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RESEARCH ARTICLE

Embodiment in modal meaning construction: The ecology of Finnish verbs of ability from a force-dynamic perspective

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Abstract

This paper deals with seven Finnish verbs of ability that all combine modal meaning with a specific lexical component that determines in terms of what the subject referent is able to do something, e.g. tolerance, energy, sensitivity: *sietää*, *suvaita*, *tarjeta*, *jaksaa*, *tohtia*, *malttaa*, *raaskia*. Through corpus-based research, the paper first provides a grammatical description for each verb, focusing on complementation, person marking, and negative affinity. Their uses are explored with regard to the types of underlying force dynamics: physical, mental, interpersonal. The study draws connections between the identified grammatical profile and the force-dynamic analysis. Correlations between experience-based ability, non-specific person marking, and physical force dynamics, as well as negative affinity, auxiliary-likeness, and mental force dynamics are observed. The specialisation patterns and interrelations between verbs are accounted for through the metaphor of *ecology* and *niche*. The analysis highlights the embodied roots and the multilayered nature of the modal meaning of *ability*.

Keywords: ability; embodiment; dynamic modality; semilexical verbs; Finnish; force dynamics

1. Introduction

1.1 Objectives

This paper investigates a selection of seven Finnish verbs of ability (VoAs). They can be seen as belonging to the category of the so-called *semilexical* or *semimodal* verbs in that they serve as both (modal) auxiliaries and (lexical) main verbs (see e.g. Dixon 2010, Depraetere & Langford 2020). In this paper, we highlight their shared semantic capacity of encoding the modal meaning of dynamic possibility, namely *ability* (see e.g. Palmer 2001) and conveying additionally a specific lexical layer that determines *in terms of what* the subject referent is able to do something. We suggest that due to this twofold semantic structure, rather than being halfway between two categories (modal and lexical), these verbs can help us to deepen our insight into the embodied roots of the meaning construction of ability.

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The paper aims to provide a grammatical description of each verb and explore their mutual interfaces. Their modal meaning is analysed in terms of conceptual force dynamics (Talmy 2000). To account for the internal organisation of the modal field of ability and the dynamics of the Finnish VoAs within it, we metaphorically employ the term *ecology*. We also speak of the *niche* of each verb when describing the processes of semantic–functional specialisation and cohabitation in the realm of ability (for a previous use of the terms *ecology* and *niche* within a cognitive linguistic framework, see Taylor 2004). The study is strongly corpus-driven. This allows us to track the most frequent patterns for each verb on several different levels (grammatical, lexical semantic, force-dynamic) and observe how these map onto each other. The data include standard and colloquial (mostly dialectal) language use, extracted from both written and oral language datasets.

The selected verbs can all enter a transitive construction with a so-called A-infinitive complement. The A-infinitive can be considered as the basic form of the Finnish verb. The selected seven verbs are presented in Table 1 (examples 1a–g).[1] We illustrate their semantics and use with the utterance presented in (1), meaning 'Liisa cannot eat in Helsinki restaurants'. Each of the studied ability verbs can occupy the position of the modal marker ('can'). Because of the negative auxiliary *ei*, they take the connegative form, as seen in column A (VoA.CNG). The infinitive form for each verb is presented in column B, associated with a code in subscript that links the infinitive to its meaning, shown in a simplified form in column C.[2] All the verbs encode ability, but they account for the event described in (1) differently. To make manifest the lexical semantic contribution of each verb to the propositional content in (1) an additional explanation is added in column D.

These fabricated examples offer a first glimpse of the differences in use and in the lexical meaning displayed by the selected verbs. The first three verbs, *sietää*$_{TOLE}$, *suvaita*$_{TOLE}$ and *tarjeta*$_{COLD}$, express different types of tolerance. *Tarjeta*$_{COLD}$ encodes specifically tolerance to a cold temperature. The meaning of *jaksaa*$_{NRG}$ has to do with energy and effort. The remaining three verbs, *tohtia*$_{DARE}$, *malttaa*$_{CTRL}$ and *raaskia*$_{SENS}$, highlight the emotional roots of ability in different ways.

Other types of complements are possible, e.g. an NP complement in (1h), along with intransitive uses (1i). These patterns appear to be verb-specific. Example (1j) illustrates that *tarjeta*$_{COLD}$ does not take an NP complement.

(1) h.

Liisa	***ei***	***siedä***	*helsinki-läis-i-ä*	*ravintolo-i-ta.*
PRP	NEG.3SG	SIETÄÄ.CNG	PRP-ADJ-PL-PART	restaurant-PL-PART

'Liisa **does not tolerate** Helsinki restaurants.'

i.

Liisa	***ei***	***tarkene***	*ulkona.*
PRP	NEG.3SG	TARJETA.CNG	outside

'Liisa **does not withstand cold** outside.'
> 'Liisa cannot be outside because she is too cold.'

j.

**Liisa*	***ei***	***tarkene***	*helsinki-läis-i-ä*	*ravintolo-i-ta.*
PRP	NEG.3SG	TARJETA.CNG	PRP-ADJ-PL-PART	restaurant-PL-PART

'Liisa **does not tolerate** Helsinki restaurants because she is cold there.'

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Table 1. The studied VoAs

(1) *Liisa* *ei*		*syö-dä*	*helsinki-läis-i-ssä*	*ravintolo-i-ssa*	
PRP	NEG.3SG	VoA.CNG	eat-INF	PRP-ADJ-PL-INE	restaurant-PL-INE
'Liisa	cannot	eat in Helsinki restaurants'			
		A	B	C	D
(1a)		*siedä*	*sietää*$_{TOLE}$	'to tolerate'	(e.g. because she does not like their menus, or she gets a stomach ache every time)
(1b)		*suvaitse*	*suvaita*$_{TOLE}$	'to tolerate'	(e.g. because they are below her expectations)
(1c)		*tarkene*	*tarjeta*$_{COLD}$	'to withstand cold'	(because she's always cold there)
(1d)		*jaksa*	*jaksaa*$_{NRG}$	'to be able to in terms of energy'	(e.g. because she already ate too much in Tallinn, or she is too tired)
(1e)		*tohdi*	*tohtia*$_{DARE}$	'to dare'	(e.g. she is afraid of not knowing how to behave)
(1f)		*malta*	*malttaa*$_{CTRL}$	'to be able to in terms of self-control'	(e.g. because she is too excited exploring the city)
(1g)		*raaski*	*raaskia*$_{SENS}$	'to be able to in terms of sensitivity'	(e.g. because she feels bad spending all that money)

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The most extensive study focusing specifically on VoAs in Finnish, to our knowledge, is Flint (1980). Flint identifies 45 'verbs of possibility and sufficiency' that display similarities in their meaning construction. For example, they exhibit negative affinity (see Kiuru 1977). According to Flint (1980:59–60), the verbs form an open-ended semantic system which is internally organised around twelve different gradually overlapping dimensions. One of these is *ability*. Yet, in Flint's model, none of the verbs studied here belongs to this dimension. In this paper, we apply a broad definition of *ability*. We consider that in addition to the prototypical ability verbs (e.g. *voida*, *pystyä*, *kyetä* 'can, to be able to'), the selected VoAs, too, encode the possibility for the subject to (not to) do something because of participant-internal or -external circumstances. This causative semantics can be accounted for within the theoretical framework of force dynamics (Talmy 2000). It is a model for describing embodied interactions between competing conceptual forces. Each VoA adds to the force-dynamic pattern a specific lexical component specifying the nature of the resisting force. Three types of force-dynamic interaction are distinguished: physical, mental, and interpersonal.

The paper proceeds as follows. We first present the theoretical and conceptual foundations of the study (Section 1.2). After this (Section 1.3), we provide an overview of the (very few) previous studies concerning the Finnish VoAs, mainly Flint (1980) and Kiuru (1977) (see also Cai 2025), account for the selection of the studied set of verbs, describe their syntactical properties (complementation, zero person) and negative affinity, and briefly place the Finnish system in the context of the VoAs in other languages. The following two sections present our research questions and hypotheses (Section 1.4.), as well as the data and methods of analysis (Section 1.5). We then move on to exposing the results. We start by comparing the studied VoAs on three grammatical points, including complementation, negation, and person marking (Section 2.1). Based on this corpus analysis, we then zoom into the particular uses of each verb, detecting the specific types of conceptual forces that are mapped onto the underlying force-dynamic pattern (Section 2.2). After this, we highlight the specific niche each verb occupies within the ecology of Finnish verbs and the modal realm of ability (Section 2.3). The outcome of the study is then discussed in view of its implications to the Finnish system of VoAs and, more generally, to the meaning of ability (Section 3), before the conclusion of the paper (Section 4).

1.2 Theoretical and conceptual framework

As expressions of dynamic modality, the studied VoAs can be paraphrased by 'it is possible for X to **p**', as opposed to epistemic modals conveying the meaning 'it is possible that **p**' (compare examples 2 and 3) (e.g. Perkins 1983, Palmer 2001, Collins 2009).

(2) *Jaksa-n* *nosta-a* *tuo-n* *kive-n.*
JAKSAA-1SG lift-INF DEM-GEN rock-GEN

'I can (i.e. I have the strength to) lift that rock'
> 'It is possible for me to lift that rock.'

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(3) *Tuo kivi saatta-a pudo-ta.*
DEM rock may-3SG fall-INF

'That rock may fall.'
> 'It is possible that the rock falls.'

Ability has been defined as 'the physical, intellectual, and perceptual capacity to do something' (see Leclercq & Depraetere 2022). The meaning of ability implies a potential obstacle, the effect of which on **p** is cancelled. The utterance presented in (2) entails that what could prevent the subject referent from lifting the rock (e.g. insufficient muscular strength with regard to the rock's weight) is neutralised. Due to their causative semantics, VoAs thus specify that the reason why **p** is not cancelled is because the subject referent has sufficient resources at their disposal to overcome the challenge (Flint 1980:60–62; see also Nadathur 2016, Johansson & Nordrum 2018).

It should be noted that ability entails not only the capacity to act (see the verb *to do* in the above definition) but also the capacity of resisting a change ('not doing') (see Figure 1(b)) and, when expressed with a nominal object complement or an intransitive construction, the capacity of overcoming unspecified effects that the interlocutor is expected to identify. For example, '(not) tolerating Helsinki restaurants' entails that the subject referent is (not) able to overcome the unnamed negative effects of Helsinki restaurants. On the other hand, *Malta!* 'malttaa$_{CTRL}$.IMP.2SG' > 'Hold on!' calls for the subject referent to resist some implied opposing force that is liable to make them act (see also examples 1h and 1i). Including in the analysis different types of constructions expressing *ability* allows us to contribute to research endeavouring to link the force-dynamic framework to the analysis of structurally diverse constructions (Hilpert 2025).

Sensitivity, self-control, daring, tolerance, and regulating one's energy encoded by the studied VoAs involve embodied properties characteristic of living beings (cf. 'intellectual and perceptual capacity' in the above definition of *ability*). The prototypical subject referent of these verbs is thus expected to be animate (see also Kiuru 1977, Gregersen 2024:103). In this paper, VoAs are approached as expressions of different types of embodied interactions between the subject referent and their environment. We analyse the causative meaning construction of VoAs within the framework of Talmy's (1988, 2000) theory of force dynamics. It is a model for describing interactions between competing conceptual forces that stem from our perception of the interplay between physical forces in our environment. This framework makes it possible to link the conceptual core of modal meaning structure with the embodied experience of living beings within their environment (Hilpert 2025:2). The experience of *ability* emerges from these interactions.

In the basic schemas, the central force called *Agonist* is challenged by an opposing *Antagonist* force. When the Agonist shows tendency to action, the Antagonist tends towards rest, and the other way around. Figure 1 exposes the modal meaning of *ability* represented by two force-dynamic schemas underlying the meaning

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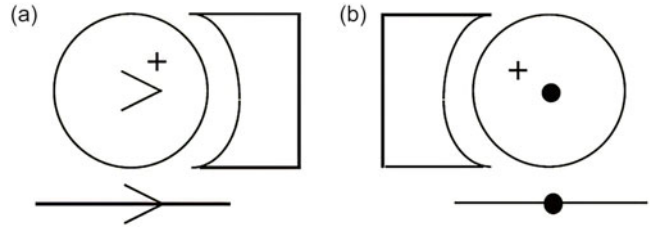


Figure 1. (a) *I can lift that rock.* (b) *The satellite is able to stay in an orbit around Earth.*

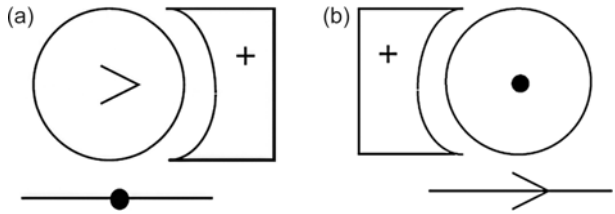


Figure 2. (a) *I cannot lift that rock.* (b) *The satellite is not able to stay in an orbit around Earth.*

structures in utterances *I can lift that rock* (Figure 1(a)) and *The satellite is able to stay in an orbit around Earth* (Figure 1(b)). The Agonist is represented by a circle; the Antagonist is indicated by a concave figure. The arrowhead marks an intrinsic force tendency to action (including movement or change of state), whereas the black dot represents tendency to rest (non-movement or lack of change of state). A plus is placed on the stronger entity, and the line below the Agonist shows the resultant.

In Figure 1(a), the Agonist force tends towards action, the Antagonist resists, but the Agonist overcomes, and the resultant is action. The subject referent's physical forces are sufficient with regard to the weight of the rock. The inverse configuration is also possible. In Figure 1(b), the Agonist tends towards rest, while the Antagonist is inclined towards action. The Agonist overcomes, and the resultant is rest. Earth's gravity is not strong enough to move the satellite from its orbit. The aspectual semantics of the complement (*lift* vs. *stay*) encodes the tendency towards action or rest of the subject referent.

In the negative form, the force relationship is reversed. For utterances presented in Figure 1, this entails that the Antagonist force overcomes and the resultant is contrary to the Agonist's intrinsic tendency. The altered configurations are shown in Figure 2.

Following Talmy's model, the original schema describing interaction between an entity and an external force can offer a ground for describing forces of different conceptual levels, also those internal to the focal entity (Talmy 2000:413–414). In this

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vein, each VoA adds a specific lexical component to the force-dynamic pattern specifying the nature of the competing forces and thus the type of the interaction: physical, mental, or interpersonal. The two last mentioned force interactions correspond to what Talmy (2000) identifies as *psychosocial dynamics*. They generalise physical notions to mental and interpersonal domains by metaphoric extension (see also Gibbs 2005:160–161). Physical force dynamics concerns the subject referent's bodily abilities to act or to resist, with regard to spatio-temporal circumstances. Mental forces are internal to the subject referent: intentions, preferences, emotions. These patterns represent an internalised dialogue between the subject's desires (the Agonist force with an inherent tendency to either change of state or rest) and social values (the Antagonist force blocking or spurring the Agonist) (Talmy 2000:431–433). Interpersonal force dynamics occurs in situations of interaction between the subject referent and other animate participants. An analogy is thus created between physical force relationships and interactional pressures resulting from social norms and disalignment in expectations and intentions (Talmy 2000:438–440).

By observing the interaction between forces of a different nature, we aim to gain an in-depth understanding of the embodied roots of the meaning construction of ability as well as the distinctive features of this modal domain. Johnson (2018:626–627) describes meaning as emerging from the interaction between an embodied organism and its environment, depending on the specific bodily properties of the living being and the patterns for perception and action provided by the particular situation (in Gibson's [1979] terms, *affordances*). Linguistic meaning is rooted in 'this much deeper and broader embodied process of meaning-making' (Johnson 2018:626). Lexically rich expressions of ability, such as the Finnish VoAs, convey a subtle description of the interplay between the bodily properties of a living entity and the situational affordances. By looking at the grammatical and lexical profiles of these verbs, we aim to cast light on the different layers in the meaning construction of ability.

To capture the internal dynamics of ability and the ways in which the Finnish VoAs cover it, we use the metaphor of *ecology*. In doing so, we aim to describe a specific semantic meaning structure (here, ability) as an ever-moving assemblage constituted by entities (here, different types of abilities) that shape each other and that are shaped by the assemblage and by what is external to it (on the origins of the theory of assemblages, see Deleuze & Guattari 1980), rather than as a category with a predetermined, fixed structure. The multilayered modal domain is metaphorically represented as a landscape on which the linguistic items (here, the Finnish VoAs) cohabit. The aim is to account for the plurality of conceptualised subject–environment interactions constituting the meaning of ability and motivating the relatively high number of ability verbs in Finnish. Approached from another angle, with a focus on the semantic interrelations between the verbs, the assemblage drafted here could certainly be mapped onto an underlying *network* of force-dynamic scenarios (see Hilpert 2025; on the usage-based network models of language, see Diessel 2019). We borrow the terms *ecology* and *niche* from Taylor (2004), although the focus here is on the semantic layers constituting the modal realm of ability and the location of a set of linguistic items within these, instead of constructional relations.

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1.3 Finnish VoAs: State of the art

The lexical meaning of each VoA emerges from the speaker's perception and experience of the environment and entities within it, but also from the gap between what the speaker thinks the reality is and what it actually turns out to be:

> Quite frequently, their function is to allow for the fact that our performance or the reality around us may fall short of our expectation. With these verbs, we calibrate the reserves available to us against the requirement or challenges before us. (Flint 1980:62)

Flint (1980:59–60) enlists 45 verbs of this type in Finnish, forming a system with 12 dimensions, as shown in Table 2.[3] We have marked the verbs selected for our study in bold letters.

In this system, each dimension is internally structured in relationships of adjacency. Sometimes adjacent verbs accumulate into clusters and display varying values with regard to the core attribute of the dimension. For example, within the tolerance dimension, *hyväksyä* 'to approve' and *suvaita* 'to tolerate' display a higher degree of 'tolerance' than *kestää*, *kärsiä*, and *sietää* 'to withstand, to tolerate'. This is liable to stem from the much less specific lexical meaning of these latter three verbs. The different dimensions, in their turn, are related to each other through transitions of varying sharpness: from overlapping (e.g. *viitsiä* (no. 24 in Table 2) and *kehdata* (no. 25) which both encode the ability to do something in terms of social norms or personal investment, cf. 'to dare', 'to bother') to only tangential adjacency (e.g. *uskaltaa* (no. 31) 'to dare' vs. *tarjeta* (no. 32) 'to be able to [despite the cold]').

The dimensions form a conceptually heterogeneous series. The first attributes (I, II) relate to spatio-temporal circumstances, whereas the last ones (IX–XII) stem from the subject referent's appreciation. In between them, the dimensions III–V are identified with attributes that could be used for describing all the verbs. Indeed, the entire category of 45 verbs is called *verbs of possibility and sufficiency* in Flint's study. In our paper, we also consider all these verbs as carrying the modal meaning of ability. One could say that the groups III–V foreground sufficiency, possibility, and ability, respectively, whereas the other verbs combine these with other physical, mental, or intersubjective attributes. The subsequent dimensions VI and VII arise from the subject referent's strength of different orders. Finally, the meaning of the verbs gathered within the dimension VIII is founded on the presence of an entity exerting some kind of harmful or otherwise unwanted influence on the subject referent (see Godet 2023).

In this study, we have selected verbs that are located in the latter half of the series, in other words not highlighting the spatio-temporal circumstances nor the all-encompassing attributes of sufficiency, possibility, and ability. In doing so, we aim to gain insight into VoAs with the most specific lexical meanings involving particular physical conditions (e.g. strength, in $jaksaa_{NRG}$, no. 23 in Table 2), emotions (e.g. fear, in $tohtia_{DARE}$, no. 28), or environmental settings (e.g. cold, in $tarjeta_{COLD}$, no. 32). By choosing to study $sietää_{TOLE}$ (no. 35) and $suvaita_{TOLE}$ (no. 36), we can observe the interface between adjacent verbs within a dimension. Looking into the meaning structure and the uses of $raaskia_{SENS}$ (no. 42) and $malttaa_{CTRL}$ (no. 43)

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Table 2. The system of verbs of possibility and sufficiency according to Flint (1980)

I.	Time	1	*ehtiä*
		2	*ennättää*
		3	*keretä*
		4	*joutaa*
II.	Space	5	*joutua*
		6	*päästä*
		7	*mahtua*
		8	*sopia*
		9	*passata*
III.	Sufficiency	10	*kelvata*
		11	*piisata*
		12	*riittää*
IV.	Possibility	13	*voida*
		14	*saattaa*
		15	*mahtaa*
		16	*taitaa*
V.	Ability	17	*osata*
		18	*selviytyä*
		19	*pärjätä*
		20	*päteä*
		21	*pystyä*
		22	*kyetä*
VI.	Energy	23	***jaksaa***
		24	*viitsiä*
VII.	Boldness	25	*kehdata*
		26	*iljetä*
		27	*juljeta*
		28	***tohtia***
		29	*rohjeta*
		30	*hirvitä*
		31	*uskaltaa*
VIII.	Tolerance	32	***tarjeta***
		33	*kestää*
		34	*kärsiä*

(*Continued*)

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Table 2. (*Continued*)

		35	***sietää***
		36	***suvaita***
		37	*hyväksyä*
		38	*sallia*
		39	*suoda*
		40	*suostua*
IX.	Sensitivity	41	*hennoa*
		42	***raaskia***
X.	Commitment	43	***malttaa***
XI.	Value	44	*kannattaa*
XII.	Harmony	45	*viihtyä*

allows us to investigate a zone that in Flint's model marks a transition from one dimension to another.

When used with an A-infinitive complement and the past tense, these verbs are implicative, in that they convey an entailment concerning an implied proposition, namely whether or not the event described in the complement took place (Karttunen 1971, Salminen 2024). This entailment can be inferred from the lexical semantics of the infinitive complement and the modifiers of the finite VoA (TAM, negation, temporal and locative adverbials, causal subordinate clauses) (Karttunen 1971). For example, the sentence presented in (1k) (modified from example 1) entails that 'Liisa ate in Helsinki restaurants'. This makes implicative verbs different from non-implicative verbs (1l) and non-factive verbs (1m). The sentences (1l, 1m) do not generate this entailment: it could be that in the end Liisa never ate in Helsinki restaurants, although she had decided or wished to do so. When the finite VoA takes a past tense, as in (1k), the implied proposition is understood as taking place in the past as well (on the role of the past tense in the implicative reading, see Salminen 2024:575–576). When the VoA is in the present tense, it conveys minimal grounding for the process described by the infinitive form, which in itself lacks personal and temporal marking (1n). The implied event is therefore conceptualised as an entailed theoretical possibility (Leech 2004:115–118, Visapää 2022). Whether it took place or not remains less determined than in the case of past-time reference (Salminen 2024). When the VoA is under the scope of the negative auxiliary (see 1e in Table 1, 'Liisa does not dare to eat in Helsinki restaurants'), the underlying proposition is negated too: 'Liisa does not eat in Helsinki restaurants'. This distinguishes implicative verbs from complement-taking factive verbs. The sentence in (1o) does not imply 'Liisa did not eat in Helsinki restaurants'.

(1) k. *Liisa* ***tohti*** *syödä* *helsinki-läis-i-ssä* *ravintolo-i-ssa.*
PRP TOHTIA.PRT.3SG eat.INF PRP-ADJ-PL-INE restaurant-PL-INE
'Liisa **dared** to eat in Helsinki restaurants.'

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l. *Liisa* ***päätt-i*** *syödä* *helsinki-läis-i-ssä* *ravintolo-i-ssa.*
PRP decide-PRT.3SG eat.INF PRP-ADJ-PL-INE restaurant-PL-INE

'Liisa **decided** to eat in Helsinki restaurants.'

m. *Liisa* ***uneksi,*** *että* *hän* *sö-i*
PRP dream.PRT.3SG COMP 3SG eat-PRT.3SG
helsinki-läis-i-ssä *ravintolo-i-ssa.*
PRP-ADJ-PL-INE restaurant-PL-INE

'Liisa **dreamt** that she ate in Helsinki restaurants.'

n. *Liisa* ***tohti-i*** *syödä* *helsinki-läis-i-ssä* *ravintolo-i-ssa.*
PRP TOHTIA.PRS-3SG eat.INF PRP-ADJ-PL-INE restaurant-PL-INE

'Liisa **dares** to eat in Helsinki restaurants.'

o. *Liisa* ***ei*** ***muista,*** *että* *hän* *sö-i*
PRP NEG.3SG remember.CNG COMP 3SG eat-PRT.3SG
helsinki-läis-i-ssä *ravintolo-i-ssa.*
PRP-ADJ-PL-INE restaurant-PL-INE

'Liisa **does not remember** that she ate in Helsinki restaurants.'

Given the variation in the complement constructions of the Finnish VoAs, namely the possibility of NP object complements and intransitive uses, which are not analysable in terms of implicativeness (Salminen 2024:585), and what we know of the complexity of the so-called implicative signatures of verbs expressing ability, courage, and effort (see Karttunen 2012), a closer analysis of this dimension in the selected VoAs goes beyond the scope of the present paper and would deserve a separate treatment.

The studied VoAs belong to those Finnish verbs that have been observed to favour negative contexts (Kiuru 1977:41–59). In previous studies, this affinity for negation has been accounted for on pragmatic grounds. Kiuru (1977:52) notes that verbs of negative affinity are used when explaining and presenting excuses for things not done. Flint (1980:ch. 5) examines a range of types of social situations where these verbs are used in negative answers to invitations and requests, for hedging and explaining politely. Cai (2025) investigates the uses of *päästä* 'to be able to go, to access' (no. 6 in Table 2) with an infinitive complement in spoken everyday conversations showing that the meaning of obstacle is present in the different interactional tasks of the verb. Our study focuses on the embodied semantic roots of the VoA discourse functions, including the motivation behind a possible negative affinity.

Furthermore, according to Flint (1980:16), VoAs are liable to take a zero subject. In these cases, the VoA is in the third-person singular form, but the subject position is left empty. This is a syntactic construction known to be favoured by modal verbs and other types of experience-based verbs (Laitinen 1995, 2006). Zero person conveys a non-specific person reference allowing the speaker to present the experience as something that can be shared by anyone in a similar position (ibid.), as in (4) and (5).

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(4) *Suome-ssa* *ø* *joutu-u* *sauna-an.*
Finland-INE ZERO have.to-3SG sauna-ILL

'In Finland, one has to go to the sauna.'
(Laitinen 2006: 209)

(5) *Täällä=hän* *ø* *jääty-y.*
here=CLT ZERO freeze-3SG

'One freezes here.'
(Hakulinen et al. 2004:§1350)

Karttunen (1971:341) mentions *malttaa*$_{CTRL}$, *joutua* 'to have to (go to somewhere)' and *suvaita*$_{TOLE}$ as a part of a language-specific inventory of implicative verbs in Finnish. The existence of a range of verbs of possibility and sufficiency with rather specific lexical semantics appears to be a feature that Finnish shares with Scandinavian languages, at least to a certain extent (Johansson & Nordrum 2018:158). Verbs expressing the sufficiency of time ('to have time to do sth.', Flint's dimension II) have been studied in Swedish (*hinna*) and Norwegian (*rekke*) (Johansson & Nordrum 2016, 2021). Gregersen (2024) analyses uses of the Danish verb *gide* that are related to the sufficiency of energy and thus come close to some of those displayed by the Finnish *jaksaa*$_{NRG}$. The Swedish *orka* is part of this group as well (Johansson & Nordrum 2018).

In non-standard Finnish, many of the selected VoAs present phonological and semantic variation.[4] This is also the case for their equivalents in other Finno-Ugric languages. The tolerance reading of *sietää*$_{TOLE}$ is widely present in Finnish dialects. Comparable forms are found in the closely related Balto-Finnic languages Ingrian and Karelian. The verb possibly stems from the Germanic lexical base **stē-* (cf. e.g. the Scandinavian *stå*) (SES 2024). *Sietää*$_{TOLE}$ can also be used for expressing necessity, e.g. *si-tä sietä-ä toista-a* 'DEM-PART SIETÄÄ-3SG repeat-INF' > 'it ought to be repeated'. In our study, we have included these uses in the tolerance category, considering the necessity reading as secondary (< 'it bears to be repeated'). In addition to tolerance, *suvaita*$_{TOLE}$ and its equivalents are used for describing different types of preference in Finnish dialects and in many Finno-Ugric languages ('to like, to love'). The form is considered to be of ancient Indo-European origin (**suH-é*), as with the permissive verb *suoda* 'to allow' (SES 2024). As for *tarjeta*$_{COLD}$, apart from describing the experience of temperature, it is also reported to express coping with other types of difficulties (related to another person, e.g. at work, in a fight), as well as daring (SES 2024). The Karelian *tareta* also covers a variety of meanings: 'to not be cold', 'to dare', 'to have the heart to do sth.' (KKS 2024). Variation is observed in the equivalent forms in Estonian and also in the Sami languages (SES 2024). The etymology of the verb is uncertain. One possible origin is shared with the adjective *tarkka* which in standard Finnish means 'precise' but in dialects also 'sensitive, tender' (ibid. *s.v. tarkka*). *Jaksaa*$_{NRG}$ is widely present in non-standard Finnish, with a rich array of ability readings (SMS 2024). In a reduced number of dialects, it is used as a communication verb describing fervent, tireless speaking (ibid.). Meanings of the type 'to take off, to rob' are also reported in certain

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regions, as well as in other Finno-Ugric languages. No etymology is provided. *Tohtia*$_{DARE}$ displays less semantic variation. The meaning of daring or being brave appears to be present even in its assumed Indo-European origin (**dhers*-) (SES 2024). *Malttaa*$_{CTRL}$ conveys the meaning 'to notice, to understand' in Finnish dialects. This is, of course, related to the meaning of 'ability to control one's attention', presented in example (1f) in Table 1, or that of 'commitment', as termed by Flint (1980). An equivalent of *malttaa*$_{CTRL}$ is reportedly found in certain Russian dialects due to their contact with Karelian, Ludic, and Veps languages (SES 2024). Inversely, *raaskia*$_{SENS}$ is of Slavic origin. It is related to the Russian verb *račít´* 'to want to, to be ready to do sth.' (ibid.). *Raaskia*$_{SENS}$ presents less semantic variation than *malttaa*$_{CTRL}$, although the meaning 'to dare' is found in Karelian, alongside with the usual 'to have the heart to do sth.'.

From a historical and cross-linguistic perspective, the semantic background of the selected VoAs is thus rich in overlaps and vagueness. The present study does not aim to track the evolutionary paths of these verbs. It observes the meaning and the use of the VoAs in a heterogeneous dataset, highlighting the functional niche occupied by each VoA unit. A niche is made available by the rest of the units. 'Each unit has pointers to other units and can therefore be "filed" under a number of different "addresses"' (Taylor 2004:10). These mutual relationships shape the *ecology* of language units.

By investigating the somewhat heterogeneous constellation of VoAs in Finnish, we can furthermore enquire into the properties of ability as a conceptual unit. The fact that the Finnish lexicon manifests such subtle distinctions between types of abilities and how they stem from different interactions between sentient beings and what surrounds them sheds new light on the internal structure of what has been considered as a semantic category in the linguistic literature on modality (e.g. van der Auwera & Plungian 1998, Palmer 2001). The Finnish VoAs raise the question of how we should deal with these elements in view of modal classification. We particularly draw attention to the traditional position of this type of items as *halfway* in the middle of two categories (*semi*-lexical or *semi*-modal) (Dixon 2010, Depraetere & Langford 2020) and suggest a model allowing them to enter the modal system as fully fledged members.

1.4 Research questions and hypotheses

The paper addresses the following questions.

1. All VoAs have been described as taking an A-infinitive complement and displaying negative affinity (Kiuru 1977, Flint 1980). As expressions of experience, they form a favourable environment for zero subject (see Laitinen 1995, 2006). *Do the selected VoAs occur in similar patterns, when it comes to complementation, negation, and person marking, or are there deviating tendencies?*
2. The meaning of ability can be visualised with two different schematic models, in terms of force dynamics, underlying the ability to do something, on the one hand, and the ability to resist a change, on the other (Talmy 2000). The forces can be of physical, mental, or interpersonal type. *Do the selected VoAs display preferences with regard to one of the force-dynamic schemas and force types? Do the results of the grammatical analysis (see Question 1) map onto these preferences?*

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3. The chain-like linear representation of the category of VoAs (see Flint 1980) has the advantage of exposing in clear terms the particularities in lexical meaning proper to different dimensions of 'possibility' and 'sufficiency'. However, the internal structure of these dimensions and the interfaces between them are rather heterogeneous. Furthermore, the linear form may not allow some of the semantic links between verbs to surface. All of this suggests a more dynamic and complex constellation. *Is it possible to describe the coalescence among VoAs through the metaphor of ecology, rather than a linear form? What kind of implications does this have on the semantic category of ability?*

Based on the literature presented above, we can draw up the following hypotheses.

1. *The selected VoAs do not occur in similar patterns, when it comes to complementation, negation, and person marking*. Although the VoAs have all been reported to occur in transitive constructions with an A-infinitive complement and showing a special affinity for negative contexts and zero subject, we can expect them to favour different grammatical patterns due to their different lexical components. They encode different kinds of interactions between an entity and its surroundings. This is liable to be reflected, for example, in verb-specific preferences in complementation.
2. *The selected VoAs display different preferences with regard to the force-dynamic schemas and force types*, because they conceptualise different kinds of interactions between the subject referent and their environment.
3. *The metaphor of ecology allows us to highlight the coalescence among VoAs in multiple ways without the limitations of a chain-like configuration.* It also helps us to understand the connections between linguistic forms and the embodied experiences and interactions within which they emerge. Furthermore, this alters the overall view on the semantic realm of ability, which now appears as a complex multilayered assemblage based on the conceptualisation of these multiple subject–environment interactions.

1.5 Data and methods

The data sources are presented in Table 3. The written language dataset includes literary texts from the late nineteenth century to the 1950s (LITER), as well as news texts from the turn of the millennium (PRESS). Spoken language data are extracted from dialect interviews conducted from the 1950s to the 1980s (DIAL) and from a smaller contemporary conversational dataset (CONV). By choosing such a large array of data, including non-standard language use and covering a relatively long time span, we aim to gain visibility over the variation and overlaps in the uses of these semantically complex verbs. Modal constructions are known to have undergone recategorisation during the construction of the present-day standard Finnish, in the second half of the nineteenth century, creating a gap between colloquial language use and the norm (see e.g. Laitinen 1997).

Table 4 shows the total number of occurrences of the selected verbs, per corpus type. We can observe that $jaksaa_{NRG}$ is by far the most frequent of the selected VoAs, covering more than a half of all the occurrences, whereas $tarjeta_{COLD}$ and

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Table 3. Data sources

	Corpus	Size (tokens)	Timeline
LITER	Literary classics	1 802 590	1880s–1930s
	Gutenberg, literature	34 487 420	–1950s
PRESS	Magazines, newspapers	246 725 411	1990s–2000s
DIAL	Digital morphology archives, dialects	3 869 635	1960s–1980s
	Syntax archives, dialects	1 194 843	1950s–1960s
CONV	Arkisyn – conversational discourse	326 946	1990s–2000s

Table 4. The total number of occurrences of the selected VoAs

	LITER	PRESS	DIAL	CONV	Total
sietää$_{TOLE}$	1 889	2 950	62	1	4 902
suvaita$_{TOLE}$	2 356	616	67	1	3 040
tarjeta$_{COLD}$	85	95	309	5	494
jaksaa$_{NRG}$	5 137	12 619	1 068	112	18 936
tohtia$_{DARE}$	1 499	408	257	0	2 164
malttaa$_{CTRL}$	2 172	1 814	130	2	4 118
raaskia$_{SENS}$	236	375	154	4	769
Total	13 374	18 877	2 047	125	34 423

raaskia$_{SENS}$ display the lowest frequency. The verbs are distributed unevenly when it comes to corpus types. *Jaksaa*$_{NRG}$ and *sietää*$_{TOLE}$ are particularly well represented in the news text corpora, whereas *suvaita*$_{TOLE}$ is mostly used in literary texts. The uses of *tarjeta*$_{COLD}$ mainly come from the dialect data. Explaining this variation is beyond the scope of this paper, but we can assume that it results from several intersecting factors, e.g. the situations typically described in each type of oral and written texts, language register, the status of the language users.

This overall dataset is dominated by written language use, which is reflected in the total number of occurrences per corpus type. For this reason, and for the needs of the manual annotation, we have reduced the amount of written data for some of the verbs. Table 5 presents the data that we used for the analysis for each lexeme.

The aim of this operation was, first, to respect a balance between written and spoken data. In the reduced dataset, 2008 occurrences were extracted from written data, 2172 occurrences from spoken data. Second, this limitation was necessary in view of the in-depth grammatical analysis, which was partly conducted manually. The omitted occurrences were selected using a random search in the written dataset. We expect that the results obtained from this reduced dataset are representative of tendencies present in the larger corpus.

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Table 5. The number of VoA occurrences selected for the analysis

	LITER	PRESS	DIAL	CONV	Total
sietää$_{TOLE}$	254	73	62	1	390
suvaita$_{TOLE}$	256	71	67	1	395
tarjeta$_{COLD}$	75	86	309	5	475
jaksaa$_{NRG}$	225	99	1 068	112	1 504
tohtia$_{DARE}$	249	75	257	0	581
malttaa$_{CTRL}$	289	40	130	2	461
raaskia$_{SENS}$	167	49	154	4	374
Total	1 515	493	2 047	125	4 180

The two authors performed manual annotation with double verification in the selected dataset. All occurrences were entered into an Excel spreadsheet. For each collected occurrence, the authors recorded the following variables.

- Syntactic construction: transitive/intransitive, the type of complement in transitive constructions.
- Negation, identified through the negative auxiliary, a connegative form of the main verb, negative polarity items (e.g. pronouns, particles), and syntactic cues (e.g. partitive case in certain complements).
- Modality: mood, modal verbs, modal particles and adverbs, interrogative, directive, and exclamative constructions.
- Person marking, including the zero person and the passive.
- The type of conceptual force: physical, mental, intersubjective, identified through the lexical semantics of the A-infinitive complement, the degree of animacy of the NP complement, and the meaning of other grammatical and lexical items in the immediate context.

2. Results

2.1. The grammar of VoAs

In this section, we analyse the grammatical properties of the selected verbs VoAs: the variation in complementation patterns, the most frequent lexical verbs in A-infinitive constructions, the distribution of negative and affirmative utterances, as well as person marking.

As shown in examples (1a–g) in Table 1, all studied VoAs can take an A-infinitive complement. However, this is not the only syntactic pattern found. The analysis showed that for some of the verbs the auxiliary use is not the most frequent one. Table 6 presents the distribution of the types of constructions where the selected VoAs are introduced in the dataset, in terms of transitivity and the nature of the object complement. The category *INTRANS* covers mainly intransitive uses. However, some of the constructions included in this group could potentially be elliptical; the difference is sometimes difficult to determine. Obvious elliptical

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Table 6. Complementation patterns of the studied VoAs (*n*/%) ($p < .001$)

	sietää$_{TOLE}$	*suvaita*$_{TOLE}$	*tarjeta*$_{COLD}$	*jaksaa*$_{NRG}$	*tohtia*$_{DARE}$	*malttaa*$_{CRTL}$	*raaskia*$_{SENS}$	Total
A-INF	73 / 18.7%	136 / 34.4%	93 / 19.6%	**1 030 / 68.6%**	**541 / 93.2%**	**319 / 69.2%**	**328 / 87.7%**	2 519
NP	**289 / 74.2%**	**186 / 47.1%**	0 / 0.0%	77 / 5.1%	2 / 0.3%	58 / 12.6%	0 / 0.0%	612
INTRANS	16 / 4.1%	38 / 9.6%	**373 / 78.5%**	361 / 24.0%	37 / 6.4%	82 / 17.8%	45 / 12.0%	942
Others	6 / 1.5%	34 / 8.6%	3 / 0.6%	8 / 0.5%	1 / 0.1%	0 / 0.0%	0 / 0.0%	63
N/A	6 / 1.5%	1 / 0.3%	6 / 1.3%	28 / 1.8%	0 / 0.0%	2 / 0.4%	1 / 0.3%	44
Total	390 / 100%	395 / 100%	475 / 100%	1 504 / 100%	581 / 100%	461 / 100%	374 / 100%	4 180

constructions are included in the *N/A* category, with different types of unclear cases. The category *Others* covers constructions with a relatively low frequency: non-finite verb complements other than A-infinitive (the so-called MA-infinitive and VA-participle), as well as finite propositional complements. The dominant patterns for each verb are indicated in bold type.

The three tolerance verbs are distinct from the rest in that the A-infinitive complement construction is not the dominant pattern for them. *Sietää*$_{TOLE}$ and *suvaita*$_{TOLE}$ are both mostly used with an NP complement encoding the object of tolerance (examples 6, 7).

(6) *Hän tiesi hyvin, että*
'She knew very well that'

Edvard	*joskus*	***ei***	***voi-nut***[5]	*hän-tä*	***sietä-ä.***
PRP	sometimes	NEG.3SG	can-PTCP.PST	3SG-PART	SIETÄÄ-INF

'She knew very well that Edvard sometimes **could not stand** her.'
(LITER, Järnefelt, 1905)

(7) *[mies on] semmonen yksineläjä*
'[The man is] such a solitary person'

*ett-**ei***	*se*	*tahos*	***suva-tak***	*ketään.*
COMP-NEG.3SG	3SG	tend.CNG	SUVAITA-INF	anyone.PART

'[The man is] such a solitary person that he **doesn't tolerate** anyone.'
(DIAL, Himanka)

Tarjeta$_{COLD}$ is, by far, the most frequently used verb in intransitive constructions (see example 1i above; see also Kiuru 1977:19).

For *malttaa*$_{CTRL}$, NP complements are not as marginal as for most other verbs because of the fixed expression *malttaa mielensä* 'MALTTAA mind-3.POSS' > 'to control one's mind', i.e. 'to be patient'. Other NPs are very rare. The intransitive uses of *malttaa*$_{CTRL}$ are mostly directive clauses where the verb appears in the imperative form and conveys the meaning 'wait, hold on', as in example (8). Imperative forms are marginal or close to inexistent for all others, with the exception of *suvaita*$_{TOLE}$ (see below).

(8) *Sainpas – viimeinkin. – Oletpa sinä koko mestari juoksemaan.*
'I got you – at last. – You are quite a runner.'

Mutta	***malta=han***	*nyt*	*on*	*minu-n*	*vuoro-ni.*
but	MALTTAA.IMP.2SG=CLT	now	be.3SG	1SG-GEN	turn-1SG.POSS

'I got you – at last. – You are quite a runner. But **wait**, now it's my turn.'
(LITER, Canth, 1893)

The emotion verbs *tohtia*$_{DARE}$ and *raaskia*$_{SENS}$ are the most auxiliary-like. They are mainly used with an A-infinitive complement (see examples 1e and 1g in Table 1).

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Table 7 presents the ten most frequent lexical verbs occurring in the A-infinitive complement. This gives insight into the types of events that are modified by the meaning of each VoA.

Although the three tolerance VoAs take an A-infinitive complement less often than the others, they display some interesting tendencies in the selection of these lexical verbs. Perception verbs are well represented on the *sietää*$_{TOLE}$ list, whereas *suvaita*$_{TOLE}$ co-occurs with verbs highlighting an interpersonal contact, such as communication verbs and the verbs of giving and taking. *Tarjeta*$_{COLD}$ mostly occurs with verbs expressing physical movements and states. Among the complements of *jaksaa*$_{NRG}$, we can observe basic physical activity verbs, such as *vetää* 'to drag' and *kantaa* 'to carry'. Interestingly, the mental verb *muistaa* 'to remember' ranks high on the *jaksaa*$_{NRG}$ list. Like *suvaita*$_{TOLE}$, *tohtia*$_{DARE}$ also favours the communication verb *sanoa* 'to say' and the verb *ottaa* 'to take'. In addition to these verbs entailing interpersonal contact, basic verbs of physical movement rank high on the *tohtia*$_{DARE}$ list. In quite the opposite vein, *malttaa*$_{CTRL}$ exhibits inclination towards verbs expressing non-movement in its complement: *odottaa* 'to wait', *pysyä* 'to stay', *jäädä* 'to stay' (on the verbs of staying in Finnish, see Dubois 2023). *Malttaa*$_{CTRL}$ and even more so *raaskia*$_{SENS}$ occur with verbs the meaning of which stems from the conceptual schema of SPLITTING (see Johnson 1987:126): *luopua* 'to give up', *heittää* 'to throw (often in the sense throw away)', and *jättää* 'to abandon'. These verbs describe a situation where the subject referent separates from someone or something. A separation is also present in the meaning of verbs expressing consumption, *syödä* 'to eat' and *ostaa* 'to buy (i.e. to consume money)'.

The results confirm that all studied VoAs favour negative contexts (see Kiuru 1977, Flint 1980).[6] Hakulinen et al. (1980) observed in their Finnish text corpus that approximately 10% of the utterances were in the negative form (see also Kiuru 1977:243).[7] All the selected VoAs are above this rate. This can be accounted for by looking at the underlying force-dynamic configurations. VoAs encode the ability to (not) to do something despite a competing force (see Figure 1). Their meaning is thus founded on a concessive relation where an implied causal inference is invalidated.[8] For example, the meaning of *tarjeta*$_{COLD}$ includes an implication that cold entails inability with regard to something situationally determined. In this sense, VoAs express unexpected states of affairs: an expected causal relation is cancelled (on the relationship between concession and negation, see Verhagen 2000), e.g. the subject referent is able to swim despite the cold. The negative form of a VoA therefore entails a situation where an expression of negated causality ('despite') is associated with an overt negation, as shown in (9) where the speaker describes the effect of air-conditioning:

(9) *Sisällä* *ol-i* *niin* *kylmä,*
inside be-PST.3SG so cold
*ett-**ei*** *ø* *kesäasu-ssa* ***tarjen-nut***.
COMP-NEG.3SG ZERO summer.clothing-INE TARJETA-PTCP.PST

'It was so freezing inside that one **was cold** in summer clothes.'
(PRESS, 2005)

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Table 7. The most frequent lexical verbs in the A-infinitive complement

	sietää$_{TOLE}$		*suvaita*$_{TOLE}$		*tarjeta*$_{COLD}$		*jaksaa*$_{NRG}$	
1	*olla*	'to be'	*tulla*	'to come'	*olla*	'to be'	*tehdä*	'to do'
2	*nähdä*	'to see'	*ottaa*	'to take'	*mennä*	'to go'	*olla*	'to be'
3	*saada*	'to get'	*antaa*	'to give'	*lähteä*	'to leave (intr.)'	*vetää*	'to pull'
4	*tehdä*	'to do'	*olla*	'to be'	*maata*	'to lie'	*kantaa*	'to carry'
5	*syödä*	'to eat'	*käydä*	'to visit'	*käydä*	'to visit'	*muistaa*	'to remember'
6	*kuulla*	'to hear'	*puhua*	'to talk'	*istua*	'to sit'	*syödä*	'to eat'
7	*hävetä*	'to be ashamed'	*istua*	'to sit'	*tulla*	'to come'	*kävellä*	'to walk'
8	*koskea*	'to touch'	*huomata*	'to notice'	*juosta*	'to run'	*pitää*	'to hold'
9	*niittää*	'to reap'	*sanoa*	'to say'	*tehdä*	'to do'	*mennä*	'to go'
10	*ihmetellä*	'to wonder'	*syödä*	'to eat'	*nukkua*	'to sleep'	*kulkea*	'to go'

	tohtia$_{DARE}$		*malttaa*$_{CRTL}$		*raaskia*$_{SENS}$	
1	*mennä*	'to go'	*olla*	'to be'	*antaa*	'to give'
2	*sanoa*	'to say'	*odottaa*	'to wait'	*ostaa*	'to buy'
3	*tulla*	'to come'	*lähteä*	'to leave (intr.)'	*syödä*	'to eat'
4	*olla*	'to be'	*istua*	'to sit'	*ottaa*	'to take'
5	*lähteä*	'to leave (intr.)'	*kuunnella*	'to listen'	*luopua*	'to give up'
6	*tehdä*	'to do'	*pysyä*	'to stay'	*pitää*	'to hold'
7	*katsoa*	'to look'	*syödä*	'to eat'	*panna*	'to put'
8	*käydä*	'to visit'	*jäädä*	'to stay'	*heittää*	'to throw (away)'
9	*ottaa*	'to take'	*luopua*	'to give up'	*lähteä*	'to leave (intr.)'
10	*panna*	'to put'	*jättää*	'to leave (tr.)'	*jättää*	'to leave (tr.)'

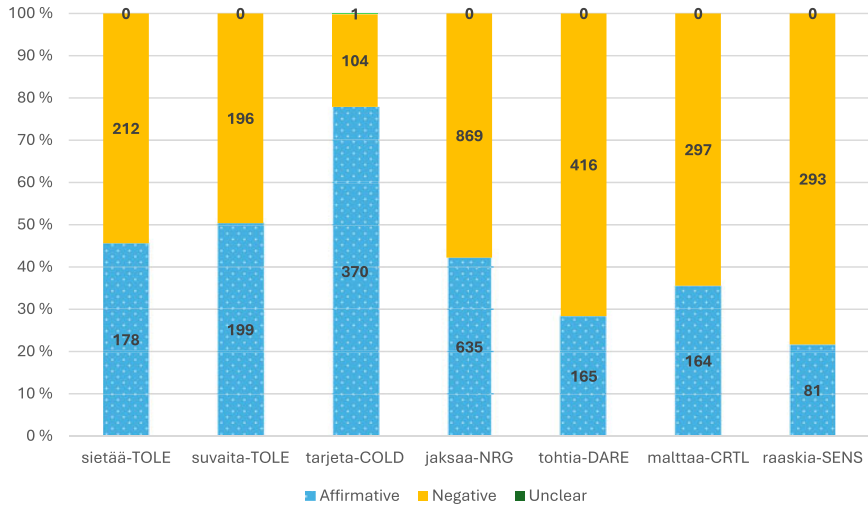


Figure 3. Distribution of affirmative vs. negative utterances ($p < .001$).

When the VoA, here *tarjeta*$_{COLD}$, is under the scope of negation, the implied causal chain is re-established: the cold entails its expected effects.

There are, however, important differences between the studied verbs, as to the degree of negative affinity. Figure 3 shows that the three emotion VoAs rank highest in this respect, whereas the three tolerance verbs display a lesser degree of negative affinity than the others, *tarjeta*$_{COLD}$ exhibiting the weakest tendency towards negation.[9]

Concerning *malttaa*$_{CTRL}$ and *raaskia*$_{SENS}$, the strong negative affinity can at least partly be accounted for in terms of the underlying schema of SPLITTING (see Dubois 2023:317). Conceptually, 'separation', as encoded by constructions including these mental verbs, is not symmetrical but founded on a division between a more central component (the subject referent) and a more peripherical part (the entity given up, thrown away, abandoned or consumed) (see Talmy 2000:432–433). This latter entity is thus removed or erased so that the subject referent can no longer access it.

When cross-referencing the distribution of affirmative and negative utterances with construction types, we observe that a higher degree of negative affinity correlates with auxiliary-likeness ($p < .001$). In 70.8% of all negative utterances collected, the VoA is used with an A-infinitive complement. The results suggest that the lexical components provide the VoAs with different kinds of syntactic potential. The tolerance verbs occur more often than others as main verbs and in affirmative form, whereas the emotion regulation verbs are mostly used for modifying an event expressed by another verb in negative utterances. The tolerance verbs thus carry a more specific lexical meaning with an event structure of its own. They can therefore be used for describing 'how things are'. This is most obvious in *tarjeta*$_{COLD}$, the lexical meaning of which goes as far as determining the cause of the encoded experience ('cold'). The semantics of the emotion regulation verbs, on the other hand, is of a more schematic nature. These verbs convey information on the subject referent's emotional experience concerning what is described by another verb. Our

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Table 8. Distribution of person marking for each studied VoA ($p < .001$)

Person marking	*sietää*$_{TOLE}$	*suvaita*$_{TOLE}$	*tarjeta*$_{COLD}$	*jaksaa*$_{NRG}$	*tohtia*$_{DARE}$	*malttaa*$_{CRTL}$	*raaskia*$_{SENS}$	Total
1PRS	85 / 21.8%	33 / 8.4%	47 / 9.9%	356 / 23.8%	173 / 29.8%	79 / 17.1%	96 / 25.7%	869
2PRS	23 / 5.9%	72 / 18.2%	34 / 7.2%	86 / 5.7%	32 / 5.5%	92 / 20.0%	28 / 7.5%	367
3PRS	**201 / 51.5%**	**230 / 58.2%**	104 / 21.9%	**617 / 41.0%**	**278 / 47.8%**	**252 / 54.7%**	**159 / 42.5%**	1 841
Zero	63 / 16.1%	12 / 3.1%	**267 / 56.2%**	**391 / 26.0%**	79 / 13.6%	25 / 5.4%	51 / 13.6%	888
PASS	8 / 2.1%	46 / 11.6%	20 / 4.2%	49 / 3.2%	18 / 3.1%	13 / 2.8%	35 / 9.4%	189
Others/unclear	10 / 2.6%	2 / 0.5%	3 / 0.6%	5 / 0.3%	1 / 0.2%	0 / 0.0%	5 / 1.3%	26
Total	390 / 100%	395 / 100%	475 / 100%	1 504 / 100%	581 / 100%	461 / 100%	374 / 100%	4 180

results thus confirm the patterns of co-occurrence between negation and mental verbs, reported in English by Biber et al. (2021:177).

Table 8 presents the distribution of person reference in the studied VoAs. The most salient types of person marking for each VoA are indicated in bold type. The category *Others/unclear* includes occurrences of low-frequency constructions such as independent infinitives, as well as unclear cases.

Once again *tarjeta*$_{COLD}$ distinguishes itself from the others in that it is used particularly often with a zero subject. It thus foregrounds the role of the subject referent as experiencer. The verb *jaksaa*$_{NRG}$ also occurs with a zero subject relatively often.

Malttaa$_{CTRL}$ and *suvaita*$_{TOLE}$ are only marginally used with a zero subject. These two occur more often than the others with second- and third-person reference. This difference can be considered with regard to the observation that *malttaa*$_{CTRL}$ and *suvaita*$_{TOLE}$ are more liable than the others to be used in the imperative form (see example 8). For *suvaita*$_{TOLE}$, this is manifest in archaic politeness formulas, as illustrated in (10).

(10) ***Suvait-kaa*** *minu-n* *esittä-ä* *tei-lle* *ystävä-ni.*
SUVAITA-IMP.2PL 1SG-GEN introduce-INF 2PL-ALL friend-1SG.POSS

'**Allow** me to introduce you my friend.'
(LITER, Pakkala, 1902)

Considering the uses in the imperative form, *malttaa*$_{CTRL}$ and *suvaita*$_{TOLE}$ display the highest degree of agency among the studied VoAs. When it comes to *suvaita*$_{TOLE,}$ this is also observable in contemporary uses where it occurs in a complement of a volitional verb (example 11).

(11) *Turkki* *ei* *halun-nut* *alistu-a* *menetyks-i-i-nsä*
PRP NEG.3SG want-PTCP.PST submit-INF loss-PL-ILL-3.POSS
ei=*kä* ***suvai-ta*** *tsaarivaltakunna-n* *paisumis-ta.*
NEG.3SG=CLT SUVAITA-INF tsarist.empire-GEN expansion-PART

'Turkey did **not** want to accept its losses and **tolerate** the expansion of the Tsarist Empire.'
(PRESS, 2001)

The distribution of person reference suggests that the selected VoAs are positioned differently on the scales of agency and experience.

In what follows, we zoom into the functions of each verb or group of verbs, detecting the types of conceptual forces that are mapped onto the underlying force-dynamic pattern.

2.2. The interplay between force dynamics and lexical meaning

As presented above (Section 1.2), the types of interactions identified in our study are of physical, mental, and interpersonal type. The physical force dynamics is defined as any type of interaction between a subject referent and its surrounding physical environment. Mental force dynamics corresponds to processes internal to the subject referent,

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while interpersonal force dynamics is defined as an interaction between the subject referent and another animate referent. The analysis of the distribution of conceptual force types was carried out by observing the lexical semantics of the A-infinitive form (see examples 12, 13), as well as the degree of animacy of the NP complements (examples 14, 15). For constructions without a complement, the relevant lexical and grammatical items in the context were taken into account (example 16).

(12) ***em*** *muista* *ennää* ***jaksam*** ***muista-as*** *si-tä,*
NEG.1SG remember.CNG anymore JAKSAA.CNG remember-INF DEM-PART
vuoslukua on täst kauvan
'year it's been so long'

'I **don't** remember anymore just **cannot remember** that year, it's been so long' (DIAL, Luumäki)

(13) *Vartijoille saat minun puolestani luvata niin paljon kultaa*
'As far as I am concerned, you may promise the guards as much gold'
kuin *he* *vaatte-i-ssa-an* ***jaksa-vat*** ***kanta-a.***
as 3PL cloth-PL-INE-POSS.3 JAKSAA-3PL carry-INF

'As far as I am concerned, you may promise the guards as much gold as they **can carry** in their clothes.'
(LITER, Sienkiewicz, 1921)

(14) *Se on Hannaa kohtaan niin väärin, kuin suinkin olla voi.*
'It is as wrong towards Hanna as it could ever be.'
Sinä *e-t* *ole* *voi-nut* *koskaan* ***hän-tä*** ***sietä-ä.***
2SG NEG-2SG AUX.CNG can-PTCP.PST ever 3SG-PART SIETÄÄ-INF

'It is as wrong towards Hanna as it could ever be. You have never been able to **tolerate her**.'
(LITER, Aho, 1907)

(15) *Vaikka* *hän* ***sietä-ä*** ***eläinpöly-ä,***
although 3SG SIETÄÄ-3SG animal.dander-PART
tietyt hajusteet ärsyttävät.
'certain perfumes cause irritation.'

'Although she **tolerates animal dander**, certain perfumes cause irritation.'
(PRESS, 2014)

(16) *ku mul on, hirvittävän vaikee joskus* ***kirjottaa***
'because it's, really difficult for me **to write** sometimes'
ja *e-n* *niinkun,* *meina-a* *millään* ***jaksa-a,***
and NEG-1SG PTCL be.about.to-CNG by.any.means JAKSAA-INF
tai siis ***sattuu käteen*** *ku, joutuu pitkään pitää kynää kädes*
'I mean like **my hand hurts** when, I have to hold a pen for a long time'

'because it's, really difficult for me **to write** sometimes and I'm really like, **struggling to keep going**, I mean like **my hand hurts** when, I have to hold a pen for a long time'
(CONV)

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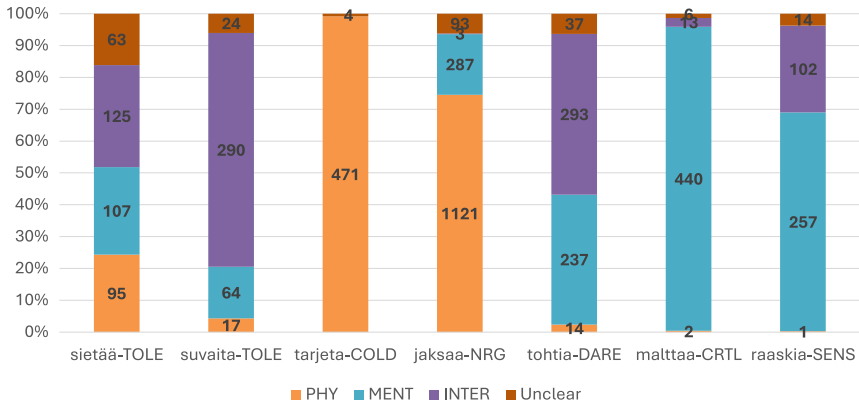


Figure 4. The types of conceptual forces (*n*, %) ($p < .001$).

In (12), the infinitive complement *muistaa* 'to remember' describes a cognitive process. The force dynamics is thus of mental type. In (13), the A-infinitive *kantaa* 'to carry' describes a bodily effort, and the force-dynamic interaction is therefore physical. The extract presented in (14) is an example of interpersonal force dynamics, since the NP complement refers to an animate entity. Conversely, when the NP complement refers to an inanimate entity, as in (15), the interaction of the competing forces is of physical type: it concerns the bodily ability of the subject referent. In (16), the physical force-dynamic reading stems from a wider context. The verbs *kirjottaa* 'to write' and *sattuu* 'to hurt' display bodily actions and experiences, and $jaksaa_{NRG}$ is therefore understood as describing a physical ability as well.

When looking at the data in general, physical force interaction is the most frequent type of force-dynamic pattern (41.2% of all utterances), followed by mental (33.3%) and interpersonal force type (19.7%). The studied VoAs display different tendencies in this respect, as shown in Figure 4.

$Tarjeta_{COLD}$ and $jaksaa_{NRG}$ exhibit a clear preference for physical force interaction, whereas $suvaita_{TOLE}$ and $tohtia_{DARE}$ most often occur in contexts involving interpersonal interaction. The mental type is almost as frequent for $tohtia_{DARE}$, however. $Malttaa_{CTRL}$ shows a very strong inclination towards mental force interaction. $Raaskia_{SENS}$ also favours interaction between mental forces, although it can be used to describe interpersonal force dynamics as well. $Sietää_{TOLE}$ displays no clear preference for any of the three types. Its lexical semantics appears to be particularly polyvalent.

When cross-referencing the distribution of person reference with the types of conceptual forces, a strong tendency connecting expressions of physical force interaction and the zero-person reference is observed. The data include a total of 888 utterances where a VoA occurs with a zero subject. Most of these forms describe physical abilities (584 utterances, 65.7%, $p < .001$). Our analysis thus offers quantitative support for Laitinen's (1995:340) observation concerning physical constraints as one of the typical contexts of use for zero person. In our data, these

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co-occurrences of zero-person reference and expressions of physical force dynamics mostly include *tarjeta*$_{COLD}$. When mapping the data on conceptual force types onto the distribution between auxiliary and non-auxiliary uses, we can detect a strong tendency for non-auxiliary uses in the descriptions of physical force interactions: 49.8% of all non-auxiliary uses are of the type PHY, vs. 23.2% of the MENT type and 19.1% of the INTER type (7.9% N/A). Expressions of mental force interaction, on the other hand, give the most prominent position to auxiliary uses: 39.9% of all auxiliary uses are of the type MENT, vs. 35.7% of the PHY and 20.2% of the INTER type (4.1% N/A). Overall, we can thus observe a junction between physical force interaction, non-auxiliary uses, lesser degree of negative affinity, and zero-person reference, on the one hand, and between mental force interaction, auxiliary uses, and strong negative affinity, on the other. *Tarjeta*$_{COLD}$ can be located at the centre of the first junction, whereas *malttaa*$_{CTRL}$ and *raaskia*$_{SENS}$ exhibit most clearly the latter properties.

In what follows, we present closer observations on the typical uses of each VoA, providing insight into the grammatical variation exposed in Section 2.1. The studied VoAs are here dealt with in two sections. *Sietää*$_{TOLE}$, *suvaita*$_{TOLE}$, and *tarjeta*$_{COLD}$ form a coherent subgroup, since they all encode tolerance. For practical reasons, *jaksaa*$_{NRG}$, describing ability in terms of energy, is included in the same section with them (2.2.1). *Tohtia*$_{DARE}$, *malttaa*$_{CTRL}$ and *raaskia*$_{SENS}$ share the semantics of emotion regulation (Section 2.2.2).

2.2.1 *Verbs of tolerance and* jaksaa$_{NRG}$

In tolerance verbs, the Agonist overcomes a potential negative effect of the Antagonist's force that could prevent the Agonist from action (see Figure 1). The verb *sietää*$_{TOLE}$ forms the cornerstone of the tolerance group, in the sense that it is productively used for expressing force interactions of three different types, as shown in examples (17)–(19):

(17) *ø* ***ei*** ***sietä-nyk*** *käsi-n* *koski-a,*
ZERO NEG.3SG SIETÄÄ-PTCP.PST hand-INS touch-INF
se [jalka] *ol-i* *niin* *kipiä*
DEM be-PRT.3SG so painful

'one **couldn't bear** to touch with a hand, it [the foot] was so painful'
(DIAL, Paavola)

(18) *He* *pyrki-vät* ***sietä-mä-än*** *epäonnistumis-i-a* *ja* *pettymyks-i-ä (. . .).*
3PL try-3PL SIETÄÄ-INF-ILL failure-PL-PART and disappointment-PL-PART

'They try to **tolerate** failures and disappointments (. . .).'
(PRESS, 2015)

(19) *Hän tiesi hyvin, että*
'She knew very well that'
Edvard *joskus* ***ei*** *voi-nut* *hän-tä* ***sietä-ä.***
PRP sometimes NEG.3SG can-PTCP.PST 3SG-PART SIETÄÄ-INF

'She knew very well that Edvard sometimes **couldn't stand** her.'
(LITER, Järnefelt, 1905)

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Example (17) displays interaction between physical forces. In (18), the complements denote abstract entities, and the resisting force to overcome is of mental type, since both Agonist and Antagonist forces are internal to the experiencer. In (19), already presented above in example (6), the force dynamics of tolerance is of interpersonal type.

Two properties distinguish *suvaita*$_{TOLE}$ from *sietää*$_{TOLE}$. First, *suvaita*$_{TOLE}$ is a relatively agentive verb, as shown above, whereas *sietää*$_{TOLE}$ highlights the experience of tolerance. Second, *suvaita*$_{TOLE}$ tends very strongly to be the verb devoted to interpersonal tolerance (73.5%, see Figure 4), as illustrated in (20), already presented above in (7).

(20) *[mies on] semmonen yksineläjä*
'[The man is] such a solitary person'
*ett-**ei*** *se* *tahos* ***suva-tak*** *ketään.*
COMP-NEG.3SG 3SG tend.CNG SUVAITA-INF anyone.PART

'[The man is] such a solitary person that he **doesn't tolerate** anyone.'
(DIAL, Himanka)

Suvaita$_{TOLE}$ is only marginally observed to denote physical tolerance. In our data, these archaic uses come from one single southeastern parish of the dialect corpus (see example 21) and from two Gutenberg project's literary sources (from 1908 and 1916).

(21) ***e**=hä*[10] *sorme-t* ***suvaiv*** *veäntä-mis-tä*
NEG.3=CLT finger-PL SUVAITA.CNG twist-NMLZ-PART

'because fingers **don't bear** to be twisted'
(DIAL, Savitaipale)

In our dataset, the verb *tarjeta*$_{COLD}$ always conceptualises concurrent physical forces, entailing bodily tolerance of cold temperature, as in (22) and (23). In Section 2.1 it was observed that, as opposed to all other studied VoAs, *tarjeta*$_{COLD}$ mainly occurs in intransitive constructions, affirmative utterances, and combined with a zero subject. This typical grammatical environment is illustrated in example (22). Example (23) shows an alternative use, with a specific subject and an A-infinitive complement. The action 'to swim' is described as made possible by the ability of the subject referent to endure cold.

(22) *ø* *sai* *vaate-t* *tällä-t* *yllen* *niim* *paljo*
ZERO get.PRT.3SG cloth-PART put-INF on as much
et *ø* ***tarken-i.***
COMP ZERO TARJETA-PRT.3SG

'one had to put on so much clothes to **withstand the cold**.'
(DIAL, Pöytyä)

(23) *Peloton* *Gösta* ***tarkene-e*** *ui-da* *ulko-alta-i-ssa=kin.*
fearless PRP TARJETA-3SG swim-INF outdoor-pool-PL-INE=CLT

'Fearless Gösta **can** even swim in outdoor pools [although it is cold there]'
(PRESS, 2016)

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The grammatical peculiarity of *tarjeta*$_{COLD}$ can be accounted for in terms of its complex lexical semantics. First, *tarjeta*$_{COLD}$ does not accept any NP complement in its argument structure because the stimulus of the experience ('cold') is already included in its lexical meaning. For this reason, *tarjeta*$_{COLD}$ can by itself describe a state without necessarily modifying an event denoted by an infinitive complement (see example 23). Since the lexical component of *tarjeta*$_{COLD}$ is inherently bound to a physical experience, the semantics of the possible infinitival complement cannot affect the type of force configuration.

As stated above, the amount of zero subject reference is correlated with the potential of the VoA to describe interaction between physical forces. For *tarjeta*$_{COLD}$, which is used only for this type of tolerance, zero subject is the most frequent person reference type.

In the semantic structure of *jaksaa*$_{NRG}$, the subject referent confronts an external challenge but prevails over it, thanks to their energy and efforts. For *jaksaa*$_{NRG}$, too, the force-dynamic pattern is of the type illustrated in Figure 1. The Agonist force tends towards action, the Antagonist resists, but the Agonist overcomes, and the resultant is action. *Jaksaa*$_{NRG}$ is mostly used for describing competing physical forces, as in (24), but a cognitive process can also be treated as demanding energy, as shown in (25), already presented above in example (12). In dialect data and older literature, *jaksaa*$_{NRG}$ is used for encoding the subject referent's capacity to pay, as in (26).

(24) *kumma* *että* *ne [kulkukauppiaat]*
amazing COMP 3PL
jakso *semmos-i-a* *t[a]akko-j-a* *kanta-a.*
JAKSAA.PRT.3 such-PL-PART load-PL-PART carry-INF

'it's amazing that they [hawkers] **could** carry such heavy loads.'
(DIAL, Kalvola)

(25) ***em*** *muista* *ennää* ***jaksam*** ***muista-as*** *si-tä,*
NEG.1SG remember.CNG anymore JAKSAA.CNG remember-INF DEM-PART
vuoslukua on täst kauvan
'year it's been so long'

'I don't remember anymore just **cannot remember** that, year it's been so long'
(DIAL, Luumäki)

(26) *ja sitte ol matto peittee(nä),*
'and then they covered themselves with a carpet,'
jotka ***ei*** ***jaksa-nna*** *täkki-ä* *saa-(ha)*
REL.PL NEG.3 JAKSAA-PTCP.PST quilt-PART get-INF

'and then they covered themselves with a carpet, those who **could not afford** a quilt'
(DIAL, Siilinjärvi)

When the object complement of *jaksaa*$_{NRG}$ denotes an entity that cannot be understood as requiring energy, as in (27), *jaksaa*$_{NRG}$ interestingly receives a tolerance reading.

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(27) *mä* ***e-n*** ***jaksa*** *si-tä* *ranna-lla* *löhöö-mis-tä*
1SG NEG-1SG JAKSAA.CNG DET-PART beach-ADE lie-NMLZ-PART

'I **can't stand** just lying on the beach.'
(CONV)

No occurrences of $jaksaa_{NRG}$ with an animate NP object complement were found in the data. Yet, based on the authors' intuition, this construction is used in contemporary colloquial Finnish. An additional search in the Language Bank's *Suomi24* corpus of online discussions confirmed this, as seen in (28).

(28) ***E-n*** *vaan* ***jaksa*** *si-tä* *tyyppi-ä* *enää.*
NEG-1SG PTCL JAKSAA.CNG DEM-PART guy-PART anymore

'I just **can't stand** that guy anymore.'
(Online discussion, Suomi24, 2006)

In these uses of $jaksaa_{NRG}$, being able to employ physical or mental efforts to overcome an opposing force is reanalysed as an ability to bear the negative effect of something unpleasant (cf. the energy-related and tolerance meanings of the English verb *to bear* 'to carry the weight of', 'to manage to tolerate'). It may be that the tolerance use of $jaksaa_{NRG}$ results from a rather recent evolution. This should, however, be tested on more adequate historical data.

2.2.2 VoAs encoding emotion

Three of the selected VoAs describe different kinds of emotional forces. In the force-dynamic structure of $tohtia_{DARE}$, the Antagonist position is occupied by the subject referent's feeling of hesitation or fear. The Agonist overcomes the Antagonist, and the resultant is action, despite the resisting emotional force (see Figure 1). As with the tolerance verb $suvaita_{TOLE}$, $tohtia_{DARE}$ mostly occurs in contexts where the concurring forces appear as interpersonal. As opposed to $suvaita_{TOLE}$, it cannot be construed with an animate NP complement referring to the stimulus of the experience. However, the infinitive complement can describe events entailing social interaction. The feared unpleasant consequences of these events are of an interpersonal nature. As seen in Section 2.1 (Table 7), the communication verb *sanoa* 'to say' figures frequently in the infinitive complement of $tohtia_{DARE}$. In (29), the verb *julkistaa* 'to make public' denotes an event involving the relationship between an individual and the community.

(29) *Häpeä tai halu välttää häpeää tuotti puhumattomuutta,*
'A feeling of shame or the desire to avoid shame resulted in silence,'
jolloin *raskaut-ta* ***ei*** ***tohdi-ttu*** *julkista-a (. . .).*
REL.TEMP pregnancy-PART NEG.3 TOHTIA-PASS.PTCP.PST make.public-INF

'A feeling of shame or the desire to avoid shame resulted in silence, and then people **did not dare** to make the pregnancy public.'
(PRESS, 2010)

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In the oldest part of our dataset, especially in dialect interviews from the Western dialects (more specifically from Ostrobothnia and Northern Finland), *tohtia*$_{DARE}$ can also describe the dynamics between physical (30) and mental (31) forces:

(30) *[tiile-t]* *kestä-ä* *jähty-äk* *kaks* *viikku-a*
brick-PL take-3 cool-INF two week-PART
ennen *ku* *ø* ***tohti-i*** *koski-a*
before CONJ ZERO TOHTIA-3SG touch-INF

'it takes two weeks [for the bricks] to cool off before one **can** touch them'
(DIAL, Pattijoki)

(31) *kun ne toimitti jotta kun*
'because they were saying like'
ei *he* ***tohorim*** *men-nä*
NEG.3 3PL.LOG TOHTIA.CNG go-INF
[e]ttä kun, siäl or rumis ollus siälä riihes ja
'because like there has been a corpse in the barn and'
ja (sitten) pelekäävät pimiää,
'and (then) they are afraid of the dark'
*[et]t-**ei*** *he* ***tohorij*** *jotta* *se* *pian* *tulo-o*
PTCL-NEG.3 3PL.LOG TOHTIA.CNG PTCL 3SG PTCL come-3SG

'because they were saying like they do **not have the courage** to go because like there has been a corpse in the barn and and (then) they are afraid of the dark like they **do not have the courage** like it [i.e. the corpse] may return'
(DIAL, Kauhava)

In (30) the consequence to be avoided involves physical pain (burning one's hands). In (31), the cause of the fear is not directly related to interpersonal relationships, either, although it can be accounted for in socio-cultural terms (i.e. fear of death).

The uses of the last two verbs *malttaa*$_{CTRL}$ and *raaskia*$_{SENS}$ are partly overlapping in our data. They both modify the event denoted by the infinitive complement so that it is construed as being dispreferred by the subject referent, in comparison to an alternative event. This is what deploys the force-dynamic tension within the semantics of these verbs. In *malttaa*$_{CTRL}$ and *raaskia*$_{SENS}$, the schema of SPLITTING interferes in the lexical semantic component, as illustrated by the following examples (32)–(36), describing different types of separation:

(32) ***ei*** *Tyyne* ***malta*** *anta-a* *eres* *vanho-j-a* *vaattee-ta,*
NEG.3SG PRP MALTTAA.CNG give-INF even old-PL-PART cloth.PL-PART
on niin nuuka
'she is so parsimonious'

'Tyyne **cannot** give away even her old clothes she is so parsimonious'
(DIAL, Kurikka)

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(33) ***e-m*** *minä* ***raski*** *nu-i-ta* *ainuv-i-a*
NEG-1SG 1SG RAASKIA.CNG DEM-PL-PART only-PL-PART
villahousu-j-a *pitä-ä*
wool.pants-PL-PART wear-INF

'I **can't** wear those wool pants, they are the only ones I have.'
(DIAL, Salla)

(34) *Kuka* *tietä-ä,* *milloin* *he* *ol-isi-vat*
Q know-3SG when 3PL AUX-COND-3PL
maltta-neet *pois* *tul-la,*
MALTTAA-PTCP.PST.PL away come-INF
ellei ruvennut jo vähäisen vilustamaan
'if it hadn't started to get a bit chilly.'

'Who knows when they **might** have returned, if it hadn't started to get a bit chilly.'
(LITER, Canth, 1886)

(35) ***E-n*** ***raask-isi*** *laitta-a* *Elisa-a* *vielä=kään* *päiväkoti-in,*
NEG-1SG RAASKIA-COND.CNG put-INF PRP-PART still=CLT day.care-ILL
nyt vuoden vanhan tytön äiti pohtii.
'says the mother of the now one-year-old girl.'

'I still **wouldn't have the heart** to put Elisa in daycare, says the mother of the now one-year-old girl.'
(PRESS, 2008)

(36) *Hänen isänsä ja naapurin Maija kyllä tiesivät kaikki muut asiat, paitsi Martin pois-ajoa,*
'Her father and Maija from the neighbouring house knew well all other issues, besides Martti being chased from the house,'
vaan ***ei-vät*** *he* ***raski-neet*** *Aina-lle* *totuut-ta* *tunnusta-a,*
but NEG-3PL 3PL RAASKIA-PTCP.PST.PL PRP-ALL truth-PART tell-INF
sillä hänellä oli surua ja sydämen kipua ilman niittäkin tiedoitta.
'because she had enough grief and heartache without all of it.'

'Her father and Maija from the neighbouring house knew well all other issues, besides Martti being chased from the house, but they **didn't have the heart** to tell Aina the truth because she had enough grief and heartache without all of it.'
(LITER, Päivärinta, 1882)

In (32) and (33), the hindering mental force arises from a sense of material value: the subject referent does not want to be separated from something, through giving away or consuming. The two verbs can both also describe force dynamics in terms of time and subject referent's attention, although this appears to be more common to *malttaa*$_{CTRL}$. In (34), the subject referents do not want to return (and in doing so, separate themselves from an ongoing preferred action), most likely because they are having a good time, but they are described as returning anyway, because of temporal constraints (see *milloin* 'when', *jo* 'already'). *Raaskia*$_{SENS}$ typically highlights the emotional roots of ability, namely affection (mental) or empathy (interpersonal force interaction). In (35), the subject referent ('mother') is attached to the other

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participant (*Elisa*) and is therefore emotionally affected by the projected separation. In (36), the subject referents are described as being aware of the change of state (i.e. separation from the previous, less painful mental state) that their action ('telling the truth') would cause in the other participant (*Aina*).

Both *malttaa*$_{CTRL}$ and *raaskia*$_{SENS}$ can take verbs denoting movement or a change of state in their infinitive complement. The underlying force dynamics is then of the type schematised in Figure 1. The Agonist force tending towards action overcomes the resisting Antagonist, and the resultant is action. However, *malttaa*$_{CTRL}$ more often occurs with verbs describing non-movement, such as *uottoa* ~ *odottaa* 'to wait' in (37) (see Table 7).

(37) *se ku män se Toivo sitä kätilyvä hakemoa,*
'and Toivo went to fetch the midwife'

Toivo	***ei***	***maltta-nt***	*uotto-a*
PRP	NEG.3SG	MALTTAA-PTCP.PST	wait-INF

'and Toivo went to fetch the midwife Toivo **couldn't** wait'
(DIAL, Lemi)

In these cases, the force-dynamic model is as presented in Figure 2. The Agonist tends towards rest, whereas the Antagonist tending towards action resists. The Agonist overcomes, and the resultant is rest (e.g. 'to wait'). In (37), the force-dynamic pattern is inversed because of the negation (see Figure 2(b)). This pattern is dominant for *malttaa*$_{CTRL}$ in our data, whereas it is very rare for *raaskia*$_{SENS}$. In other words, the subject referent of *malttaa*$_{CTRL}$ tends to prefer movement or other type of change in the ongoing situation. *Malttaa*$_{CTRL}$ describes the control of this preference. The subject referent of *raaskia*$_{SENS}$, inversely, displays preference for continuity and non-movement. *Raaskia*$_{SENS}$ profiles that the subject referent overcomes their own emotional resistance and takes on the action anyway.

2.3 The ecology of ability

Based on the force-dynamic analysis, Figure 5 presents a tentative ecology of Finnish ability verbs for the selected lexemes. Its complexity aims to illustrate the overlaps and the differences in the lexical components that each of the verbs carry alongside the modal meaning. It also makes apparent the overall multilayered nature of the modal assemblage of *ability*.

The first layer (A) includes the distinction between more controlled, agentive ability and the experience of ability. The next (B) draws a difference between the types of conceptual forces, while the last (C) highlights the more specific semantic groups that were identified as gathering more than one of the investigated VoAs. The codes in subscript further indicate that each verb has developed its own niche where different parameters stemming from the embodied interaction between the subject referent and their environment come together in various ways. The figure thus shows that although some of the verbs can be used in similar functions (e.g. *sietää*$_{TOLE}$ and *suvaita*$_{TOLE}$ on the one hand, *malttaa*$_{CTRL}$ and *raaskia*$_{SENS}$ on the other), each of them comes from a different horizon. None can therefore be considered as a synonym of another.

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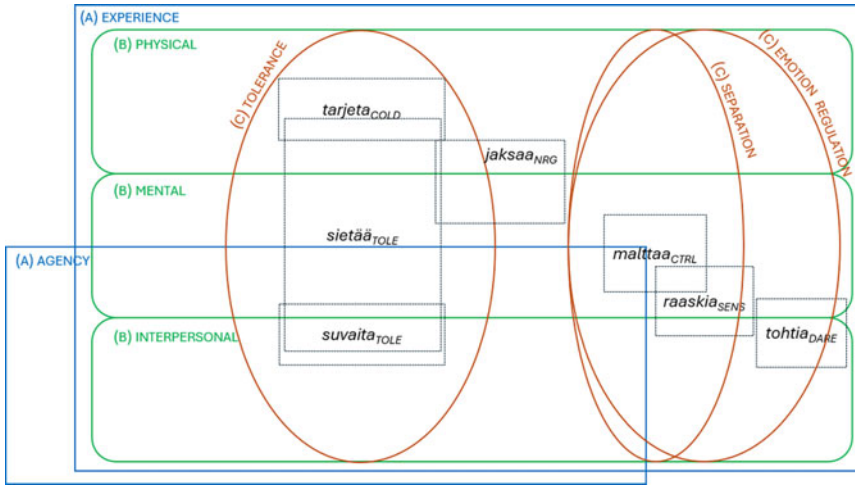


Figure 5. The ecology of the studied VoAs.

Concerning the grammar of VoAs, the analysed features are distributed differently on this landscape. All studied VoAs display negative affinity, but the strongest tendency is found on the right side of the realm. Affirmation is more present on the left side, with a focus on the *tarjeta*$_{COLD}$ niche. The uses of zero subject concentrate on the physical experience realm, also close to the *tarjeta*$_{COLD}$ niche. The intransitive construction shares this same location, whereas the transitive [V + NP] construction is arranged across the three force types onto the *sietää*$_{TOLE}$ and *suvaita*$_{TOLE}$ niches. The uses of the transitive [V + A-infinitive] construction cluster on the lower right corner of the *ability* realm, with the highest concentration on the *tohtia*$_{DARE}$ and *raaskia*$_{SENS}$ niches.

3. Discussion

Our first aim in this study was to analyse the grammatical patterns in which a set of Finnish verbs of ability occur: the types of complements, the distribution between negative and affirmative utterances, and tendencies in person marking. We then approached these VoAs within Talmy's force-dynamic framework, which makes manifest the embodied physical roots of such abstract meaning structures as dynamic modality (see Johnson 2018; also Hilpert 2025). The objective was to find out whether the analysed VoAs display preferences with regard to a certain force-dynamic schema and force type and to examine if the results of the grammatical analysis could map onto these preferences. These lexemes have previously been identified as forming a linear system (Flint 1980). We observed in depth the meaning structure and uses of each verb, drawing parallels despite their mutual distance on the linear axis. We proposed to apply the concept of *ecology* in the description of the interplay between these verbs and the modal realm of *ability*. We tested three hypotheses.

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Hypothesis 1, *The selected VoAs do not occur in similar patterns, when it comes to complementation, negation, and person marking*, was confirmed. The VoAs displayed differing tendencies as to their typical grammatical environment. Although the studied VoAs share the capacity of entering a transitive construction with an A-infinitive complement, some of them, namely the tolerance verbs, favoured NP complements (*sietää*$_{TOLE}$ and *suvaita*$_{TOLE}$) or intransitive constructions (*tarjeta*$_{COLD}$). The tolerance verbs stood out from the rest also when it came to the distribution between negative and affirmative utterances. While the other VoAs displayed strong negative affinity, *sietää*$_{TOLE}$ and *suvaita*$_{TOLE}$ showed equal inclination towards negative and affirmative contexts. *Tarjeta*$_{COLD}$ was significantly more frequent in the affirmative form (although when compared to the overall frequency of negative utterances in Finnish, it is marked by a certain negative affinity as well). *Tarjeta*$_{COLD}$ was different from the rest also in person reference. It mostly occurred with a zero subject. Due to unspecific reference, the physical experience of cold temperature (or the lack of it) is construed as identifiable to anyone in the described situation (see Laitinen 2006). The zero subject is well represented also in other VoAs profiling the role of the subject referent as an experiencer, especially when it comes to physical experiences. *Suvaita*$_{TOLE}$ and *malttaa*$_{CTRL}$, on the other hand, turned out to be the most agentive verbs among the studied VoAs, as they occur in imperative form.

Hypothesis 2, *The selected VoAs display different preferences with regard to the force-dynamic schemas and force types*, was partly confirmed. The force dynamics of *ability* underlies the semantic structure of all studied VoAs. The typical aspectual pattern (shown in Figure 1, in Section 1.2) involved an Agonist force tending towards action and the Antagonist resisting. In this schema, the Agonist overcomes, and the resultant is action. The subject referent is able to do something despite the resisting force. The inverse configuration (shown in Figure 2) was however also possible, and for *malttaa*$_{CTRL}$ it was dominant. The Agonist tending towards rest confronts an Antagonist force tending towards action. The Agonist overcomes, and the resultant is rest. The meaning of ability is not only about the possibility of doing something but also the capacity of *not* acting although this presents the dispreferred option.

The resisting conceptual force manifests itself in different forms among the studied VoAs, according to the lexical component inherent to their semantic structure. This generates diverging and converging tendencies as to the type of force interaction involved: physical, mental, or interpersonal. In tolerance verbs, the subject referent overcomes the potential negative effects (e.g. pain, feeling of disappointment or disapproval) of the physical circumstances (e.g. temperature), of the gap between their own preference and the way the situation turns out to evolve, as well as of the actions and properties of other persons. *Tarjeta*$_{COLD}$ only encodes physical force interactions, while *suvaita*$_{TOLE}$ is dominantly used for expressing interpersonal tolerance. *Sietää*$_{TOLE}$ covers all three domains. Dimension-internal patterns of specialisation can thus be observed in Flint's (1980) model. One specific outcome of the study was that it shed more light on the rich array of meanings that can be ranged under the concept of 'tolerance' (see also the discussion on *jaksaa*$_{NRG}$ below).

Tohtia$_{DARE}$, *malttaa*$_{CTRL}$ and *raaskia*$_{SENS}$ describe force interactions involving emotions and social norms. In the semantic structure of *tohtia*$_{DARE}$, the subject referent is faced with an opposing force that causes fear. In our data, this was predominantly of a social nature, i.e. fear of losing face, but in dialect interviews,

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physical and mental causes of fear were observed as well. *Malttaa*$_{CTRL}$ typically describes the subject referent as having to control and resist their own preference for a given action, because of time, social norms, or other external constraints that orient their attention to another, dispreferred action or state. The lexical meaning component of *raaskia*$_{SENS}$ is founded on a comparable force-dynamic tension, except that it is more strongly inclined towards emotional constraints: affective attachment to other beings or objects. In an interpersonal setting, *raaskia*$_{SENS}$ tends to describe the feeling of empathy. The meaning structures of both *malttaa*$_{CTRL}$ and *raaskia*$_{SENS}$ are founded on an underlying schema of SPLITTING, giving rise to a meaning of separation. Most uses of *malttaa*$_{CTRL}$ and *raaskia*$_{SENS}$ therefore overlap, which suggests that the transition between dimensions IX and X in Flint's (1980) model is gradual.

The verb *jaksaa*$_{NRG}$ was by far the most frequent in all types of data. Its prevailing use is to describe physical force interactions, as the subject referent's energy, efforts, and endurance are confronted with the physical forces of the environment. However, it turned out in the *jaksaa*$_{NRG}$ data that mental processes and interpersonal relationships can also be construed as demanding efforts. In these cases, *jaksaa*$_{NRG}$ comes close to tolerance verbs. Because of the involvement of the speaker's own efforts (of a mental or interpersonal nature) in these situations, the tolerance is understood, not so much as an expression of attitude towards something or someone (as with the more prototypical tolerance verbs *sietää*$_{TOLE}$ and *suvaita*$_{TOLE}$), but rather as profiling the potential of the tolerated entity to overcome the subject referent's resilience. The case of *jaksaa*$_{NRG}$ shows that a VoA can extend its semantics and uses in the direction of a non-neighbouring dimension on Flint's (1980) continuum.

We could also observe aligning patterns of specialisation in VoAs that are distant on the continuum of dimensions. For example, *suvaita*$_{TOLE}$ and *tohtia*$_{DARE}$ displayed an inclination for interpersonal interaction. For many verbs, the dialect corpus and the older literary texts contained possible signs of a vague modal meaning (see Geeraerts 1993), also attested in the ancient regional variation and in equivalent forms in other Finno-Ugric languages. Tracking the grammaticalisation paths of these verbs was not the aim of this study, and the dataset was not designed for this type of investigation. However, for the benefit of future research, we have gathered in Table 9 the observations we made concerning the uses that could potentially display traces of regional variation and the diachronic pathways of the studied VoAs. The last column indicates the example where the observation was made.

Table 9. Uses to be tested in view of regional variation and grammaticalisation paths

suvaita$_{TOLE}$	physical force dynamics	dialectal, archaic?	(21)
jaksaa$_{NRG}$	capacity to pay	dialectal, archaic?	(26)
jaksaa$_{NRG}$	interpersonal force dynamics	recent extension?	(28)
tohtia$_{DARE}$	physical force dynamics	dialectal?	(30)
tohtia$_{DARE}$	mental force dynamics	dialectal?	(31)

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It is possible that in contemporary Finnish, language standardisation, shaping the lexical and grammatical system for a more formal usage, has pushed these verbs towards clearer mutual distinction and more fixed and impermeably limited meaning potential. There are signs of these processes in other semantically vague modal verb forms in Swedish, Finnish, and Danish (see Viberg 2012:1427, Peltola 2016:710, Gregersen 2024).

Hypothesis 3, *The metaphor of ecology allows us to highlight the coalescence among VoAs in multiple ways without the limitations of a chain-like configuration*, was confirmed. While a linear representation offers the benefit of exposing efficiently the different lexical twists of 'possibility' and 'sufficiency', the ecology model brings to the surface the interfaces between linearly non-neighbouring categories, parallel patterns between verbs with distinct specialisations, as well as dynamics internal to verb groups and on the interfaces of categories.

It should be noted that the aim of the ecology model is not to provide a tool for detecting the links and mutual order between constructions, as with the network models (e.g. Diessel 2019, Hilpert 2025:30). It represents the cohabitation between linguistic units of a given language form within a semantic landscape and makes manifest the multiple kinds of conceptualised interactions between living entities and their environment that shape the particular niche of each linguistic item and that hold together this constellation.

Approaching VoAs as forming a whole where the conceptual force dynamics of ability is combined with a lexical component that specifies the type of force interaction suggests that these verbs are hardly *semi*-lexical or *semi*-modal from a semantic perspective. They are full expressions of ability with an additional semantic layer allowing them to generate fine-grained distinctions describing the rich array of interactions between living beings and their surroundings. We therefore propose that the semantic notion of ability is best described as a complex assemblage of related meanings underlain by the more general ground of dynamic modality (elsewhere giving rise also to necessive meanings such as physical, mental, or social needs), rather than a category at the periphery of which items such as VoAs are to be located. Ability verbs carrying a rich lexical meaning layer in their semantic structure allow us to better comprehend the embodied roots of the modal meaning of ability than the more generic modal verbs and constructions ('can', 'be able to'). Cross-linguistically, it is interesting that in languages such as Finnish, this complex meaning is lexicalised with such subtle variations.

4. Conclusion

In this paper, we have aimed to provide a grammatical description of a selection of verbs of ability in Finnish, highlighting the embodied, force-dynamic origins of their meaning structure, as well as their cohabitation within the modal realm of ability. We first compared complementation patterns, person marking, and negative affinity in these VoAs. We then observed the lexical semantic component and the uses of each verb, in terms of the specific types of conceptual forces that are mapped onto the underlying force-dynamic pattern. We draw connections between the grammatical differences we had detected and the overall force-dynamic analysis of

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the modal meaning of ability. We observed correlations between experience-based ability, non-specific person marking, and physical force dynamics, as well as negative affinity, auxiliary-likeness, and mental force dynamics with an underlying conceptual schema of SPLITTING. These tendencies were related to the different degrees of specificity in the lexical meaning of the studied verbs. We suggest that this complexity and dynamicity within the system of Finnish ability verbs is best illustrated through the metaphor of ecology, which also highlights the embodied roots and the multilayered nature inherent to the modal meaning of ability.

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Notes

1 Abbreviations used in the interlinear morphemic translations: 1 = first person; 2 = second person; 3 = third person; ADJ = adjective; ADE = adessive; ALL = allative; CLT = clitic; CNG = conneg; COMP = complementiser; COND = conditional; CONJ = conjunction; DEM = demonstrative; DET = determiner; GEN = genitive; ILL = illative; IMP = imperative; INE = inessive; INF = infinitive; INS = instructive; LOG = logophoric; NEG = negation; NMLZ = nominalizer; PART = partitive; PASS = passive; PL = plural; POSS = possessive; PRP = proper noun; PRS = present; PRT = preterit; PST = past; PTCL = particle; PTCP = participle; Q = question marker; REL = relative; SG = singular (see Leipzig Glossing Rules: http://www.eva.mpg.de/lingua/resources/glossing-rules.php).
2 The subscript codes are based on the description provided by Flint (1980) for these verbs.
3 In Flint's model, the verbs are given in their third-person singular form. In our figure, they are presented in the A-infinitive form.
4 Some of our examples include phonological variants. To make it easier for the reader to recognise a given verb form, we indicate the standard form in the gloss in small capitals.
5 The Finnish past participle, when associated with the negative auxiliary, has a similar function in simple past tense to that of the connegative form in the present tense.
6 See also Cai's (2025) analysis of *päästä* 'to be able to go, to access' (no. 6 in Table 2) in terms of *obstacle*, from an interactional perspective.
7 The same proportion of negative utterances was observed by Givón (2001:372–373) for English.
8 Gärdenfors (2024) provides a model for analysing the 'despite' type of event structure from a force-dynamic perspective.
9 The distribution of negative utterances could be in part linked to the type of data dominating the analysis. It has been observed in English that negative forms are significantly more frequent in spoken conversation than in written language use (Biber et al. 2021:162). The *sietää*$_{TOLE}$ and *suvaita*$_{TOLE}$ datasets are strongly focused on the written language. However, *tarjeta*$_{COLD}$ challenges this hypothesis. After *jaksaa*$_{NRG}$ (78% of spoken language data), the *tarjeta*$_{COLD}$ corpus used for analysis exhibits the second largest proportion of spoken language use (66%).
10 In colloquial Finnish, a third-person plural subject is frequently used with a verb in the third-person singular. Since the verb does not encode number in these cases, we have not included any indication of this category in the gloss.

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