LINGUISTICS / KALBOTYRA

Modal polyfunctionality and German modals revisited

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Modalinis daugiafunkciškumas ir vokiečių kalbos modaliniai žodžiai

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Abstract

This paper points out that there is presently no consistent definition of German modals, nor is there any agreement as to which verbs should be categorized as modals. The paper suggests that modals should be defined based on modal polyfunctionality, i.e. the ability to express both root and epistemic readings. Applying this definition, the paper states that besides canonical *dürfen* 'be allowed to', *können* 'can', *mögen* 'may', *müssen* 'must', *sollen* 'should', *wollen* 'want', verbs *werden* 'will' and *brauchen* 'need' are to be considered modals as well, since they semantically behave as standard modals. More specifically, they are both capable of expressing both root and epistemic modalities. Furthermore, the paper proposes that the absence of agreement in 1st and 3rd person singular in modals such as in *ich/er mussØ* 'I/ he must' cannot be solely attributed to their preterite-present origin of modals, but is related to the synchronic definition of modals, i.e. their polyfunctionality as a result of paradigmatic coherence. In addition to exploring the central modals, the paper investigates the paradigms of *brauchen* 'need', as well as *werden* 'will', suggesting that they might be aligning with the central modals in terms of their agreement morphology as well. Since being theoretical, the paper's arguments are supported by the examples from the texts referenced in literature or produced by native speakers of German.

KEYWORDS: polyfunctionality, modal, grammaticalization, German, definition of modality.

Introduction[1]

For conducting successful scientific research in any field, it is vital that the researchers' community clearly delimits and defines the concepts of the field in question. Therefore, it is disappointing that the key term 'modal'[2] in German linguistic research does not seem to be

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[1] This study elaborates on and further develops the ideas presented in my dissertation (Machová, 2015: 128–149).

[2] By 'modal' I mean what is generally referred to as 'a modal verb' in German linguistics. For the purpose of this paper 'a modal' and 'a modal verb' may be regarded as synonyms. The reason I am not comfortable using the term 'a modal verb' is the fact that in my previous work (Machová, 2015, pp. 30–46) I stressed that modals do not necessarily have to be verbs but can belong to other categories as well. I do not detail this complex theoretical issue in this study, since there is extensive work on the categorial status of modals in other languages as well as in German; see for example see for Diewald (1999), Reis (2001) or Machová (2015).

enjoying such a privilege[3]. Despite the fact that the question of defining the category of German modals has been addressed many times in literature, there does not seem to be general agreement as to what 'a modal' is. If we go over general grammar manuals, linguistic lexicons, as well as more specialized volumes on modality, we will not find a solid and self-contained definition of what a 'modal' is. To illustrate this problem, I list some examples below. A comprehensive grammar manual *Duden* (2009, pp. 415–459) does not provide any definition of modals, besides vaguely stating that they are used for modal characterization of the content (*Duden,* 2009, p. 426). In *Deutsche Grammatik*, Engel (1996, p. 391) fails to clearly delimit the category as well, admitting that the elements to be included are up for discussion. The grammar manual for foreign learners by Helbig and Buscha (2001, p. 114) merely states that modals constitute a semantically and a syntactically closed group, without defining it any further. In her lexicon entry, Hentschel (2010, p. 184) defines modals as verbs that carry the meaning of possibility or obligation expressed by another verb. All the above-mentioned definitions are problematic, since they are too vague. If we define the group 'modal' merely based on semantics (i.e., based on the possibility – ability – permission meanings), we end up having a long list of words with modal meanings that are not modals, such as *vielleicht* 'perhaps' or *wahrscheinlich* 'probably'.

On the other hand, if we base our definition on morphosyntactic grounds (category status, presence or absence of *zu* 'to'), as some authors do, we do not end up with a well-defined group either. To give an example, some authors stress that German modals combine with a bare infinitive. That, however, is not exclusively restricted to modals, as there are other German verbs with such valency, for example *helfen* 'to help' or *lernen* 'to learn', and we definitely do not want to identify *helfen* 'to help' as a modal, since it has no modal meaning at all. As a result, it seems that neither vague semantic nor formal definitions are satisfactory enough for delimiting the members we (intuitively?) think should be regarded as modals. Fritz (1997, p. 14) even blatantly admits that modal verbs do not constitute a well-defined category, explaining that there are no criteria that would apply to all members that are normally regarded as members.

Such a nihilistic approach is unnecessary and actually undesirable. If we are to regard linguistics as science, we must provide solid definitions for key terms, and at the same time, we must abandon the idea that linguistic categories are fuzzy. The lack of precise delimitations and definitions results in only an intuitive or customary listing of what 'a modal' is, as shown below in Table 1.

Table 1 List of modals in various grammar manuals

	Duden (2009, p. 426)	Engel (1996, p. 406)	Hentschel (2010, p. 184)	Helbig and Buscha (2001, p. 114)	Reis (2001, p. 287)	Weinrich (2005, p. 290)
dürfen 'be allowed to'	x	x	x	x	x	x
können 'can'	x	x	x	x	x	x
mögen 'may'	x	x	x	x	x	x
müssen 'must'	x	x	x	x	x	x
sollen 'should'	x	x	x	x	x	x
wollen 'want'	x	x	x	x	x	x

[3] The absence of a solid definition of what a modal is holds also for studies dealing with English modals. As shown in Machová (2015, p. 80), there is no consistent definition of what a 'modal' is, nor is there any agreement on which morphemes belong to this group.

	Duden (2009, p. 426)	Engel (1996, p. 406)	Hentschel (2010, p. 184)	Helbig and Buscha (2001, p. 114)	Reis (2001, p. 287)	Weinrich (2005, p. 290)
werden 'will'		x			?[4]	
brauchen 'need'	?[5]	x			x	x
haben zu 'have to'	?					

As shown above, there seems to be an agreement to include *dürfen* 'be allowed to', *können* 'can', *mögen* 'may', *müssen* 'must', *sollen* 'should' and *wollen* 'want' (we can call them 'central modals'). However, then there are words that are regarded as modals by some but not all authors. These include *werden* 'will', *brauchen* 'need', and *haben zu* 'have to'. Sometimes, modals also tend to be grouped even with *wissen* 'to know', due to the fact that its agreement pattern is similar to that of modals.

This paper aims to rectify this situation. The original contribution of this paper is to provide a solid and consistent definition of the term modal, which is relevant not only for the German language but can be applied cross-linguistically. As a result, I will be able to provide a list of modals that comply with this definition. Furthermore, the paper will also deal with the issue of non-standard agreement of German modals, as for example in *er mussØ* 'he must'. Unlike other studies on German modals, it will demonstrate that the reason for this exceptional conjugation pattern cannot be attributed to the preterite-present origin of modals (as is repeated in sources on the subject), but it is related to the synchronic definition of modals as discussed below.

Theoretical Background and Literature Overview

Types of Modal Meanings

Modality is defined as "non-factuality", also known as "irrealis" (Narrog, 2012, p. 5). The propositions that contain a modal element do not necessarily need to be factual, or existent in the real world. To illustrate this, compare (**Ex 1a**) and (**Ex 1b**). Sentence (**Ex 1a**) expresses a statement without any modal component. In the mind of the speaker, the person is at home; the speaker regards it as factual, real. Sentence (**Ex 1b**) contains modal *sollen,* which expresses an order, or at least a strong recommendation. Using a modal in a sentence does not necessarily convey the factuality. Referring to example (1b), it is possible that he is not at home.

Ex 1

    a *Er   ist   zu Hause.*

       he   be-3SG-PRS   at home

       'He is at home.'

    b *Er   soll   zu Hause   sein.*

       he   should-3SG-PRS at home   be-INF

       'He should be at home.'

The modality meanings can be of two types, namely 'root' and 'epistemic'. Depraetere and Reed (2006, p. 273–275) explain that the root modality is related to the "actualization of situations", whereas epistemic meaning

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[4] In her list, Reis lists *werden* 'will' in brackets.

[5] *Duden* (2009, p. 426), however, adds that in terms of their semantic function, *brauchen* 'need' and *haben zu* 'have to' should be also added, and labels these as "half modals".

refs rather to the proposition itself and speaker's attitude to that – see Depraetere and Reed (2006, p. 274)[6]. The two types of modal meanings are related and based on two concepts of modal logic – namely 'necessity' and 'possibility'.

Root modality

Root modality expresses the necessity or possibility that is imposed by an authority, as illustrated in (**Ex 2a**) and (**Ex 2b**), respectively.

Ex 2　**a**　*Er soll*　　　　　　*zu Hause.*　　*sein.*
　　　　　he should-3SG-PRS　　at home　　　be-INF
　　　　　'He should be at home.'

　　　　b　*Darf*　　　*ich*　　*heute*　　*schwimmen*　*gehen?*
　　　　　may-1SG-PRS　I　　　today　　swim-INF　　go-INF
　　　　　'May I go swimming today?'

Sentence (**Ex 2a**) expresses a meaning of necessity, order, or a strong suggestion, whereas (**Ex 2b**) demonstrates possibility that is interpreted as a permission. These types of meanings (permission, order, suggestion, prohibition) are also referred to as deontic modality, which is a subtype of root modality. Besides these, root modality also encompasses meaning such as volition and ability[7]. As Depraetere and Reed (2006, p. 274) explain, ability can be paraphrased as "is it possible for X to do Y", as shown in (**Ex 3**).

Ex 3　　*Ich*　　*kann*　　　*Deutsch*　　*sprechen.*
　　　　　I　　　can-1SG-PRS　German　　speak-INF
　　　　　'I can speak German.'

Epistemic modality

Epistemic modality, on the other hand, is linked to a speaker's judgment or the attitude towards the proposition. Hence, it encompasses meanings such as epistemic necessity (**Ex 4a**) or epistemic possibility (**Ex 4b**).

Ex 4　**a**　*Er muss*　　　　*sicher*　　*zu Hause*　　*sein.*
　　　　　he must-3SG-PRS　surely　　at home　　be-INF
　　　　　'He must be at home.'

　　　　b　*Er kann*　　　　*vielleicht*　*zu Hause*　　*sein.*
　　　　　he can-3SG-PRS　maybe　　at home　　be-INF
　　　　　'He may be at home.'

Both examples (**Ex 4a**) and (**Ex 4b**) express the evaluation of the speaker, more precisely how likely the situation can be. Whereas in (**Ex 4a**), the speaker is nearly certain about the proposition (logical necessity), (**Ex 4b**) expresses only a probability.

[6] Narrog (2012, pp. 46–49) uses the volitive vs. non-volitive dichotomy. He claims that this dichotomy is based on "the element of will or a force".

[7] Narrog (2012, p. 47), he groups ability together with evidential and epistemic modality.

Epistemic modality also includes evidentiality, i.e. hearsay or reported statements; see (Ex 5).

Ex 5	*Er*	*soll*		*krank*	*sein.*
	he	should-3SG-PRS		ill	be-INF
	'He is allegedly ill.'				

Although many sources question the status of evidentiality within the modality framework, evidentials are modal expressions. First, evidentials express the attitude of the speaker towards the proposition; and at the same time, these propositions are non-factual. Referring to sentence (Ex 5), in the mind of the speaker the person may or may not be ill. The speaker reports someone else's utterance, but the situation does not have to be factual. For more arguments why evidentiality should be regarded as a type of a modal meaning, see Narrog (2015, 11).[8]

For more detailed classifications of modal meanings, see Coates (1983) or Palmer (2001, pp. 8–10). The reader may also refer to a detailed illustrative overview by Depraetere and Reed (2006, p. 280), or Nuyts (2016, pp. 33–40), which also contains numerous references to further works on modality types. For a recent detailed source about the meaning of German modals, refer to Baumann (2017).

Modal polyfunctionality

Introduction section showed that there is no satisfactory definition of modals. This paper suggests defining modals based on modal polyfunctionality. Modal polyfunctionality is a specific type of polysemy when the same modal can express two modal meanings – namely 'root' and 'epistemic', as discussed above. Modal expressions in many languages are notorious for being able to express both meanings by the same morpheme. If a modal can express both modalities, it can be labelled as polyfunctional; see (Ex 6).

Ex 6	*Er muss*		*zu Hause*	*sein.*
	he must-3SG-PRS		at home	be-INF
	'He must be at home.'			

Modal *müssen* is capable of expressing both root (specifically deontic) and epistemic modality. First, it can express deontic necessity – it is necessary for him to stay at home, since an authority (internal or external) forces him to do so. Second, the very same modal can be interpreted epistemically – it is logically necessary that he is at home.

Accessibility of modal meanings

As for polyfunctionality, both readings, i.e. root and epistemic, do not necessarily have to be accessible in the very same sentence. This is shown in (Ex 7) where the interpretation is likely to be epistemic. Still, we regard *müssen* 'must' as polyfunctional, because there is 'at least' one context where *müssen* 'must' can have a root/deontic interpretation – see (Ex 6).

Ex 7	*Er muss*	*krank*	*gewesen*	*sein.*
	he must-3SG-PRS	ill	be-PST-PTCP	be-INF
	'He must have been ill.'			

In fact, there are several factors that can impact the accessibility of the modal meanings. Heine (1995, pp. 20–36) outlines them, providing example sentences in German. There can be formal (i.e. grammatical) reasons that

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[8] For a more detailed discussion on evidentials, refer to Faller (2017, p. 57)

may favor one particular modal meaning. These can be for example negation or past tense; sentences containing these features are likely to be interpreted deontically. Example (Ex 7) will be interpreted only epistemically because of the combination with perfective infinitive. Besides formal reasons, there can also be extra-linguistic factors. These include knowledge of the world – I am using Heine's example in (Ex 8). This sentence will be interpreted epistemically; deontic reading is not available, since we cannot manipulate time in reality.[9]

Ex 8	*Er*	*muss*	*drei Uhr*	*sein.*
	It	must-3SG-PRS	three o'clock	be-INF

'It must be 3 o'clock.'

(Heine, 1995, p. 28)

Hence, even if the modal has only root or only epistemic reading in one sentence, it can still be regarded as polyfunctional, as long as there is at least one context, where the other interpretation is available.

Polyfunctionality as a defining property

The concept of modal polyfunctionality is not a novel one, and this is not the first study to mention this term in relation to the German modals either. In fact, it is widely acknowledged that German modals, as well as modals in many other languages (such as English, French, or Czech) demonstrate this specific type of polysemy – see among others Heine (1995, p. 20), Traugott and Dasher (2004), Diewald (1999, pp. 16–19), van der Auwera, Ammann and Kindt (2005) (see Auwera), or for an overview of the situation across the languages, I suggest van der Auwera and Ammann (2013) (see Auwera). However, fewer authors regard polyfunctionality as a property that would define the category itself. De Haan and Hansen (2009, p. 3) (see Haan), editors of a comprehensive crosslinguistic manual on modals in Europe, offer in the introduction a unifying definition of the term "modal", namely "we proposed to define modals as word-like elements which are polyfunctional [...]". Reis (2001, p. 288) also states that modal verbs are polyfunctional and thus differ from modal adjectives or adverbs, which are either root or epistemic. As can be seen, these are the few instances where this self-contained and solid definition can be found, but to my knowledge it is not wide-spread. Moreover, even if the authors define modals based on their polyfunctionality, they do not test the candidates against the definition they themselves propose. To give an example, Mortelmans, Boye and van den Auwera (2009) use polyfunctionality as a defining property of modals. And yet, they fail to label elements that they themselves recognize polyfunctional as modals in the very same chapter; compare Mortelmans, Boye, and van den Auwera (2009, pp. 29–31) with Mortelmans (2004, p. 6).

Therefore, in this paper, I plan to apply this definition to words that are usually referred to as modals/modal verbs in German to see which ones actually qualify. Hopefully this will also bring more light to what I showed in Table 1.

Polyfunctionality and Agreement

Besides identifying polyfunctionality as a defining property, I also aim to propose a link between polyfunctionality and the morphological properties of a modal in German. It is a well-known fact that modals in German have a specific agreement paradigm – more precisely, they have zero agreement inflection in 1st and 3rd person singular, as I illustrate in (Ex 9a) in the person-number paradigm of *müssen* 'must'*,* compared to the paradigm of *küssen* 'to kiss' in (Ex 9b).

Ex 9	a	1SG	*ich*	*mussØ*	1PL	*wir*	*müssen*
		2SG	*du*	*must*	2PL	*ihr*	*müsst*
		3SG	*er*	*mussØ*	2PL	*sie*	*müssen*

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[9] The sentence could, however, be interpreted deontically in some fantasy scenario.

Ex 9	**b**	1SG	*ich*	*küsse*	1PL	*wir*	*küssen*
		2SG	*du*	*küsst*	2PL	*ihr*	*küsst*
		3SG	*er*	*küsst*	2PL	*sie*	*küssen*

Whereas a regular verb *küssen* 'to kiss' demonstrates agreement in 1st and 3rd persons, *müssen* 'must' lacks these. In fact, the agreement is ungrammatical – **ich musse* 'I must', **er musst* 'he must'.

Theoretical basis of agreement paradigm

A similar phenomenon, namely the absence of agreement in the 3rd person can be observed with English modals as well, as is *he mustØ*. There is extensive (mainly formal) literature that discusses this phenomenon in English. The reasoning behind that is the position in the syntactic tree – more precisely present-day English modals merge high in the tree and are higher or complementary with the slot reserved for agreement or tense; see for example for Roberts and Rousssou (2003, pp. 35–48) or more recently Emonds (2022, pp. 17–21). For German modals, however, different principles must be at work. German modals do not lack agreement morphology completely, but only in some persons – see for *wir müsse-n* 'we must'. Furthermore, German modals still possess, unlike their English counterparts, many verb-like properties, and it is widely acknowledged in the literature that German modals enter the syntactic tree as verbs. The defective paradigm as illustrated in (**Ex 9**) cannot be, therefore, explained based on the syntactic position in the tree.

In studies on German modals, these gaps in paradigms are attributed to diachronic reasons – more specifically to the preterite-present origin of modals, see for example Reis (2001, p. 291). The history of preterite-present verbs dates back to the Proto-Germanic period. The non-agreeing past forms were to express present tense. In other words, the present tense agreement pattern of preterite-presents copies the paradigm of strong German verbs in past tense (Präteritum). This is illustrated by examples (**Ex 10a**) and (**Ex 10b**), comparing the present tense paradigm of present-day *müssen* 'must' (**Ex 10a**) with past tense (Präteritum) paradigm of present-day verb *laufen* 'run'.

Ex 10	**a**	1SG	*ich*	*mussØ*	1PL	*wir*	*müssen*
		2SG	*du*	*musst*	2PL	*ihr*	*müsst*
		3SG	*er*	*mussØ*	2PL	*sie*	*müssen*
	b	1SG	*ich*	*liefØ*	1PL	*wir*	*liefen*
		2SG	*du*	*liefst*	2PL	*ihr*	*lieft*
		3SG	*er*	*liefØ*	2PL	*sie*	*liefen*

Prima facie, this may look pleasing in a linguist's eyes. However, in this paper, I will show that this specific agreement paradigm cannot be attributed only to historical development as sketched above; explaining such a paradigm solely by diachronic reasons is unattainable. To give an example, the modal *wollen* 'want' is not of a preterite-present origin, as in Birkmann (1987, p. 374), and yet it demonstrates the paradigm identical to *müssen* 'must', as shown in (**Ex 11**).

Ex 11	1SG	*ich*	*willØ*	1PL	*wir*	*wollen*
	2SG	*du*	*willst*	2PL	*ihr*	*wollt*
	3SG	*er*	*willØ*	2PL	*sie*	*wollen*

Later, I will provide an example of *brauchen* 'need' or *werden* 'will' that are not preterite-presents either. Still, they demonstrate behavior similar to *wollen* 'want' and other modals.

In the opposite direction, there are verbs in present-day German that originated from preterite-presents but do not demonstrate the agreement pattern illustrated above. Specifically, they have standard agreement paradigm in present-day German, such as *genügen* 'be enough'. As a result, one-to-one correspondence between the preterite-present origin and modal agreement paradigm does not exist.[10] My suggestion is that the defective agreement is linked to the synchronic definition modals, namely to polyfunctionality.

To provide a theoretical framework for my claim, I subscribe to the proposals mentioned by Mortelmans, Boye and van den Auwera (2009, pp. 32–35), or detailed in Lehmann (2002), about 'paradigmatic coherence'. More specifically, Lehmann (2002, p. 121) states that "grammaticalized elements join preexistent paradigms and assimilate to their other members." I propose that exactly this happens with polyfunctional elements. At a certain point in the diachronic development, the link between polyfunctionality and the specific agreement paradigm was created. Specifically, preterite-presents were polyfunctional and kept their agreement paradigm. Preterite-presents that were not polyfunctional at that point converted to regular verbs, such as *genügen* 'be enough' or *taugen* 'be suitable'; as Birkmann (1987, p. 206) points out, *tugen* (present-day *taugen*) converted to regular verbs as early as in the 12th century. On the other hand, a newly polyfunctional modal could enter the group of modals, and then adjusted its agreement paradigm. I will show that this happened to *werden* 'will', *wollen* 'want' and, most recently, *brauchen* 'need'. Birkmann, as well as many diachronic linguistics, claims that it was only modals that retained the specific preterite-preterite conjugation up to present-day German. In line with this paper, I would refine his statement by saying that it is not modal elements that join this agreement-specific group, but rather polyfunctional elements.

Methods

The aim of the paper is to categorize modals based on their polyfunctionality. Hence, the subsequent Results section examines all candidates that are mentioned in **Table 1** for polyfunctionality. More specifically, I will analyze the types of meanings that particular modals can express. As noted previously, a modal is regarded as polyfunctional if it exhibits at least one context, where it has the root reading, and, at the same time, at least one context, where it has the epistemic reading, as discussed in the subsection on *Accessibility of modal meanings*. The paper is theoretical, and it primarily relies on judgement data. This means that to support its arguments, the paper uses the attested examples that are acceptable to native speakers of German; for more about the method, see Schütze and Sprouse (2013, p. 27). The paper, however, does not present new data. Instead, it relies on data from other studies, primarily those referenced in this paper. The reason for using examples provided by sources themselves is the fact that some authors disagree in some cases as to which meanings are available with a particular modal. In case of *werden* 'will', whose deontic meaning is overlooked, I will use an additional example from DWDS corpus.

Second, the paper investigates the relation between polyfunctionality and agreement paradigm. Therefore, I will analyze every modal in terms of its agreement paradigm. In order to do so, I will use the example sentences from references, reflecting the attested utterances acceptable to native speakers of German. With certain modals currently undergoing the changes in their paradigm, I will refer to examples and data provided in studies by other authors.

Results

Central Modals in German

There seems to be a general agreement that words such as *dürfen* 'be allowed to', *können* 'can', *mögen* 'may', *müssen* 'must', *sollen* 'should', *wollen* 'want' should be counted as modals in German – see **Table 1**. In this section I will test whether all above-mentioned words are polyfunctional, and thus comply with the definition proposed in the section on *Modal Polyfunctionality*.

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[10] For a detailed discussion, see also Maché (2019, pp. 11–12)

Dürfen

Starting with *dürfen* 'be allowed to' in (**Ex 12**), it is obvious that it is polyfunctional. Example (**Ex 12a**) expresses deontic modality, whereas (**Ex 12b**) is an example of an epistemic reading.

Ex 12	**a**	*Darf*	*ich*	*heute*	*schwimmen*	*gehen?*
		may-1SG-PRS	I	today	swim-INF	go-INF
		'May I go swimming today?'				

	b	*Sie*	*dürfte (*darf)*	*nicht mehr*	*ganz nüchtern*	*sein.*
		she	may-3SG-PST-SBJV	not anymore	completely sober	be-INF
		'She might not be completely sober.'				
		(Mortelmans et al., 2009, p. 33)				

Mortelmans et al. (2009, p. 33) point out that with *dürfen* 'be allowed to' epistemic reading is compatible only with a specific form – past subjunctive (Konjunktiv II); example (**Ex 12b**) is theirs. Still, this does not prevent us from calling *dürfen* 'be allowed to' a polyfunctional modal. In the subsection on *Accessibility of modal meanings*, I showed that grammatical structures can impact on the accessibility of modal meanings, and that some structures can be compatible with one reading only.

Können

Können 'can' also demonstrates the ability to express multiple modality meanings. More precisely, it can express ability (**Ex 13a**), permission (**Ex 13b**) – which are deontic – but also probability (**Ex 13c**) – i.e. epistemic reading.

Ex 13	**a**	*Ich*	*kann*	*gut*	*schwimmen.*
		I	can-1SG-PRS	well	swimm-INF
		'I can swim well.'			

	b	*Er*	*kann*	*kommen.*
		he	can-1SG-PRS	come-INF
		'He is allowed to come.'		

	c	*Er*	*kann*	*sie*	*kennen.*
		he	can-1SG-PRS	she-ACC	know-INF
		'He may know her.'			

Mögen

As *Duden* (2009, p. 560) points out, *mögen* 'may' primarily expresses volition, which is a subtype of root modality. For this meaning, a specific form, namely Konjunktiv II is used, see (**Ex 14a**). As for a clear deontic meaning, *Duden* (2009, p. 560) states that *mögen* 'may' is close to *sollen* 'should' or *dürfen* 'be allowed to'*,* as exemplified in (**Ex 14b**) taken from that source. Finally, epistemic use is widely used as well, as given in (**Ex 14c**).

Ex 14	**a**	*Sie*	*möchte*	*kommen.*
		she	want-3SG-PST-SBJV	come-INF
		'She wants to come.'		

Ex 14 **b** *Es*   *mag*   *kommen,*   *wer*   *kommen*

           it   may-3SG-PRS   come-INF   who   come-INF

           will.

           want-3SG-PRS

           'Whoever wants to come may come.'

           (*Duden*, 2009, p. 560)

         c *Das*   *mag*   *sein.*

           that   may-3SG-PRS   be-INF

           'It may be like that.'

Müssen

The next verb *müssen* 'must' is polyfunctional – it demonstrates clearly both deontic and epistemic modalities, as can be seen in (**Ex 15a**) and (**Ex 15b**), respectively.

Ex 15 **a** *Er*   *muss*   *viel*   *studiere.*

           he   must-3SG-PRS   much   study-INF

           'He must study a lot.'

         b *Sie*   *muss*   *das*   *wissen.*

           she   must-3SG-PRS   it-ACC   know-INF

           She surely knows that.'

Sollen

Similarly, *sollen* 'should' is a well-established polyfunctional modal, which, as Engel (1996, p. 467) states, has a variety of meanings, ranging from obligation and prohibition to recommendation, when it comes to deontic modality (**Ex 16a**). As for the epistemic reading, *sollen* 'should' is used for expressing evidential meaning; for reporting somebody else's statement, as exemplified in (**Ex 16b**).

Ex 16 **a** *Man*   *soll*   *den Platz*   *räumen.*

           one   should-3SG-PRS   the place-ACC   clean-INF

           'Somebody should clean this place.'

         b *Er*   *soll*   *krank*   *sein.*

           he   should-3SG-PRS   ill   be-INF

           'He is allegedly ill.'

In the subsection on *Epistemic modality*, I explained why the evidential meaning is a type of epistemic modality.

Finally, to conclude the group of six modals that are prototypically regarded as central modals, modal *wollen* 'want' demonstrates polyfunctionality as well. First, it expresses volition, i.e. root modality (**Ex 17a**). A clearly deontic meaning is expressed by *wollen* 'want' meaning a polite request (**Ex 17b**). Engel (1996, p. 473) exemplifies the epistemic use of *wollen* 'want', see (**Ex 17c**).

Ex 17   **a**   *Ich*   *will*   *einen Ausflug*   *machen.*

I   want-1SG-PRS   a trip-ACC   make-INF

'I want to go for a trip.'

     b   *Wollen*   *Sie sich*   *bitte*   *hinsetzen.*

could-3PL-PRS   you REFL   please   sit down-INF

'Could you please sit down?'

     c   *Er*   *will*   *nichts*   *darüber*   *wissen.*

he   will-3SG-PRS   nothing   about it   know-INF

'He won't (surely) know anything about that.'

(Engel, 1996, p. 473)

I have illustrated above that *dürfen* 'be allowed to'*, können* 'can'*, mögen* 'may'*, müssen* 'must'*, sollen* 'should' and *wollen* 'want' can express simultaneously both modalities, and are therefore polyfunctional, and thus comply with the definition laid out at the beginning of this paper.

Agreement paradigm

As stated previously, I plan to deal with the agreement paradigm of these verbs. Therefore, I will now present the paradigms of the verbs in question, showing that all of these lack agreement in 1st and 3rd person singular, see (**Ex 18**).

Ex 18   1SG   *ich*   *darfØ*   *kannØ*   *magØ*   *mussØ*   *sollØ*   *willØ*

        2SG   *du*   *darfst*   *kannst*   *magst*   *musst*   *sollst*   *willst*

        3SG   *du*   *darfØ*   *kannØ*   *magØ,*   *mussØ*   *sollØ*   *willØ*

The six elements are both polyfunctional and defective in terms of their agreement paradigms. The first five members *dürfen* 'be allowed to'*, können* 'can'*, mögen* 'may'*, müssen* 'must' and *sollen* 'should' are of a preterite present origin. Therefore, originally, their agreement paradigm had already been nonstandard. The last modal *wollen* 'want' is not of a preterite-present origin. Its present paradigm originated from optative mood, and its paradigm was already non-agreeing in the 3rd person singular in Old High German – *wili* (see Birkmann [1987, p. 157]). Fritz (1997, p. 11) acknowledges that *wollen* 'want' had both deontic/root meanings, as well as epistemic ones in Old or Middle High German. It was then easy to join the other polyfunctional preterite-presents, since *wollen* 'want' was also polyfunctional, and demonstrated similar gaps in paradigm.

Other Candidates for 'The Modal Group'

The following sections will examine other possible candidates for the modal group – namely *werden* 'will'*, brauchen* 'need'*, wissen* 'know'*, lassen* 'let' and the construction *haben + zu* 'have to'. More precisely, it will test whether they are polyfunctional, and outline their paradigms.

Polyfunctional werden

In linguistic literature, *werden* 'will' is not prototypically listed as a modal. Referring back to **Table 1**, only Engel (1996) acknowledges it as a modal. Reis (2001) hesitates to list it as a modal, putting in within brackets. Mortelmans et al. (2009, p. 31) argue that *werden* 'will' has the properties of modals, but in fact do not mention it two

pages earlier, when they list German modals. Other sources I studied do not count *werden* 'will' as modal. Word *werden* 'will' tends to be primarily labelled as an auxiliary verb, since it expresses (neutral) future in German, as illustrated in (**Ex 19**).

Ex 19	*Wann*	*wird*	*er*	*abreisen?*
	when	will-3SG-PRS	he	leave-INF

'When will he be leaving?'

German *werden* 'will' also gained an epistemic meaning overt time, which is frequent nowadays; see for (**Ex 20**).[11]

Ex 20	*Er*	*wird*	*jetzt*	*zu Hause*	*sein.*
	he	will-3SG-PRS	now	at home	be-INF

'He will probably be at home now.'

As for the deontic one, Reis (2001, p. 312) claims that *werden* 'will' lacks any deontic interpretations. However, Engel (1996, p. 472 and p. 469) provides examples of both epistemic and deontic meaning (**Ex 21a**) and (**Ex 21b**), respectively.[12]

Ex 21	**a**	*Sie*	*wird*	*das*	*nich so gemeint*	*haben.*
		she	will-3SG-PRS	it-ACC	not so mean-PST-PRT	have-INF

'She probably didn't mean it in that way.'

	b	*Du*	*wirst*	*nicht*	*zuhause*	*bleiben.*
		you	will-2SG-PRS	not	at home	stay

'You won't stay at home.'
(Engel, 1996, p. 469)

Example (**Ex 21b**) can be understood as an order. Despite the fact that literature on German modals either does not mention the existence of deontic *werden,* or even rejects it, the examples with this interpretation can be found – (**Ex 22**) is taken from the DWDS corpus.

Ex 22	*Du*	***wirst***	*jetzt*	*sechshundert*	*Gewehre*	*zusammenbringen*
	you	will-2SG-PRS	now	six hundred	guns	bring together-INF
	und	*hier*	*vor*	*mir*	*niederlegen.*	
	and	here	in front	me-DAT	put down-INF	

'You will now gather six hundred rifles and put them down here in front of me.'
[DWDS corpus: Die Vierzig Tage des Musa Dagh I]

In (**Ex 22**), *werden* 'will' clearly expresses deontic order. Surely, its deontic use is probably less frequent than its epistemic use, however the frequency does not play any role here. The fact that it has got the ability to express both epistemic and deontic (root) meanings at least in one context makes *werden* polyfunctional. In this respect, *werden* 'will' differs from monofunctional *haben zu* 'have to', which cannot express the two meanings

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[11] For more information about the diachronic development of epistemic meaning, refer to Fritz (1997, pp. 135–138).

[12] Interestingly, Mortelmans (2004, p. 6) in her earlier work acknowledges *werden* 'will' to be polyfunctional, but later in Mortelmans et al. (2009) hesitates to list it as a modal, despite the fact that polyfunctionality is the defining term of the volume she contributes in.

in any context.   Therefore, it complies with the definition of being a modal, and thus should be regarded as a standard modal alongside *dürfen* 'be allowed to', *können* 'can', *mögen* 'may', *müssen* 'must', *sollen* ' should', and *wollen* 'will'.

As for the agreement pattern, *werden* 'will' did not originate from preterite-presents, so historically it did not have the paradigm that is typical of other preterite-presents. Still, its paradigm shows certain gaps. I compare the singular present paradigm of *werden* 'will' with *werten* 'rate' in (**Ex 23**), since they contain a similar consonant cluster.

Ex 23	1SG	*ich werde*	1SG	*ich werte*
	2SG	*du wirst*	2SG	*du wertest*
	3SG	*er wirdØ*[13]	3SG	*er wertet*

Based on this paradigm, I claim that *werden* 'will' lacks the agreement in 3SG, similarly to *er mussØ* 'he must', or *er sollØ* 'he should'. It may be argued that the verbal paradigm of *werden* 'will' copies the paradigm of other strong verbs, such as *gelten* 'to be valid', or *halten* 'to hold' – see for (**Ex 24**).

Ex 24	1SG	*ich gelte*	1SG	*ich halte*
	2SG	*du giltst*	2SG	*du hältst*
	3SG	*er gilt/*giltet*	3SG	*er hält/*hältet*

Comparing the paradigms, one can argue that *er wird* 'he will' is similar to *er gilt* 'he is considered' and *er hält* 'he holds', which both seem to merge the stem consonant with the agreement inflection into a single consonant *-t*. And in fact, the pronunciation of er *wird* 'he will' is [viɐt]. The final [*-t*] is, however, a result of devoicing at the end of syllable. A similar phenomenon can be found for example in the adjective *rund* 'round', whose pronunciation is [rʊnt]. In this way, it would be incorrect to simply state that *er wird* is the 3SG morpheme *-t*; there is no *er wirt. I therefore argue that *-d* in *er wird* is indeed a stem consonant and not the agreement morpheme.

To conclude, *werden* 'will' is a polyfunctional verb, and as a result, it is a standard modal. Moreover, it seems to be adjusted to a modal group in terms of the agreement paradigm as well.

Polyfunctional brauchen

Verb *brauchen* 'need' can have a full-verb meaning of 'to need' with a full-verb valency (just as its English counterpart *need*). Besides that, *brauchen* 'need' can be used as a deontic modal, and as Engel points out (1996, p. 467). In combination with the negation, it is a competing structure of *nicht m*üssen 'need not', see (**Ex 25**).

Ex 25	*Du*	*brauchst*	*nicht*	*hier*	*zubleiben.*
	you	need-2SG-PRS	not	here	to-PRT-stay-INF
	'You don't need to stay here.'				

Weinrich (2005, p. 301), however, shows that the negation is not necessary for the deontic reading, but rather that any negative polarity element, such as *nur* 'only' suffices, see (**Ex 26**).

Ex 26	*Sie*	*brauchen*	*nur*	*auf den Knopf*	*zu*	*drücken.*
	you	need-3PL-PRS	only	on the button-ACC	to-PRT	press-INF
	'You only need to press the button.'					
	(Weinrich, 2005, p. 301)					

[13] In Middle High German, the form for 3SG was *wirdet*, as discussed in Hermann (2013, p. 110).

The epistemic meaning of *brauchen* 'need' is still disputed. Öhlschläger (1989, p. 8) claims that *brauchen* 'need' is not epistemic[14]. Still, there are plenty of sources that provide epistemic examples, like Reis' (2001, p. 312) example (**Ex 27**), Ulvestad (1997, p. 218) or Engel (1996, p. 472), whose example is in (**Ex 28**).

Ex 27	*Das*	*braucht*	*nicht (zu)*	*stimmen.*		
	you	need-3SG-PRS	not to-PRT	be correct-INF		
	'That doesn't have to be correct.'					
	(Reis, 2001, p. 312)					

Ex 28	*Sie*	*braucht*	*es nicht*	*gewusst*	*zu*	*haben.*
	she	need-3SG-PRS	it not	know-PST-PRT	to-PRT	have-INF
	'She may not have known it.'					
	(Engel, 1996, p. 472)					

In (**Ex 27**) and (**Ex 28**), *nicht brauchen* express uncertainty, similarly to epistemic *may not/might not*. Moreover, the grammatical structure in (**Ex 28**), more precisely a modal plus perfective infinitive, renders an epistemic reading. As shown, *brauchen* 'need' can be interpreted both deontically as well as epistemically, and as a result, it should be regarded as modal in German, without being mentioned just in footnotes, or in parentheses.

Having shown its polyfunctionality, I would now like to explore the paradigm of *brauchen* 'need'. At first sight, *brauchen* 'need' demonstrates a regular weak verb paradigm, as illustrated in (**Ex 29**), comparing *brauchen* 'need' and *müssen* 'must'.

Ex 29	1SG	*ich brauch-**e***	1SG	*ich muss-Ø*
	2SG	*du brauch-**st***	2SG	*du muss-t*
	3SG	*er brauch-t*	3SG	*er muss-Ø*

However, *brauchen* 'need' seems to be gradually adopting the paradigm of modals. As Mortelmans et al. (2009, p. 30) or *Duden* (2009, p. 469) point out, *brauchen* 'need' is getting closer to other modals, since in colloquial German, it seems to be dropping *-e* and *-t* morpheme in the 1st and 3rd person singular, as exemplified in (**Ex 30**) adapted from Maitz and Tronka (2009, p. 189).[15]

Ex. 30	*Wenn*	*Du*	*ihm*	*einfach*	*sagst*	*er*
	when	you	he-DAT	simply	say-2SG-PRS	he
	brauchØ	*es*	*nicht*	*machen, [...]*		
	need-3SG-PRS	it	not	do-INF		
	'When you simply tell him that he doesn't need to do it.'					
	(Maitz & Tronka, 2009, p. 189)					

The loss of agreement in the 1st person is not that remarkable. As *Duden* points out (2009, p. 444), the 1st person singular verb can occur without *-e* in spoken language, such as *ich koch* 'I cook', *Ich wohn* 'I live'. However, the absence of *-t* in the 3rd person yields an ungrammatical sentence in standard German, such as **er koch* 'he

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[14] For the whole discussion, see also for Ulvestad (1997, p. 215).

[15] For more references, see Maché (2019, p. 193)

cooks' or **er wohn* 'he lives'.[16] As a result, we can consider *brauchen* 'need' to be a modal, and as I have illustrated above, it seems that it is nearing the central modals in terms of morphology.

Monofunctional structures

In this section, I will scrutinize structures that have a modal meaning but are not polyfunctional. First, I will examine *haben zu* 'have to' and *sein zu* 'be to'. The structure *haben zu* 'have to'*,* and I will also add *sein zu* 'be to'*,* which are counterparts of English *have to* 'have to' and *be to* 'be to', are frequently mentioned in relation to German modals. Obviously, they both have a modal component, specifically the meaning of necessity or ability, i.e. they express deontic modality, as illustrated in (**Ex 31**) and (**Ex 32**), taken from *Duden* (2009, p. 562).

Ex 31	*Sie*	*haben*	*meine Anweisungen*	*zu*	*befolgen.*
	you	have-3PL-PRS	my instructions-ACC	to-PRT	follow-INF

'You have to follow my instructions.'
(*Duden*, 2009, p. 562)

Ex 32	*Die Gebühren*	*sind*	*sofort*	*zu*	*bezahlen.*
	the fees	be-3PL-PRS	immediately	to-PRT	pay-INF

'The fees are to be paid immediately.
(*Duden*, 2009, p. 562)

As far as the epistemic meaning is concerned, Duden (2009, p. 562) and Engel (1996, pp. 480–481) claim that it is not available with the either *haben zu* 'have to' or *sein zu* 'be to'. As a result, structures *haben zu* 'have to' and *sein zu* 'be to' are monofunctional in present-day German[17], and thus should not count among modals.

In the same vein, other structures, that are sometimes called 'verbs with a modal meaning' (i.e. Modalitätsverben) should be treated likewise – *bleiben* 'stay', *lassen* 'let', etc. – see (**Ex. 33**).

Ex 33	*Das Buch*	*lässt*	*sich*	*gut*	*verkaufen.*
	the book	let-3SG-PRS	REFL	good	sell-INF

'The book (can) sell well.'

These words have the ability to express one type of modality but are not grammaticalized to a sufficient extent to be polyfunctional. As a result, they should not be included in the group. And obviously, they do not demonstrate any exceptional agreement paradigms – see for example (**Ex 34**).

Ex 34	1SG	*ich lass-e*
	2SG	*du läss-t*
	3SG	*er läss-**t***

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[16] A paper by Maitz and Tronka (2009) is arguing the opposite – that the loss of *-t* is not a purely grammar-driven phenomenon, but can be a result of a phonetic erosion. They claim that a similar phenomenon can be observed in regional variations also with other words, such *hast* 'you have', *jetzt* 'now', or even in the 2nd person plural with *brauchen* 'need' as in *ihr brauch* 'you need'. Still, they present some studies showing that the non-agreeing form is much more frequent than the agreeing one; specifically, *brauch-t* (7) vs *brauch* (75). Moreover, the results show that the loss of -t with modal *brauchen* is much more frequent than with other (non-modal) verbs *er brauch* (75) 'he needs' vs. *er rauch* 'he smokes' (12), *er tauch* 'he dives' (18).

[17] In my work (Machová, 2015, pp. 96–111) I demonstrate that English counterparts of *haben zu* 'have to' have developed an epistemic meaning as well, i.e. these structures are polyfunctional. There is no semantic reason that would prevent *haben zu* 'have to' from becoming epistemic in the future.

I will now discuss *wissen* 'know', which poses a challenge. As for its semantics, *wissen* 'know' has, besides its lexical meaning and use as 'know', a deontic meaning. It can semantically replace deontic *können* 'can' to denote an ability; see for example (**Ex 35**) from Engel (1996, p. 483).

Ex 35	*Er*	*weiß*		*das*	*zu*	*würdigen.*
	he	know-3SG-PRS		it	to-PRT	appreciate-INF

'He can appreciate it.'

(Engel, 1996, p. 483)

Mortelmans et al. (2009, p. 62) argue that *wissen* 'know' has no epistemic meaning. In fact, it cannot simply replace an epistemic modal, as illustrated below in (**Ex 36**).

Ex 36

Er	*will/*weiß*	*nichts*	*darüber*	*wissen.*
he	will/know-3SG-PRS	nothing	about it	know-INF

'The fees are to be paid immediately.'

The structures with *wissen* 'know', i. e. 'I know that *p*' are generally not regarded in sources as a type of epistemic modality, thus I conclude that *wissen* 'know' is monofunctional. Therefore, it should not be labelled as a modal, and in this respect, it stands alongside *bleiben* 'stay', *lassen* 'let' or *haben zu* 'have to' as a verb expressing one type of modal meaning. Interestingly, its agreement paradigm demonstrates similar gaps as other modals, such as *müssen* 'must', *können* 'can' (**Ex 37**).

Ex 37	1SG	*ich weiß-Ø*	1SG	*ich muss-Ø*
	2SG	*du weiß-t*	2SG	*du muss-t*
	3SG	*er weiß-Ø*	3SG	*er muss-Ø*

The reason for this is the fact that *wissen* 'know' is a preterite-present, and obviously, unlike other verbs that transferred from preterite-present paradigms to regular ones, *wissen* retained its original paradigm. The explanation for this may lie in the fact that languages tend to tolerate irregularities in frequent words. Emonds (2022, p. 65) describes this as "Syntactic economy", pointing out that "the frequently used forms tend to be and stay irregular". In line with this, we can easily explain why a frequently-used *wissen* 'to know' retained its original preterite-present grammar, while *genügen* 'be enough' and *taugen* 'be suitable' converted to regular verbs.

Conclusions

This study aims to provide a solid definition of what a modal is, and thus rectify the fact that there has not been any consistently applied definition of German modals up to now. This paper suggests that the group should be defined by polyfunctionality of words. This definition is self-contained and, moreover, is not limited to German only, but applies to other languages as well. Based on polyfunctionality, we can state that German modals are *dürfen* 'be allowed to', *können* 'can', *mögen* 'may', *müssen* 'must', *sollen* 'should', *wollen* 'want', *werden* 'will' and *brauchen* 'need'. The first six members *dürfen* 'be allowed to', *können* 'can', *mögen* 'may', *müssen* 'must', *sollen* 'should' and *wollen* 'want' are no surprise, since they are traditionally regarded as modals by a majority of linguists. However, I also proved that *werden* 'will' is a modal as well – both semantically as well as formally; I demonstrated its polyfunctionality and pointed to its modal-like paradigm, which remains completely undiscussed in the literature to this date. Another addition I suggest here is modal *brauchen* 'need'. With *brauchen* 'need', we might be witnessing grammaticalization in progress. It is polyfunctional, at least for some speakers. Moreover, *brauchen* 'need' seems to be developing the paradigm of a modal, as well. As for the follow-up research, it would be interesting to study to what degree and for which speakers *brauchen* 'need' is polyfunctional nowadays, and how that is related to the acceptability of the missing agreement morpheme in 1st and 3rd persons paradigm.

Conflict of Interest

The author declares no conflict of interest regarding the publication of this article.

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Santrauka

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Modalinis daugiafunkciškumas ir vokiečių kalbos modaliniai žodžiai

Šiame straipsnyje atkreipiamas dėmesys į tai, kad šiuo metu nėra nuoseklaus vokiečių kalbos modalumo apibrėžimo, taip pat nėra sutarimo, kurie veiksmažodžiai turėtų būti priskiriami modalumo kategorijai. Straipsnyje siūloma modalinius žodžius apibrėžti remiantis modaliniu daugiafunkciškumu, t. y. gebėjimu išreikšti ir šaknies, ir episteminį skaitymą. Taikant šį apibrėžimą, straipsnyje teigiama, kad be kanoninių veiksmažodžių *dürfen* 'leidžiama', *können* 'gali', *mögen* 'gali', *müssen* 'turi', *sollen* 'turėtų', *wollen* 'noriu', veiksmažodžiai *werden* 'bus' ir *brauchen* 'reikia' taip pat laikytini modaliniais, nes jie semantiškai elgiasi kaip standartiniai modaliniai. Tiksliau tariant, jie abu gali išreikšti ir leksinį, ir episteminį modalumą. Be to, straipsnyje siūloma, kad sutikimo nebuvimas 1 ir 3 asmens vienaskaitos modaliniuose veiksmažodžiuose, pavyzdžiui, *ich/er muss*Ø 'aš turiu / jis turi', negali būti siejamas tik su jų protgermaniško praeities-dabarties laiko kilmės (vok. *Prateritum-Prasens*) modalumu, bet yra susijęs su sinchronine modalinių žodžių apibrėžtimi, t. y. jų daugiafunkciškumu dėl paradigminės darnos. Straipsnyje ne tik tiriami pagrindiniai modaliniai veiksmažodžiai, bet ir *brauchen* 'reikia', taip pat *werden* 'noriu' paradigmos, darant prielaidą, kad jos gali būti suderintos su pagrindiniais modaliniais žodžiais ir dėl morfologinio panašumo. Nors straipsnis yra teorinio pobūdžio, jo argumentai paremti pavyzdžiais iš literatūroje minimų ar gimtakalbių vokiečių kalbos vartotojų sukurtų tekstų.

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