionsart, modality*, and *negation* clearly have to do with the semantics of sentences. In linguistic literature, they are often grouped together 'by virtue of their semantic cohesion' (Zagona, 2013, p. 746).
(3) *Relational concepts*: this leaves us with a remaining category, including *case (marking), agreement, predication, valency, complementation/modification, semantic roles, locality*; *compositionality, idiomatic connections, word order, animacy, information structure, grammaticalisation, sentence types, definiteness*. If we look at these from a linguistic viewpoint, we observe that they are all about *relating* linguistic elements. *Valency, predication, complementation/modification* and *semantic roles* are about linguistic heads assigning certain form and meaning properties to other elements (cf. Den Dikken, 2013); *compositionality, idiomatic connections, word order, information*

structure, agreement and *sentence types* denote structural properties relating to a special overall meaning. Finally, *animacy, case (marking), grammaticalisation* and *definiteness* are concepts that relate grammatical forms to meaning. Finally, *locality* is a concept restricting (long distance) relations between linguistic elements (Den Dikken & Lahne, 2013, pp. 655–697).

In Figure 4, the relation between concept ranking and concept type is depicted. The most striking result is that the structural concepts dominate the top group of the ranking (five of the seven from the top group are structural). Semantic concepts tend to be ranked lower, but this effect is less strong. It seems that linguists accredit more importance to structural concepts than to other concepts, both for linguistic theory and for grammar education. This may be due to the fact that in the syntax-semantics interface, structural concepts are a prerequisite for the other two types. In order to appreciate or understand relational or semantic concepts, a basic notion of structure must be present.

Another somewhat surprising result is the strong correlation between the relative importance of concepts in the linguistic domain and in the educational domain, even though the scales were different, and some concepts were only introduced in the third round. Although the order within the middle group is less clear, all concepts in the top and low group from the linguistic domain also occur in the same group category as in the educational domain. A possible explanation for this is that experts take the

Concept ranking	Structural	Relational	Semantic
Word order		■	
Syntactic functions	■		
Constituent structure	■		
Main syntactic categories (NP/VP/AP/PP)	■		
Complementation/modification		■	
Negation			■
Recursion	■		
Word structure	■		
Predication		■	
Definiteness		■	
Semantic roles		■	
Idiomatic connections		■	
Sentence types		■	
Modality			■
Agreement		■	
Case		■	
Information structure		■	
Aspect/Aktionsart			■
Compositionality		■	
Grammaticalization		■	
Tense			■
Animacy		■	
Valency		■	

Figure 4. The relation between concept ranking and concept type.

perspective of *tradition* or *transmission* (cf. Van der Aalsvoort & Kroon, 2015, p. 10), such that they perceive students as experts-to-be, so eventually, the same concepts should be important for students and for experts. Another explanation may be that the experts do not have a clear picture of secondary school education (recall that they were not informed on this matter), since their expertise is limited to higher education. In this case their judgements are likely to be related to the concepts they would like their first year students to know. Both explanations give rise to the conclusion that in order to take the *cooperation* perspective (Van der Aalsvoort & Kroon, 2015), linguistic experts need to enter into discussions on linguistic education with secondary school teachers. Educational linguists could play an important role in that regard (cf. Denham & Lobeck, 2010).

Generally, experts judged most concepts more important for linguistic experts than for students. There were two exceptions: *negation* and *sentence types* were ranked higher in the educational context than in the linguistic context. The former scored only slightly higher, but the difference for *sentence types* was bigger. This can be explained by the fact that traditional school grammar always focused on sentences and sentence types (main clauses versus subordinate clauses, for example), whereas modern linguistics deals more with constituent structure.

In the third round, concepts were sorted again. Rankings confirmed the ranking from the second round and correlated strongly for both the linguistic and educational domain, with two exceptions: the concept *semantic roles* scored considerably lower in the educational domain, and *predication* scored lower in the linguistic domain. The former may be due to the problematic interpretation of *valency*: some experts may have judged *semantic roles* (e.g. *agent, patient, recipient*) and *valency (the verb's syntactic requirements for the realisation of arguments)* as instances of the same concept, especially because arguments carry semantic roles. Another possibility is that in the third round, *semantic roles* was interpreted more as a semantic concept than as a relational concept. This fits into the picture that all semantic concepts, with the exception of *negation,* show a negative score in the educational domain (cf. Figure 3).

The low score for *predication* in the third round is also surprising. Whereas in general, *predication* scored at the top of the middle group in round 2, in the third round, the score in the linguistic domain is lower than expected. It may be that *predication* is viewed by the experts as a basic concept (that everyone should know about), but compared to other concepts, it is linguistically simpler and therefore less interesting.

Conclusions

The sub-questions, *Which linguistic concepts from the syntax-semantics interface are considered most important for theoretical linguistics/for secondary education by linguistic experts?* can be largely answered with the list of concepts from Figure 3. Experts only differ slightly in their views about the importance of concepts for both domains. They accredit relatively more importance to syntactic structural concepts, and tend to consider the purely semantic concepts of relatively less importance.

The most significant result of this study might be the fact that the inventory of candidate concepts only yielded 24 results, apart from *form* and *meaning*. This suggests that the number of concepts for secondary education necessary to largely cover linguistic

theory on the syntax-semantics interface is rather limited, especially in light of the entire pre-university track of six years. This makes it feasible to construct a continuous and differentiated linguistic curriculum for secondary education in which linguistic concepts can enrich school grammar, targeting only 26 concepts at different levels.

In future research, we will explore the role these concepts can play in enriching traditional L1 grammar education in secondary school classrooms and the effect they convey, by conducting Design Based Research cycles. These studies will be aimed at identifying design principles to foster linguistic insight and concept use. The current study has yielded a list of concepts that, at least from a linguistic perspective, can be used to bridge the gap between linguistic theory and L1 grammar education.

Notes

1. Rules of thumb may have some pedagogical merit, such as making learners feel more secure. However, they tend to support 'grammar myths' and, more importantly, they confuse the learner into thinking that grammar is only about these simple rules (Berry, 2015, pp. 28–29).
2. Although, recently, a more comprehensible list which is part of the primary school curriculum became available (see https://www.gov.uk/government/publications/national-curriculum-in-england-english-programmes-of-studyand). The list is still aimed at promoting correctness.
3. We invited professors of linguistics because the research was aimed at crossing the conceptual gap between theoretical linguistics and L1 grammar education. In a later stage, teacher educators, teachers and educational linguists should also be involved for pedagogical and curricular implementation. In our view, one should first arrive at a conceptual consensus from a linguistic standpoint before actively involving educational experts.
4. Which is not to be confused with writing an international paper, which would be beyond 5.
5. Note that Figure 3 also contains four concepts that were added in a subsequent round: *negation, sentence types, grammaticalisation, definiteness.* Moreover, the concept of *locality* was removed from the ranking, because closer investigation in the third round revealed that the concept was interpreted in different ways by most experts.
6. Note that in Figure 3, the concept of *Negation* was added in the third round.
7. As was pointed out by one of the experts, *grammaticalisation* was not optimally defined in this overview. A better definition would be: content words can develop into function words over time, losing their original meaning.

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Appendix 1. Linguistic concepts and their appurtenant descriptions in alphabetical order. The last four concepts were brought forward by experts in the second round of the Delphi study.

Concept	Description
Agreement	Elements in a language can be similar in certain aspects (person and number)
Animacy	Parts of speech that label animate entities behave differently from parts of speech that label non-animate entities
Aspect	Some formal elements are connected to the transition from one state into another
Case	Words can be case marked
Complementation/modification	Some parts of speech are more closely connected to the verb than others
Compositionality	The meaning of the whole can often be deduced from the meaning of the composing parts
Constituent structure	In language, words are organised into groups
Idiomatic connections	The meaning of the whole can't always be deduced from the meaning of the composing parts
Information structure	The order of elements is related to information value
Locality	Parts of speech exclusively maintain local dependencies
Main syntactic categories (NP, VP, AP, PP)	The most important parts of speech are adjectives, nouns, prepositions and verbs
Modality	Some elements are connected to an assessed reality or probability
Predication	Elements can be linked to a *to do* or *to be* meaning
Recursion	Structures can be imbedded into other structures
Semantic roles	

(*continued*)

Concept	Description
	Verbs and prepositions serve out meaning roles (agent, patient, recipient, experiencer, etc.)
Syntactic functions	Parts of speech have a certain grammatical function (subject, object, etc.)
Tense	Some formal elements are connected to the expressed time
Valency	The verb chooses a number of arguments
Word order	The order of words is limited or has consequences for meaning
Word structure	Words can be comprised of smaller units
Definiteness	Languages contain formal elements that shed light on the status of the concepts in the domain of discussion
Grammaticalisation	Constructions can become idiomatic in time and develop into more solid units or words[7]
Negation	Languages contain elements with which sentences or parts of sentences can be negated
Sentence types / combinations	Sentences can take different shapes and be connected to one another in different ways