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Recursive embedding in productive causatives:
The view from Turkish

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Preface

This monograph investigates the morphosyntax and semantics of causative constructions, with a particular focus on productive causatives in Turkish. The central claim is that productive causatives in Turkish allow genuine syntactic recursion and that the interpretation of recursive causative structures is determined by the size and internal composition of the embedded event structure. Adopting a decompositional approach to event structure (e.g. Alexiadou et al. 2015), the theoretical analysis treats Turkish as a controlled test case for examining how causative heads interact with verbal roots, argument structure, and Voice. The analysis assumes that causative semantics is introduced compositionally by verbal functional structure and that recursive causativization corresponds to the recursive embedding of productive causative projections. Within this framework, the monograph takes a clear position in the ongoing debate on whether Turkish productive causatives are syntactically recursive (Key 2013; Nie 2022). Against analyses that deny recursion or reduce multiple causative morphology to non-structural factors, I argue that productive causatives can embed causative structure in a principled and compositional manner. Conflicting views concerning the morphosyntax, event structure, and argument realization of recursive causatives are re-evaluated under explicit structural and lexical-semantic diagnostics.

The empirical part of the study is based on corpus-linguistic data and provides systematic observational evidence for the theoretical claims. Large datasets of naturally occurring Turkish causatives are examined with respect to causative formation, verbal semantics, and argument realization. In contrast to earlier accounts that attribute the second productive causative suffix to factors such as causee overttness (Göksel & Kerslake 2005), indirect causation (Key 2013), or intensification (Sebüktekin 1971), without independent diagnostics, this study operationalizes these factors and tests their predictions directly. Claims in the literature that question the acceptability or structural status of recursive causatives (e.g. Acartürk & Zeyrek 2010) are shown to rest on insufficient empirical grounding. The results demonstrate that argument overttness systematically mediates the interaction between causative formation and root semantics. Manner verbs, which

are mono-eventive, impose stronger restrictions on argument omission, while result verbs, which encode a bi-eventive structure, allow greater flexibility in argument realization under contexts of recursive causativization. These patterns follow from properties of embedded event structure and support a compositional account of indirectness in recursive causatives.

Overall, this monograph advances a unified theoretical and empirical account of causative recursion in Turkish. By combining explicit structural assumptions with large-scale corpus-based data, it shows that manner/result complementarity plays a central role in determining argument realization and degrees of indirectness in recursive causatives. The study thereby contributes to an understanding of how syntactic recursion interacts with root semantics in complex predicate formation.

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Abbreviations

ABL	Ablative	NOM	Nominative
ABIL	Ability	NEG	Negative
ACC	Accusative	NMLZ	Nominalizer
ADESS	Adessive	PASS	Passive
A.DER	Adj-deriving suffix	PST	Past
ADV	Adverb	PL	Plural
AGR	Agreement	PN	Proper name
AOR	Aorist	PF	Phonological Form
CAUS	Causative	POSS	Possessive
COM	Commitative	PRS	Present
COND	Conditional	PROG	Progressive
CVB	Converb	RECIP	Reciprocal
DAT	Dative	RELZ	Relativizer
DOM	Differential Object Marking	S	Subject
DO	Direct object	SG	Singular
DM	Distributed Morphology	V	Verb
EVID	Evidential	V.DER	Verb-deriving suffix
FUT	Future	Q	Question
GEN	Genitive	1SG	1st person singular
INST	Instrumental	2SG	2nd person singular
IO	Indirect object	3SG	3rd person singular
LOC	Locative	1PL	1st person plural
LF	Logical Form	2PL	2nd person plural
N	Noun	3PL	3rd person plural
N.DER	Noun-deriving suffix	∅	Null

Chapter 1

Introduction

1.1 Research program and goals

Productive causative formation typically alters both argument structure and event structure through the introduction of a causing event and a causer argument realized as the surface subject (Shibatani 1976; Dixon 2000). Turkish allows productive affixal causatives, realized as *-Dir* or *-t* depending on the morpho-phonological properties of the base verb. For instance, the transitive verb *oku-* ‘read’ in (1a) is causativized via *-t* in (1b). Here, the embedded agent *öğrenci* ‘student’ becomes the causee, receiving dative case, while the new agent *öğretmen* ‘teacher’ (the causer of the causing event) appears as the surface subject (Aissen 1974; Comrie 1974; Zimmer 1976; Zúñiga & Kittilä 2019).

- (1) a. Öğrenci_{AGENT} kitab-1 oku-du.
student book-ACC read-PST
‘The student read the book.’
- b. Öğretmen_{CAUSER} öğrenci’ye_{CAUSEE} kitab-1 oku-t-tu.
teacher student-DAT book-ACC read-CAUS-PST
‘The teacher made the student read the book.’

Turkish allows for the recursive application of these suffixes. In the double-causativized structure shown in (2), a new causer argument *müdür* ‘principal’ serves as the initiator of the higher causing event. The realization of the embedded (intermediary) causer *öğretmen* ‘teacher’ is constrained by case theory: realizing the intermediary causer as a second dative is ruled out by the distinctness condition (Richards 2001), as shown in (2a), when two adjacent dative arguments are articulated in their base-generated positions (Comrie 1974; Öztürk 2005; Akkuş 2021). Instead, the intermediary causer must be realized via a postpositional *tarafından* ‘by’-phrase, as in (2b), or left implicit, as in (2c).

- (2) a. *Müdür_{INIT} öğretmen-e_{CAUSER} öğrenci-ye kitab-ı oku-t-tur-du.
 principal teacher-DAT student-DAT book-ACC read-CAUS-CAUS-PST
 ‘The principal had the teacher make the student read the book.’
- b. Müdür_{INIT} öğretmen tarafından_{CAUSER} öğrenci-ye kitab-ı oku-t-tur-du.
 principal teacher by student-DAT book-ACC
 read-CAUS-CAUS-PST
 ‘The principal had the teacher make the student read the book.’
- c. Müdür_{INIT} öğrenci-ye_{CAUSEE} kitab-ı oku-t-tur-du.
 principal student-DAT book-ACC read-CAUS-CAUS-PST
 ‘The principal had (the teacher make) the student read the book.’

While (2c) theoretically allows for alternative readings involving beneficiary arguments (see Chapter 4), the focus here is the structural realization of agentive arguments in stepwise causativization. These patterns suggest that while recursive embedding is structurally available for productive causatives of transitives, it is constrained by the requirements of argument realization and case assignment.

The central thesis of this monograph challenges the prevailing view that the iteration of causative morphemes in Turkish arises merely from morphological reduplication or intensification (e.g., Sebüktekin 1971; Göksel & Kerslake 2005; Key 2013). Instead, I argue that these constructions exhibit true syntactic recursion (cf. Nie 2022), where each causative suffix introduces a distinct causing event accompanied by unique external arguments. This proposal raises immediate questions regarding the status of the intermediary causer: How is it represented morphosyntactically when not overt? Specifically, what differentiates the event and argument structures of (1b) and (2c) given that their surface argument structures appear identical? This question sets the scene for empirical investigations that will be dealt with in Chapter 5 and Chapter 6, which generally examines the interaction of causative formation and verbal semantics (primarily the manner-result distinction), influencing argument structure and realization.

In this monograph, I conduct my investigations on the morphosyntactic representation of recursive causatives, dealing primarily with transitive base verbs. Specifically, I examine the complex interaction of causative formation and verbal semantics, with a focus on manner/result complementarity and its impacts on argument structure and realization. Adopting a decompositional approach to argument and event structure within the framework of Distributed Morphology (DM), I assume that causative semantics is introduced by a flavor of dynamic event-introducing v , namely v_{CAUS} , while agentive semantics is contributed by an additional Voice projection (Kratzer 1996; Alexiadou et al. 2015). Predicting that the type of verbal root determines its morphosyntactic representation (Alexiadou

et al. 2015), that is, whether a transitive verb embeds a manner or a result root, I assume that while manner verbs (e.g. *read, ask, watch*) describe the way an action is performed by an agent and encodes a mono-eventive structure, result verbs (e.g. *cut, open, assemble*) specify the resultant state of an otherwise underspecified causing event and therefore inherently encodes a bi-eventive structure (Alexiadou et al. 2015; Hopperdietzel 2020). Building on these assumptions, I investigate how the interaction of causative formation and manner/result complementarity—as defined in terms of the degree of increasing indirectness—influences argument structure. Recursive causativization introduces an additional causal dependency to a causativized structure that already encodes a causal dependency between a causing event and a caused eventuality. The higher-causing event therefore stands in an indirect causative relation to the embedded caused eventuality, mediated by an intermediate causal layer, and the embedded caused eventuality encodes either a state or an activity determined by the root semantics. It is precisely this configuration that gives rise to increasing indirectness.

In recursive causatives of result verbs, the embedded caused eventuality includes a result state that can be interpreted independently of an otherwise underspecified causing activity. As a consequence, the higher-causing event is causally related to a caused state without a necessary access to the manner or agentive properties of the embedded state, allowing both agentive and non-agentive external arguments. In recursive causatives of manner verbs, by contrast, the embedded caused eventuality is an activity event that only allow agents as external arguments. Under the increasing indirectness hypothesis, this asymmetry follows from differences in causal layering. This hypothesis predicts that while recursive causatives of manner verbs embed two causal layers, and, due to the inherent mono-eventive structure of the embedded predicate, show more restriction in argument realization, therefore encoding a lower degree of indirectness, recursive causatives of result verbs embed three causal layers, and, due to the inherent bi-eventive structure of the embedded predicate, and show more flexibility in argument realization, therefore encoding a higher degree of indirectness. Overall, the contrast between manner- and result-based recursive causatives follows from root-sensitive event structure, demonstrating that root semantics decisively shapes the syntax and interpretation of recursive causative constructions.

This research program pursues three primary goals. **First**, I establish a structural analysis of Turkish causatives that supports a syntactic, rather than purely morphological, account of productive causative formation. Adopting a decompositional approach to event structure (e.g. Alexiadou et al. 2015) and a relational view of causation (e.g. Lyutikova & Tatevosov 2014), I distinguish lexical causatives from productive causatives on the contrast between direct causation and indirect

causation (e.g. Harley 2008). To investigate the event structure of lexical causatives, anticausatives are also analyzed as part of the causative alternation in Turkish (i.e. unaccusative-causative alternation and transitive-anticausative alternation). **Second**, I analyze the morphosyntax of recursive causatives, focusing on the realization of intermediary arguments (i.e. the causee and the intermediary causer). By utilizing the distinction between thematic active and non-active Voice (Alexiadou et al. 2015), the status of the causee is structurally distinguished from that of the intermediary causer. Predicting a monoclausal case alignment and rejecting multiple dative marking for intermediary arguments based on Richards (2001)'s distinctness condition, I show that the intermediary causer must either be realized by a postpositional *tarafından* 'by'-phrase or left implicit. I argue that even when the intermediary causer (licensed by the postpositional *tarafından*) is null due to complexity constraints or discourse factors (e.g. Zimmer 1976), the causing event remains syntactically present. The observations attained via this goal leads to the conclusion that empirical validation of causative recursion in productive causatives of transitives is necessary.

Third, I validate the increasing indirectness hypothesis through a quantitative corpus study. To the best of my knowledge, no quantitative studies have been reported within this paradigm so far, so this corpus study contributes to the understanding of the phenomenon of causative recursion and questions whether root semantics and structural features such as argument overtness play a role in the increasing indirectness in recursive causatives. This investigation persists despite some previous literature in Turkish linguistics and grammar, contending against the acceptability of double causativization of unergatives and transitives (e.g. Acartürk & Zeyrek 2010); cf. Göksel & Kerslake 2005), arguing that the second causative suffix brings no change into the event structure (e.g. Key 2013) but merely hinges on the overtness of the causee, indirect causation, and intensification of the caused event (e.g. Sebüktekin 1971). However, these assumptions notably lack systematic operationalization and empirical testing.

In essence, I propose a novel perspective on recursive causatives in Turkish, providing a detailed theoretical analysis and robust empirical evidence from a large corpus. By highlighting the crucial role of root semantics and argument realization in understanding the behavior of single and double causatives of transitive verbs, I make a significant contribution to the ongoing scholarly debate on the nature of causative constructions and syntactic recursion in Turkish. Overall, this monograph underscores the importance of considering root semantics and event structure in the analysis of these complex linguistic phenomena.

1.2 Data and terminology

Alongside of formal and semantic variation in Turkish causatives that will be outlined in this section, I provide necessary information with regard to descriptive data, observational data sources, and representational conventions that are utilized and implemented in this monograph. The data analyzed in this monograph come primarily from Turkish, a nominative-accusative, verb-final language. A more detailed overview of the language, including its case system, constituent order, and verbal morphology, will be provided in Section 3.2, which will play a central role in the analysis of Turkish causatives that this monograph presents.

Turkish allows causativization on all types of verbal predicates, which fall into several classes including unaccusatives, unergatives, transitives, and ditransitives, each with characteristic case-assignment patterns (see Chapter 3 for causativization of unaccusative, unergative, and transitive bases; causativization of ditransitive bases and recursive causativization of unergative and transitive bases are presented in Chapter 4). For orientation, it is useful to mention some typologically relevant properties of Turkish causatives. Throughout this monograph, I refer to Turkish causatives as consisting of two main formal types: lexical causatives and productive causatives. Lexical causatives are those that are either marked or unmarked, i.e. the one, in which the causative morphology is overt, and the other, in which the causative morphology is null. Those that are derived from unaccusatives are referred to as morphologically marked lexical causatives, as in (3a), and those that are (non-derived) transitive result verbs are referred to as unmarked lexical causatives, as in (3b). Turkish lexical causatives correspond to English transitive result verbs. Accordingly, I consistently use English lexical causatives to translate both morphologically marked forms (e.g. *bit-ir-* ‘finish’, *düş-ür-* ‘drop’) and unmarked forms (e.g. *kır-* ‘break’, *aç-* ‘open’).

(3) Lexical causatives in Turkish

a. *Morphologically marked lexical causatives*

Ece tren-i kaç-ır-dı.
Ece train-ACC flee-CAUS-PST
‘Ece missed the train.’

b. *Morphologically unmarked lexical causatives*

Ece vazo-yu kır-dı.
Ece vase-ACC break-PST
‘Ece broke the vase.’

Productive causatives are also of two types: morphological and analytical. Morphologically marked productive causatives are those that are derived from unergatives,

transitives, and ditransitives, as in (4a), (4b), and (4c). Syntactically marked productive causatives are referred to as analytical causatives that are constructed by the use of causative light verbs, such as *sağla-* ‘ensure’, and by subordination of the embedded constituent, as in (4d).

(4) Productive causatives in Turkish

a. *Morphologically marked productive causatives (of unergatives)*

Patron Ece’yi çalış-tır-dı.
 boss Ece-ACC work-CAUS-PST
 ‘The boss made Ece work.’

b. *Morphologically marked productive causatives (of transitives)*

Öğretmen Ece’ye bir öykü oku-t-tu.
 teacher Ece-DAT a story read-CAUS-PST
 ‘The teacher made Ece read a story.’

c. *Morphologically marked productive causatives (of ditransitives)*

Ece Ada tarafından Oya’ya bisiklet-i ver-dir-di.
 Ece Ada by Oya-DAT bike-ACC give-CAUS-PST
 ‘Ece made Ada give Oya the bike.’

d. *Syntactically marked productive causatives*

Patron Ece’nin çalış-ma-sın-ı sağla-dı.
 boss Ece-POSS.3SG work-NMLZ-GEN-ACC ensure-PST
 ‘The boss ensured that Ece works.’

This monograph focuses on morphological causatives, that is, morphologically marked lexical causatives and morphologically marked productive causatives, with reference to morphologically unmarked lexical causatives (e.g. *yak-* ‘burn’) as part of transitive result verbs. Analytical causatives of the type *-mAsIn-I sağla-* ‘make/ensure that’ are not treated here. For the analysis of productive causatives, transitive verbs are the focus, with occasional reference to unergatives and ditransitives, illustrating the structural properties of such verbs under causativization such as case alignment properties; see Chapter 3 and Chapter 4.

To follow the terminology used in this monograph regarding to the study of causative constructions in Turkish, some of the critical notions must be made clear, which concern ‘causation’, ‘causativization’, and ‘causative’ verbs. Causation is a semantic notion referring to the causative relation between a causing event e and a caused eventuality ε , which ranges over events e and states s (e.g. Higginbotham 2000), and formalized as $R_{\text{CAUS}}(e, \varepsilon)$. Causativization, by contrast, is a morphosyntactic process by which a causative morpheme is added to a verbal base, yielding a causativized predicate. Causativization thus constitutes one possible morphosyntactic realization of causation, but causation itself is not restricted

to overtly causativized forms. A causative verb, as understood here, is a verb that encodes causation. Unaccusative verbs and non-derived transitive verbs that lexicalize result roots incorporate causation, even when no overt causative morphology is present. As a consequence, not all causative verbs are morphologically causativized, and not all instances of causation correspond to overt causativization. In short, causation is the semantic relation $R_{\text{CAUS}}(e, \varepsilon)$ shared by all causative predicates, whereas causativization is one morphosyntactic strategy for encoding that relation.

Lexical causatives constitute transitive result verbs as opponents of transitive manner verbs in terms of manner/result complementarity (e.g. Levin & Hovav 2013; cf. Beavers & Koontz-Garboden 2020b; see Chapter 2). This distinction has not only semantic but also syntactic consequences regarding the nature of causatives. The event-decompositional difference between manner and result verbs is that the result roots are decomposed into a CAUSE component and a resultant STATE (e.g. Alexiadou et al. 2015), therefore, bear an underspecified causing event, which becomes specified after causativization and in the context of an external argument. The causative morpheme can be used to derive a transitive result verb from an unaccusative verb and a productive causative verb from a derived transitive result verb, as in (5), adopted from Ketrez (2012: 154).

- (5) a. *Unaccusative causative*
 Araba-lar dur-du.
 car-PL stop-PST
 ‘The cars stopped.’
- b. *Lexical causative*
 Trafik polis-i araba-lar-ı dur-dur-du.
 traffic police-3SG car-PL-ACC stop-CAUS-PST
 ‘The traffic police stopped the cars.’
- c. *Productive causative*
 Hasan trafik polis-in-e araba-lar-ı dur-dur-t-tu.
 Hasan traffic police-3SG-DAT car-PL-ACC stop-CAUS-CAUS-PST
 ‘Hasan made the traffic police stop the cars.’

Example (5a) describes a causing event in which *cars* stop without an explicit agent; the caused state is thus non-specified for the causing event. Example (5b) depicts the same situation but includes an overt agent (*the traffic police*). Finally, (5c) evidences two causing events bringing about the resultant state: the agent of the lower causing event functions as the causee, while the agent of the higher causing event acts as the causer. This observation aligns with Key (2013)’s view that ‘real’ recursive causatives are restricted to unaccusative roots bearing two causative

markers: the unaccusative *dur-* ‘stop’ derives the lexical causative *dur-dur-* ‘stop (tr.)’, which in turn derives the productive causative *dur-dur-t-* ‘make stop’. In this monograph, however, I argue that the structure in (5c) does not constitute causative recursion, but rather a single instance of productive causativization applied to a lexical causative base. I define recursive causativization strictly as the application of the same operation: a productive causative embedding another productive causative. Under this definition, true recursion on unaccusative roots requires three causative suffixes, as in (6), a configuration I analyze in Chapter 4.

- (6) Patron depo görevli-si tarafından işçi-ye yağ
 boss warehouse attendant-3SG.POSS by worker-DAT oil
 tank-in-1 dol-dur-t-tur-du.
 tank-3SG.POSS-ACC fill-CAUS-CAUS-CAUS-PST

‘The boss had the warehouse attendant make the worker fill the oil tank.’

Coming back to the classification above, it means that the unaccusative in (5a) lacks causativization, but include causation, in which causing event *e* is non-specified. Lexical causative differs from productive causative in terms of causation, although both are specified. This difference lies in the distinction between direct and indirect causation (e.g. Harley 2008). Lexical causatives realize direct causation, in which an agent directly brings about a result state with no intervening event between cause and result (e.g. Wolff 2003; Shibatani 1976), e.g. the traffic police must carry out the stopping herself, as in (5b), while productive causatives encode indirect causation, without imposing constraints on intervening causal structure. Therefore, direct causation refers to a caused state being the direct cause of a causing event, including deliberate control of the argument of the causing event over the argument of the caused state, hence, the causing event and the caused state is co-existent (Ramchand 2008; Lyutikova & Tatevosov 2014). Indirect causation refers to a caused event being not necessarily the immediate cause of a causing event (Lyutikova & Tatevosov 2014). In short, direct causation involves an uninterrupted causal co-existence between a causing event and a caused state, whereas indirect causation allows an intervening event with its own causal force between a causing event and a caused event.

causative	causativization	causation	manner/result
unaccusative	no	non-specified	result
lexical	∅, if non-derived	direct-specified	result
productive	yes	indirect-specified	manner/result

Table 1.1: The interplay between causatives and manner/result complementarity

Table 1.1 shows that productive causative is derived from both result verbs and manner verbs, in which result verbs, by definition, correspond to non-derived transitive result verbs as well as derived transitive result verbs (=marked lexical causatives, i.e. those that are derived from, or more precisely, alternate with, unaccusatives; see Section 3.3). As a result, recursive causative only applies to cases in which productive causative embeds another productive causative. Also, the difference between the types of causatives lies in the number of agents playing a role in causative situations. Lexical causatives can only bear one agent argument. Productive causatives, on the other hand, can bear two agentive arguments (the causer and the causee), and recursive causatives can have one more additional agentive argument (the intermediary causer); see Chapter 3 and Chapter 4.

Turkish causative morphology is semantically underspecified regarding the precise nature of the causative relation. Unlike English, which utilizes distinct lexical items to differentiate between coercive (*make*), permissive (*let*), and assistive (*help*) causation, Turkish employs a single causative morpheme to encode these various relations since it does not morphologically distinguish between the types of causative relations. Consequently, a single surface form in Turkish often allows for multiple interpretations depending on context. For instance, the construction in (7) is ambiguous between a coercive reading, where the clinics forced patients to quit, and an assistive reading, where the clinics facilitated the process.

- (7) Sigara bırak-ma klinik-ler-i bu yıl yaklaşık 2.5 milyon
 cigarette quit-NMLZ clinic-PL-ACC this year approximately 2.5 million
 kişi-ye sigara-yı bırak-tır-dı.
 person-DAT cigarette-ACC quit-CAUS-PST
 ‘Smoking cessation clinics **made/helped** about 2.5 million people quit
 smoking this year.’ (coercive/assistive)

A similar ambiguity arises between permissive and coercive interpretations. As shown in (8), the causative verb *piş-ir-t-* ‘have sb. make sb. cook’ can function as the equivalent of the English *let*-causative or the *have*-causative (see Kural 1997). Note that the causee is not overtly expressed in this example, corresponding to a passive construction in the English translation (see Akkuş 2021).

- (8) Müşteri balığ-ı tava-da piş-ir-t-ti.
 customer fish-ACC pan-LOC COOK-CAUS-CAUS-PST
 (i) ‘The customer **let** the fish **be cooked** in the pan.’ (permissive)
 (ii) ‘The customer **had** the fish **cooked** in the pan.’ (coercive)

Beyond these relational ambiguities, Turkish causatives exhibit structural ambiguities regarding adverbial scope that are absent in their English counterparts. In English, the choice of the causative verb (*make*) and the strict configurationality of

the auxiliary structure generally fix the scope of the adverb. In Turkish, however, an adverb like *nazikçe* ‘gently’ may modify either the causing event (the causer’s activity) or the caused event (the causee’s activity), as illustrated in (9).

- (9) a. The police officer made the drunk man speak *gently*.
 b. Polis memur-u sarhoş adam-ı nazikçe konuş-tur-du.
 police officer-3SG drunk man-ACC gently speak-CAUS-PST
 (i) ‘The police officer *gently* made the drunk man speak.’
 (ii) ‘The police officer made the drunk man speak *gently*.’

This monograph does not analyze the post-syntactic or pragmatic disambiguation of these readings. I adopt a decompositional analysis where the causative head introduces a general causative relation, defined as $R_{\text{CAUS}}(e, \varepsilon)$, linking a causing event to a caused eventuality either directly or indirectly. Whether this relationship manifests as permission, coercion, or assistance is treated as a matter of usage beyond the morphosyntactic scope of this study. For the purposes of the structural analysis presented in Chapter 3 and Chapter 4, I treat productive causatives as encoding a default *coercive* relation. The semantics of the causative head represented in the structural analysis will be defined in Chapter 2. To maintain consistency in the face of this semantic variation between different interpretations of permission, coercion, or assistance, I adopt the following translation conventions throughout the monograph. Lexical causatives are rendered using simple English transitive result verbs rather than analytical causatives like ‘cause to V’, e.g. *John opened the door*, but not *John caused the door to open*. Productive causatives are rendered using analytical causatives, as in (10). Recursive causatives are rendered using combinations of *have* and *make*, as in (11).

(10) *Productive causatives*

- a. If the causee is overt, the *make*-causative is used.
The teacher made the student leave.
 b. If the causee is null, the *have*-causative is used.
The teacher had the door repaired.

(11) *Recursive causatives*

- a. If both the causer and the causee are overt, *have* is used for the higher causative and *make* for the embedded causative.
The principal had the teacher make the student read the book.
 b. If the causer is null, the *have*- with an embedded *make*-causative is used.
The teacher had (someone make) the student read the book.
 c. If both the causer and the causee are null, the *have*-causative is used.
The teacher had (someone have) the book read.

These conventions are strictly heuristic and intended to reflect the argument structure configurations (specifically the overtness of arguments) rather than fine-grained semantic distinctions. In summary, causatives in Turkish are known to allow a variety of semantic interpretations, often distinguished as permissive, coercive, assistive, and more. For the purposes of this monograph, I treat each causative as encoding a *coercive* relation, while acknowledging that other interpretations are available in principle.

Unless otherwise indicated, the grammaticality judgments presented in Chapters 2-4 are based on my own native-speaker intuitions; examples explicitly cited from other sources are marked as such. In addition to native-speaker judgments, I consulted 3 native speakers of Turkish, especially for examples including recursive causatives with fully overt argument realization, where my native-speaker intuition for such examples did not suffice.

This monograph also makes use of corpus data drawn from sources such as the Turkish Web 2012 (trTenTen12, comprising approximately 3.40 billion words) and the more recent Turkish Web 2020 (trTenTen20, containing about 4.98 billion words), both accessible via Sketch Engine (Kilgarriff et al. 2014). Corpus data were annotated for verb class, causative morphology, argument realization, and other relevant parameters for post-hoc analyses; details of the sampling procedure and the annotation scheme are presented in Chapter 5.

Some technical remarks are in order. All examples are glossed according to the Leipzig Glossing Rules (e.g. Lehmann 1982), with adaptations for Turkish. Numbered examples run consecutively within each chapter, with subexamples distinguished by letters. For grammaticality and acceptability judgments, ? marks marginal acceptability, ?? marks strong degradation, * marks ungrammaticality, and # marks semantic or pragmatic anomaly. In what follows, I give an overview of the theoretical framework and assumptions adopted in this monograph.

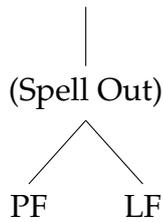
1.3 Theoretical framework and assumptions

To investigate the recursive embedding potential of productive causatives and examine the syntactic status of the agentive arguments introduced in causative constructions in Turkish, I adopt a decompositional approach within Distributed Morphology (DM) (Marantz 1997; Embick & Noyer 2007; Embick 2015) that is developed within Generative Grammar and departed from the Minimalist Program (Chomsky 2001; Chomsky 2000). The choice for this framework is its ability to explain morphosyntactic and event-semantic structure using a decompositional approach to the morphosyntax of causative constructions.

In DM, “the syntactic part of the grammar generates syntactic structures”, which are then processed into Phonological Form (PF) and Logical Form (LF) for sound and meaning, respectively (Embick 2015: 3). Syntactic derivations are shown as hierarchical structures, with morphemes (terminal nodes) as the basic units of syntactic derivations in the grammar, as in (12).

(12) **The Grammar**

Syntactic Derivation



In other words, the syntax is made up of rules that generate syntactic structures, which are then subject to further operations in the course of the derivation to the PF and LF interface levels (Alexiadou et al. 2015: 11). This framework posits that every word is formed through syntactic operations such as *Move* and *Merge*, and emphasizes that the principles of morphology largely coincide with the principles of syntax. The elements subject to operations like *Move* and *Merge* are referred to as ‘morphemes’ (Alexiadou et al. 2015: 11). These morphemes are selected from the list of Syntactic Terminals and function as the terminal components of syntactic derivations. The Vocabulary comes into play at PF by adding phonological exponents to functional morphemes. Additionally, the interface with interpretation accesses the Encyclopedia (Embick 2015: 21). While the syntax has access to the list of syntactic terminals (the list containing the *Roots* and *Functional Morphemes*), vocabulary insertion (the list of *Vocabulary Items* with the rules that provide phonological content to abstract morphemes) and semantic interpretation (*Encyclopedia*, the list of special semantic information) occur in a post-syntactic manner at the respective interfaces with LF and PF (Embick 2015: 20; Hopperdietzel 2020: 7).

In DM, the theory of the morpheme states that grammar includes representations of sound and meaning in terms of *features*: *phonological* and *syntacticosemantic* (i.e. *synsem*). The former involves phonological features such as [\pm voice], [\pm labial], etc. and the latter involves synsem features such as [PAST] (‘past’), [DEF] (‘definite’), [PL] (‘plural’), etc. (Embick 2015: 6). Another distinction is found between the *Roots* and the *functional morphemes*: although they function similarly as the terminal objects in syntactic derivations, the difference is that the former constitutes the “open class” with items such as $\sqrt{\text{CAT}}$ or $\sqrt{\text{SIT}}$ and the latter involves the synsem features such as [PAST] or [PL]. More importantly, “roots have no grammatical

category”; as a result, they “cannot appear without being *categorized*” (Alexiadou et al. 2015: 11; Embick 2010). The categorization occurs when they are “in a local relationship with one of the category-defining functional heads” (Alexiadou et al. 2015: 11). These category-defining heads *v*, *n*, *a* are combined with category-neutral roots to derive verbs, nouns, and adjectives (Marantz 1997; Embick 2010).

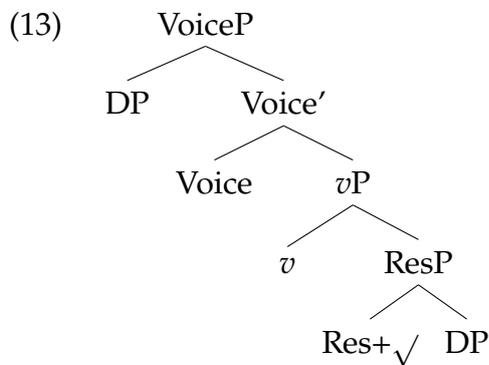
1.3.1 Verbal domain

A core assumption of the decompositional framework adopted here is the severance of the external argument from the verb, i.e. the external argument is not an argument of the verb itself. Following Marantz (1984), Kratzer (1996), and subsequent work (Pylkkänen 2008; Alexiadou et al. 2015), the interpretation of the external argument is determined by the verbal structure it merges with rather than by the verb’s lexical properties alone. Internal arguments systematically condition verb meaning, as illustrated by contrasts such as *throw a party* vs. *throw a fit* and *take a bus to New York* vs. *take a nap*, and thereby induce a corresponding interpretation of the external argument (Alexiadou et al. 2015: 5). However, this dependency is asymmetric: while internal arguments can shape the interpretation of the external argument, there is no evidence for the reverse dependency whereby the external argument determines verbal semantics (Alexiadou et al. 2015: 5).

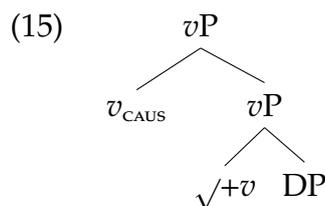
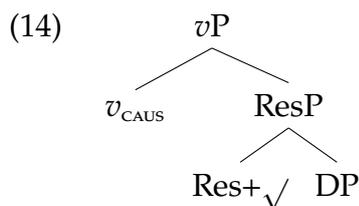
This asymmetry motivates the treatment of external arguments as being introduced by a functional head rather than by the verb. Building on Kratzer (1996), I assume that external arguments are introduced by a functional projection VoiceP, which relates an argument to the event described by its complement. Voice is thus responsible for agentive semantics, while event introduction is handled independently by verbal functional structure. In line with Pylkkänen (2008), Voice is treated as a metavariable over possible relations between an external argument and an event, whereas *v* is any functional head of verbal category that introduces event structure. The verbal domain assumed in this monograph minimally consists of three layers: VoiceP, *v*P, and Res(ult)P (Kratzer 1996; Ramchand 2008; Alexiadou et al. 2015; Hopperdietzel 2020).

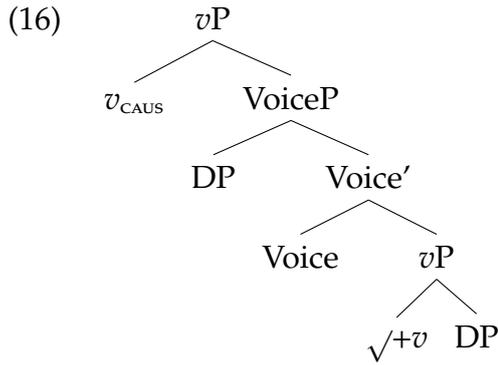
I adopt a decompositional approach to the verbal domain in which verbs are assembled in the syntax from a category-neutral root and a verbal functional head *v* (Cuervo 2003), and event and argument structure are constructed compositionally through the interaction of functional projections and their interpretation at LF (Hopperdietzel 2020). Within this architecture, ResP hosts the non-categorical root together with its internal argument and encodes resultant state information. Although ResP corresponds informally to a verb-object combination, it is not itself categorical; rather, it consists of a result root, its theme argument, and an associated

state variable, and only becomes verbalized through combination with v . The head v introduces event semantics and comes in distinct event types, including $v_{\langle e \rangle}$, which introduces an event variable, and $v_{\langle s \rangle}$, which introduces a state variable (Higginbotham 2000; Hopperdietzel 2021; cf. Ramchand 2008). Different flavors of v are thus responsible for different event types, including causative event configurations. VoiceP, when present, introduces an external argument and fixes its thematic relation to the event described by its complement (Kratzer 1996; Folli & Harley 2005; Alexiadou et al. 2006; Pylkkänen 2008; Alexiadou et al. 2015). (13) shows the basic architecture of the verbal domain assumed in this monograph, representing the three core layers: VoiceP, v P, and ResP. This layered structure will serve as the basis for the analysis of causative alternations, productive causatives, recursive causatives, and argument realization patterns in Turkish.



Adopting a decompositional approach to argument and event structure (Kratzer 1996; Folli & Harley 2005; Alexiadou et al. 2015), I assume that v introduces a dynamic event, while agentive semantics is contributed by an additional Voice projection. Causative semantics is introduced by a flavor of v , namely v_{CAUS} . Following Pylkkänen (2008) and Alexiadou et al. (2015), I assume that v_{CAUS} can select complements of different sizes, yielding distinct structural types of causatives. In particular, v_{CAUS} may select ResP-sized, as in (14), v P-sized, as in (15), or VoiceP-sized constituents, as in (16). These selectional options correspond to different configurations of causation and play a central role in the analysis of productive and recursive causatives in Turkish. The structural consequences of these selectional possibilities are discussed in detail in Chapter 2.





I adopt a relational view of causation (e.g. Kratzer 2005), formalized in (17a), according to which v_{CAUS} relates a causing event e to an existentially bound caused eventuality ε via an underspecified causative relation R_{CAUS} . The caused eventuality ε is described by the complement of v_{CAUS} and ranges over events e and states s (e.g. Higginbotham 2000). The interpretation of R_{CAUS} is restricted to direct and indirect causation (17b) and is configurationally determined by the size of the embedded structure (cf. Lyutikova & Tatevosov 2014), giving rise to a contextual alloosemy (cf. Wood 2015); such that ResP-sized complements yield direct causation and VoiceP-sized complements yield indirect causation; see Chapter 3.

- (17) a. $\llbracket v_{\text{CAUS}} \rrbracket = \lambda P. \lambda e. \exists \varepsilon [R_{\text{CAUS}}(e, \varepsilon) \wedge P(\varepsilon)]$
 b. $R_{\text{CAUS}} \in \{\text{D-CAUSE}, \text{I-CAUSE}\}$

This section has established three core assumptions of a decompositional approach to event structure: Voice introduces the external argument and assigns its thematic role; causative semantics is encoded by vP ; and verbal roots combine with vP or ResP to determine event types within the syntactic derivation, with the distribution of roots conditioned by the manner versus result distinction (Alexiadou et al. 2015; Hopperdietzel 2024). The discussion now turns to the role of root semantics in shaping these complex causative structures.

1.3.2 Root semantics

Within this decompositional framework, verbal meaning is derived from the interaction between roots and functional structure, with the functional hierarchy providing the eventive skeleton and the root supplying descriptive content. A central assumption adopted here is manner/result complementarity, according to which eventive verbs lexicalize either a manner root or a result root, but not both (e.g. Rappaport Hovav & Levin 2010; Levin & Hovav 2013). Following Alexiadou et al. (2015: 13), manner and result are treated as ontological categories that determine how roots integrate into syntactic structure and how event meaning is

constructed. This semantic distinction maps directly onto syntactic composition. The ontological type of the root dictates its mode of syntactic integration with the functional head v : manner roots, such as $\sqrt{\text{WIPE}}$ and $\sqrt{\text{RUN}}$, merge as modifiers of v , specifying the manner of the activity, whereas result roots, such as $\sqrt{\text{BREAK}}$ and $\sqrt{\text{CLEAN}}$, merge as complements of v , specifying the resultant state achieved by the event (Alexiadou et al. 2015). These two modes of attachment are illustrated in (18a) and (18b), respectively.



As a consequence, the event structures associated with transitive manner and result verbs differ fundamentally. Manner verbs instantiate a mono-eventive structure in which the root modifies a single activity event. Result verbs, by contrast, are inherently bi-eventive, consisting of a causing event introduced by v and a result state encoded in ResP. This distinction is systematically reflected in their syntactic representations, as shown for manner verbs in (19a) and for result verbs in (19b) (cf. Alexiadou et al. 2015: 14). For transitive verbs, this yields two distinct event-structural configurations: manner verbs exhibit a mono-eventive structure, whereas result verbs encode a bi-eventive causative configuration in which v_{CAUS} relates a causing event to a result state. These structural differences are crucial for the analysis of productive and recursive causatives, as they constrain which verbal structures may be embedded under additional causative heads.



These assumptions raise concrete questions about the argument and event structure of recursive causatives in Turkish, given ongoing disagreement over whether the second causative suffix introduces an independent causative layer or reflects non-structural factors (see Chapter 4). Taken together, the assumptions about verbal structure and root semantics yield clear predictions for the morphosyntax of Turkish causatives. In particular, the distinction between manner and result roots has structural consequences: result verbs, being inherently bi-eventive, encode a higher baseline degree of indirectness under recursive causativization than manner verbs. This monograph exploits this distinction to address the debated status of

recursive causatives, especially the role of the second causative suffix and patterns of argument realization. Treating the manner/result contrast as a structural variable, I argue that variation in argument realization in double causatives follows from root semantics rather than from construction-specific optionality. The following section operationalizes these commitments by formulating explicit hypotheses and outlining the empirical architecture used to test them.

1.4 Empirical orientation and architecture

This section situates the empirical component of the monograph within the broader analytical architecture developed in the preceding chapters. The empirical investigations pursued here are not exploratory in nature, but are driven by the theoretical assumptions adopted throughout the monograph. In particular, the decompositional analysis of causative structures, the distinction between manner and result roots, and the structural treatment of productive causatives as recursive configurations jointly determine the space of testable hypotheses. The role of the empirical chapters is therefore twofold: first, to evaluate whether the predicted structural asymmetries are reflected in naturally occurring data, and second, to assess whether these asymmetries give rise to systematic differences, most notably with respect to degrees of indirectness.

1.4.1 Hypotheses and predictions

The empirical investigation is guided by the increasing indirectness hypothesis derived directly from the structural analysis that are developed in Chapters 2-4. According to this hypothesis, recursive causativization introduces an additional causal dependency by embedding an already causativized structure. As a result, the highest causing event stands in an indirect causative relation to the embedded caused eventuality, mediated by an intermediate causal layer. Crucially, the interpretive effects of this configuration are predicted to be sensitive to the event-structural properties of the embedded predicate.

More specifically, I predict that recursive causatives of transitive result verbs, which are inherently bi-eventive and introduce an independent result state, encode higher degrees of indirectness than recursive causatives of transitive manner verbs, which are mono-eventive and identify the caused event as an activity dependent on an executing participant (i.e. the causee). This asymmetry is expected to surface in patterns of argument realization. Recursive causatives of manner verbs are predicted to impose strict constraints on argument realization, favoring

overt realization of agentive initiator and causee arguments, whereas recursive causatives of result verbs are predicted to allow greater flexibility, including the omission of initiator and causee arguments, without loss of interpretability; see Section 4.4 and Section 6.2 for more details on the hypotheses and predictions.

A further prediction concerns the interaction between causative depth and argument structure. If recursive causatives involve genuine structural embedding rather than morphological reduplication, causative iteration should correlate with systematic changes in argument realization rather than mere intensification of a single causative relation. In particular, recursive causatives are expected to show distributions of initiator and causee realization that differ from those of non-recursive causatives, with these differences determined by the manner–result distinction. Overall, these predictions define the empirical signature of recursive causativization as a structurally and semantically non-vacuous phenomenon.

1.4.2 Methodologies

To test these hypotheses, this monograph adopts a corpus-based quantitative methodology grounded in explicit structural and semantic annotation. In line with the scope of the research questions of this monograph, I opted for a morphologically annotated corpus via institutional login in Sketch Engine (Kilgarriff et al. 2014): Turkish Web 2020 (trTenTen20). The empirical investigation focuses on productive causatives of transitive manner and result verbs and their recursive counterparts, extracted from large-scale Turkish corpora. Special attention is given in order to restrict the dataset to genuinely productive causative formations by applying careful circumscribing parameters and elimination criteria for base verbs.

Each token is annotated for a set of theoretically motivated parameters. These include verbal semantic properties, in particular the classification of predicates as manner or result verbs, as well as argument-structural properties such as the overt or null realization of initiator, causee, and theme arguments. Additional morphosyntactic parameters, including case marking, person, and animacy, are annotated to control for factors that may influence surface realization independently of causative structure; see Chapter 5 for a detailed presentation of data and data structures. The annotated data are then subjected to quantitative analysis using R (RStudio Team 2020) specifically designed to evaluate interaction effects between causative formation, root semantics, and argument realization; see 6. Rather than testing isolated frequency differences, the methodology targets systematic patterns that reflect the predicted structural asymmetries using state-of-the-art statistical models. In this way, the empirical component of the monograph directly operationalizes the theoretical architecture developed in the earlier chapters.

1.5 Outline of the monograph

To achieve the research goals of this monograph, Chapter 2 develops the theoretical foundations for the analysis of causative constructions by situating causativization at the interface of event composition, root semantics, and argument realization. It first introduces core distinctions among unaccusative, unergative, and transitive predicates and motivates an aspectual classification of dynamic events. The chapter then establishes manner/result complementarity as a central organizing principle, presenting diagnostics that distinguish manner and result roots and their consequences for event structure. Building on this, the chapter clarifies the conceptual and empirical distinction between causation and causativization, surveys cross-linguistic patterns of causative formation, and adopts a decompositional model in which causative relations are encoded in the verbal domain. Finally, it develops an explicit view of the verbal domain and event composition that integrates causative alternations, Voice structure, and causative relations, providing the theoretical framework required for the subsequent analysis of productive and recursive causatives in Turkish.

Chapter 3 provides a detailed morphosyntactic analysis of Turkish causatives and develops the structural assumptions that underlie the treatment of productive and recursive causativization. The chapter first establishes the relevant properties of Turkish morphosyntax, focusing on case marking, word order, information structure, and patterns of argument realization and omission. It then turns to the internal composition of lexical causatives, arguing for a decompositional event structure that captures causative and anticausative alternations. Building on this foundation, the chapter analyzes the argument structure of productive causatives, examining the interaction of Voice, event structure, and causative morphology, and critically evaluates previous analyses. The chapter concludes by identifying the structural implications of these findings, which directly motivate the analysis of recursive causatives developed in the following chapter.

Chapter 4 develops the core analysis of recursive embedding in productive causatives and argues that causative recursion in Turkish is a genuine syntactic phenomenon subject to structural constraints. The chapter first examines the realization of intermediary arguments, showing how causatives of ditransitives are shaped by case-theoretic and linearization constraints, in particular the distinctness condition. It then extends the analysis to recursive causativization of transitive predicates, demonstrating how recursive embedding interacts with argument realization and motivates alternative strategies such as postpositional realization of the intermediary causer or its omission. Building on these findings, the chapter

evaluates alternative analyses and interspeaker variation, and culminates in a unified proposal that integrates structural recursion with root-sensitive event structure. The resulting analysis yields explicit empirical predictions concerning argument realization, omission, and degrees of indirectness, which are dealt with and tested in the subsequent empirical chapters.

Chapter 5 establishes the empirical foundation for the quantitative investigation of recursive causativization. It introduces the dataset and sampling procedure, defines the corpora and circumscribing parameters, and motivates the elimination criteria applied to base verbs in order to isolate genuinely productive causative formations. The chapter then presents the annotation scheme, detailing verbal-semantic parameters, argument-structural parameters, and additional morphosyntactic parameters. Finally, it describes the data wrangling procedures that prepare the annotated dataset for statistical analysis, thereby linking the theoretical predictions to an empirically testable design.

Chapter 6 presents the statistical analysis and interpretation of the results. After restating the main hypotheses and predictions, the chapter reports descriptive statistics and develops statistical models designed to test the interaction between causative formation, manner/result semantics, and argument realization. Particular attention is paid to three-way interaction effects involving contrast analysis of unique conditions and verb-specific variability. The chapter concludes with a detailed discussion of the results, including post-hoc analyses targeting initiator realization and animacy, theme realization and case, and linear argument order, and evaluates the extent to which the empirical findings support the increasing indirectness hypothesis.

Chapter 7 concludes the monograph by summarizing the main theoretical and empirical results and by integrating them into a unified account of recursive causativization in Turkish. It revisits the central claims proposed concerning recursive embedding in productive causatives, root-sensitive event structure, and increasing indirectness, and assesses how the corpus-based findings bear on these claims. The chapter then discusses the broader implications of the analyses for theories of causation, event structure, and argument realization, and identifies open questions and directions for future research.

Chapter 2

Event composition and argument realization

2.1 Overview

Causative constructions constitute a central locus of inquiry in contemporary linguistics, as they illuminate how languages encode the relationship between an initiating event and a resulting eventuality. Types of causative forms and relations have sparked significant interest driven by the need to comprehensively account for cross-linguistic variation in causative constructions. While all human languages possess dedicated means (morphological or analytical) for expressing causative relations, they vary considerably in how these means interact with verb classes, root semantics, event structure, and argument realization. This variation has motivated extensive research aimed at identifying both the structural configurations and the semantic dimensions that give rise to causative meanings. From a cross-linguistic perspective, causativization has served as a testing ground for typological and theoretical proposals, particularly those seeking to capture the robust similarities observed in the causativization of unaccusative verbs across languages, as well as the striking diversity that emerges when unergatives and transitives are causativized. These contrasts highlight the need for a nuanced understanding of how verbal semantics and morphosyntactic mechanisms jointly shape causative structures. In this chapter, I outline the theoretical background necessary for the subsequent analyses, situating causativization at the interface of event structure, root semantics, and argument realization.

Section 2.2 introduces distinctions among unaccusative, unergative, and transitive predicates, which are crucial for understanding how different verb classes respond to causativization. Causativization of unaccusative verbs typically exhibits properties distinct from the causativization of unergative or transitive verbs, both

argument-structurally and verb-semantically, which lies in their distinct internal structural representations and verbal semantics. This section presents aspectual classification of transitive dynamic events. These aspectual classes that determine the type of verbal semantics will be effectively used in the empirical investigations of this monograph as presented in Chapter 5 and Chapter 6.

Since these contrasts hinge on root semantics, Section 2.3 turns to manner/result complementarity and presents the diagnostics employed to classify predicates into these two broad types. The distinction is crucial regarding the assumption that manner and result roots impose systematically different constraints on event decomposition, diagnosed by the availability of causative alternations, and the syntactic realization of arguments and their thematic roles. Result roots lexically encode a change of state and therefore directly determine the presence of a caused state, whereas manner roots merely specify how an event unfolds and leave the result component entirely absent. As a consequence, manner and result predicates differ in their compatibility with causativization strategies, the interpretation of causative relations, and the degree to which causative morphology can manipulate event structure. Establishing this distinction is therefore a necessary precondition for the subsequent analysis of causative formation and recursive causativization, and for evaluating the increasing indirectness hypothesis as an empirically and theoretically relevant dimension.

Section 2.4 sharpens the conceptual distinction between *causation* as a semantic relation between eventualities (an event bringing about another event or state) and *causativization* as a morphosyntactic operation that introduces such a relation into the verbal domain. The section further outlines the typology of causative constructions, covering formal cross-linguistic variation (lexical, morphological, and syntactic causatives) as well as semantic dimensions such as (in)directness. The working definitions in terms of both theoretical and empirical aspects of the overall study are made explicit to ensure terminological consistency prior to the presentation of causation, causativization, and event structure within the decompositional approach employed in this monograph.

Considering causative constructions as configurations built from independently motivated event-structural primitives, Section 2.5 provides the theoretical machinery for analyzing the size of the complement of *v*P and the role of Voice, leveraging the causative taxonomy of Pylkkänen (2008). It further presents the phenomenon of causative alternation in line with common-base approaches (e.g. Alexiadou et al. 2015). Finally, it introduces the broader outlook pursued in later chapters, including the possibility of recursive *v*P- and VoiceP-embedding, as it will be previewed and examined in Chapter 4. Overall, the sections of this chapter establish

the conceptual and analytical foundations on which the theoretical and empirical analyses in the subsequent chapters build, offering a structured account of how causativization interfaces with event structure, root semantics, and argument realization across languages.

2.2 Unaccusativity and aspectual classes

This section establishes the foundational distinctions among unaccusative, unergative, and transitive predicates, a classification that is critical for the subsequent analysis of causativization. From a typological perspective, these classes often dictate the availability of morphological versus analytical causativization across languages. From a generative standpoint, the distinction allows us to probe how the properties of the verbal root interact with functional projections such as Voice or *v*. As will be shown, the derivation of causatives is not uniform; rather, it is sensitive to the underlying event structure of the base predicate. Semantic aspects such as telicity, duration as well as manner/result complementarity lead to morphosyntactic effects influencing argument structure and the availability of causative alternations. Consequently, unaccusative roots typically exhibit distinct structural and semantic behavior under causativization compared to unergative or transitive roots. The following subsections outline these aspectual and syntactic classifications, providing the empirical baseline for the overall study.

2.2.1 Unaccusative-unergative distinction

Since Perlmutter (1978)'s seminal study concerning impersonal passives, intransitives have been distinguished into two types: unaccusatives and unergatives. This "split intransitivity" hypothesis posits that unaccusatives and unergatives have fundamentally different underlying structures (Acartürk & Zeyrek 2010; Kuno & Takami 2004). Structurally, unaccusatives, such as *fall* and *die*, "have an underlying object promoted to the subject position" (Acartürk & Zeyrek 2010: 111), whereas unergatives, such as *talk* and *work*, are considered to have "a base-generated subject", that is "the subject in both underlying and the surface structures" (Kuno & Takami 2004: 11; Burzio 1986). Within Burzio (1986)'s framework, the structural analysis of the two types of intransitives is presented such that unaccusatives base-generate the theme DP as an internal argument, while unergatives base-generate the agent DP as an external argument; see Section 2.5 for the analysis of the split intransitivity according to the decompositional approach within DM as employed in this monograph.

The split intransitivity is not only related to the syntactic differences between the sole arguments of the two types of verbs, but also related to the semantics of verbs on the basis of verbal parameters such as volition and lexical-semantic features such as animacy (Perlmutter 1978). Unaccusatives generally describe non-volitional events involving a single theme argument, which is “either animate or inanimate and undergo the action” (van Gelderen 2019: 218), and include verbs such as *die*, *burn*, *fall*, *drop*, *melt*, and *freeze*. Unergatives, on the other hand, describe volitional events involving a single agent argument, that is “animate and act deliberately” (van Gelderen 2019: 218), and include verbs such as *work*, *talk*, *speak*, *dance*, *play*, *laugh*, *cry*, and *smile*.

In Perlmutter (1978)’s classification, unaccusative predicates cover a wide range of semantic types, all typically involving a subject that is a non-volitional theme. This includes predicates expressed by adjectives in English and, most centrally, predicates whose subjects undergo a change. This features verbs like *burn* (*the paper burned*), *fall* (*the apple fell*), and *drop* (*the temperature dropped*). This group also contains inchoatives, which describe a process of changing state, such as *melt* (*the ice melted*) or *freeze* (*the lake froze*). Beyond these change-of-state verbs, the unaccusative class also includes predicates of existing and happening, such as *exist* (*new problems exist*) and *happen* (*the event happened*). Furthermore, it contains verbs describing the involuntary emission of stimuli, like *shine* (*the moon shines*), *sparkle*, and *glitter*. Finally, the category is rounded out by aspectual predicates that describe the phases of an event, like *begin*, *start*, and *stop*, and durative verbs describing a persistent state, such as *last*, *remain*, and *stay* (*the guest stayed*). Unergative predicates, on the other hand, are primarily defined by volitional action originating from an agent. The core of this class consists of predicates describing willed acts, such as *work* (*the researchers work*), *play* (*the children play*), and *speak* (*the leader speaks*). This category of volitional action is quite broad, also including more specific manner-of-speaking verbs like *whisper* and *shout*, as well as predicates that describe sounds made by animals, such as *bark* (*the dog barks*) or *roar* (*the lion roars*). This class also contains certain involuntary bodily processes, such as *cough*, *sneeze*, and *vomit*.

Moreover, Sorace (2000)’s hierarchy distinguishes seven classes of verbs that form a continuum between unaccusative and unergative verbs as depicted in Table 2.1 below: Verbs at the top of this hierarchy are the most prototypical unaccusatives, and those at the bottom are the most prototypical unergatives. This continuum maps directly onto aspectual properties as added by van Gelderen (2019). The top of the hierarchy, representing the core unaccusatives, consists of telic verbs. These include change-of-location verbs (e.g. *come*, *arrive*) and change-of-state verbs (e.g. *begin*, *rise*). The middle of the hierarchy is populated by stative verbs, which include ‘continuation of a pre-existing state’ (e.g. *last*, *survive*) and ‘existence of

state' (e.g. *exist, belong*). Finally, the bottom of the hierarchy, representing the unergative verbs, consists entirely of durative (and atelic) verbs. These are further divided into 'uncontrolled process' verbs (e.g. *cough, shine*), 'controlled process (motional)' verbs (e.g. *run, walk*), and 'controlled process (non-motional)' verbs (e.g. *work, play, talk*).

	Example verbs	Aspect
Change of Location	<i>come, arrive</i>	telic
Change of State	<i>begin, rise</i>	telic
Continuation of a pre-existing State	<i>last, survive</i>	stative
Existence of State	<i>exist, belong</i>	stative
Uncontrolled Process	<i>cough, shine</i>	durative
Controlled Process (motional)	<i>run, walk</i>	durative
Controlled Process (non-motional)	<i>work, play, talk</i>	durative

Table 2.1: Continuum between unaccusatives and unergatives

This syntactic and semantic distinction regarding the split intransitivity has direct consequences for both the aspectual nature of the verb and its ability to participate in the causative alternation (see Section 2.5.2 and Section 3.3). As will be analyzed in later chapters, unaccusatives (i.e. unmarked anticausatives) alternate with marked lexical causatives by the addition of an agent, which then “render them causative” (van Gelderen 2019: 217, see e.g. Schäfer 2008: 9; Alexiadou et al. 2015). The alternants of the causative alternation in English can be exemplified as follows: *The window broke* vs. *John broke the window*. Such alternation with unergatives is not possible, however, a theme can be added to the argument structure of unergatives, which is not possible for unaccusatives (van Gelderen 2019: 218): *She danced a dance* vs. **The bus arrived a passenger*. Since causative alternation plays a crucial role in the overall analysis of the morphosyntax of Turkish causatives, Section 2.5 thoroughly presents this phenomenon within the framework of DM.

In summary, first, “unaccusative verbs are mainly those that represent non-volitional events of the subject referents and express changes of state/location of these referents” (Kuno & Takami 2004: 10), in which the thematic role of those subject referents is theme; second, “unergative verbs are those that represent volitional acts of their subject referents [where the grammatical subject is an agent] and those that represent involuntary bodily processes of humans [where the grammatical subject is an experiencer]” (Kuno & Takami 2004: 10). Moreover, unaccusatives are telic and may describe delimited events (Dowty 1991; van

Gelderen 2019: 218), whereas unergatives are atelic and durative and may express non-delimited events.

2.2.2 Aspectual classification of transitive events

While the unaccusative-unergative split illustrates the syntactic consequences of event structure within intransitives, similar aspectual constraints, specifically dynamism, duration, and telicity, extend to transitive predicates, determining their argument realization and structural configuration. Table 2.2 shows the Vendlerian classification of eventualities based on their aspectual types of dynamism, duration, and telicity (Vendler 1967: 106; Dowty 1979; Tenny 1994; Levin & Rappaport Hovav 2005; Kearns 2011: 159; Beavers 2013: 681; Rohlstein 2004: 12).

	Dynamism	Duration	Telicity
state <i>be tall, know the answer</i>	stative	durative	atelic
achievement <i>break the vase, arrive at a station</i>	dynamic	punctual	telic
activity <i>play the guitar, run a marathon</i>	dynamic	durative	atelic
accomplishment <i>clean the table, fill the bottle</i>	dynamic	durative	telic

Table 2.2: Vendler’s four aspectual classification of eventualities

The core parameter that determines transitive-dynamic events is TELICITY, i.e. whether a dynamic event has an inherent temporal endpoint - also known as telos, or bound, or delimiter (Levin & Rappaport Hovav 2005: 88; Krifka 1998). Another important parameter lies in the question of whether a dynamic event takes time, hence durative, or happens in less than a moment in time, hence punctual (Engelberg 1999), i.e. DURATION.

The first aspectual class *state* constitutes non-dynamic and durative events. These involve events such as “*be in the garden, be tall, resemble one’s mother, know the answer, and believe in witches*”, which do not involve change of state, i.e. atelic (Levin & Rappaport Hovav 2005: 88). The second aspectual class *achievement* constitutes non-stative and punctual events. These include verbs such as *realize, notice, break, explode, arrive*, which describe a transition to a resultant state, i.e. telic. The third aspectual class is *activity*, which incorporates events that are dynamic and durative events. These involve verbs such as *run, play the piano, run,*

laugh, which have no inherent temporal endpoint, i.e. atelic. The fourth aspectual class accomplishment is similar to achievement in terms of telicity, but distinct in terms of duration, as it takes time to ‘accomplish’. These include events such as *draw a picture, clean the table, fill the bottle, build a bridge, eat an apple*, which depict a transition to a resultant state.

The fifth aspectual class, which is not shown in Table 2.2, is semelfactive (Levin & Rappaport Hovav 2005; Kearns 2011). A semelfactive verb, such as *knock, kick, jump, kick* refers to “a brief event which ‘resets’, or returns to the initial situation, and so is inherently repeatable” (Kearns 2011: 159). These verbs are instantaneous and do not involve a change of state. The fundamental difference between semelfactives and achievements is that the former do not establish any particular result state, but the latter does so (Kearns 2011: 167). More importantly, in terms of event structure, Levin (1999: 10) argues that semelfactives pattern with activities: “many semelfactive verbs also allow for activity interpretations when the events they describe are iterated”. As a result, such verbs can have durative interpretations. Moreover, Kearns (2011: 168) suggests that “a possible classification for semelfactives is that they are bounded but not telic, although there is no consensus on how to classify them”.

Diagnostic tests for the aspectual classification of eventualities include *in* adverbials (only with the past tense), *take* time construction, *for* adverbials (Kearns 2011: 160). An atelic-dynamic event is not compatible with the use of *in* adverbials. For instance, atelic verbs, having no inherent temporal endpoint, cannot be used with an *in* adverbial, however, they can be used with a *for* adverbial (Rohlsstein 2004: 7–8; Kearns 2011: 159). Telic events, on the other hand, have no problem with *in* adverbials but disallow *for* adverbials. (20) and (21) show the diagnostics for atelic and telic events, adopted from Rohlsstein (2004: 8) and Kearns (2011: 161).

(20) *Atelic events*

- a. They walked in the park ^{ok}for half an hour / *in half an hour.
- b. John knew Mary ^{ok}for years / *in a year.
- c. John danced ^{ok}for hours / *in an hour.

(21) *Telic events*

- a. John spotted Mary ^{ok}in a few minutes / *for a few minutes.
- b. John built the house ^{ok}in a few weeks / *for a few weeks.

Activities and accomplishments share the same property of duration; as a result, they can both be used with the progressive easily (Rohlsstein 2004: 21); however, achievements cannot occur in the progressive due to the lack of duration (see Landman 1992) The difference between activities and accomplishments, both

referring to durative events, lies in the lack of entailments with the contrast between the progressive and the imperfective (Rohlsstein 2004: 22), as in (22).

(22) *Atelic events*

- a. John is running *entails*
John has run.
- b. Bill is crying *entails*
Bill has cried.
- c. John is eating a sandwich *does not entail*
John has eaten a sandwich.
- d. Mary was building a house *does not entail*
Mary has built a house.

Both accomplishments and achievements are telic, but achievements are non-durative. Using the *take* time modification, the contrast between them becomes visible (Rohlsstein 2004: 23; Kearns 2011: 161), as in (23).

(23) *Telic events*

- a. ??It took half an hour for Mary to break the vase.
- b. ??It took half an hour for Mary to lose her keys.
- c. ^{ok}It took half an hour for Mary to clean the table.
- d. ^{ok}It took half an hour for Mary to eat the pie.

Having established the structural baseline for split intransitivity and the aspectual classes of transitive dynamic events, the discussion now turns to the theory of manner/result complementarity, which characterizes how lexical semantics of transitive roots contribute to event structure and argument realization, and motivates the framework adopted for the analysis of causativization.

2.3 Manner/result complementarity

The preceding sections established the relevance of split intransitivity and aspectual classifications for transitive dynamic predicates, with particular attention to parameters such as telicity and duration. These parameters play a central role in the empirical investigations pursued later in this study, where telicity in particular serves as an important diagnostic for result-denoting predicates. At the same time, however, aspectual properties alone do not fully determine the internal semantic contribution of verbal roots. The present section therefore turns to the distinction between manner and result predicates, which has been argued to reflect deeper constraints on lexicalized root meaning and its interaction with event structure.

The distinction between “manner” verbs and “result” verbs is a foundational concept in lexical semantics, providing a crucial lens into the analysis of the structure of events. Manner verbs, such as *run*, *scrub*, and *laugh*, specify the way an action is carried out. In contrast, result verbs, such as *break*, *arrive*, and *empty*, specify the outcome or state that comes about from an action. As such, manner/result complementarity provides an important point of contact between lexical semantics, event-structural representations, and their syntactic implementation. The strategic importance of this distinction extends across linguistic theory, influencing our understanding of argument realization, the architecture of event structure, and the fundamental nature of the lexicon-syntax interface. Rather than constituting a purely descriptive verb classification, it has been argued to capture restrictions on which components of an event can be lexically encoded by a root and which must be introduced compositionally. This section outlines the core theoretical assumptions underlying this distinction and situates them with respect to the structural representations adopted in this monograph.

2.3.1 Core theoretical assumptions

The theoretical foundation of manner/result complementarity is developed most extensively in the work of Rappaport Hovav and Levin (e.g. Levin & Rappaport Hovav 2005; Rappaport Hovav & Levin 2010) and related research, according to which verbal roots encode idiosyncratic lexical meaning that systematically constrains event structure, giving rise to two distinct semantic classes with complementary syntactic behavior. On this view, roots differ with respect to what they lexically entail, and these entailments regulate how roots may combine with event-structural primitives. The core of their proposal is that eventive verbs can only lexicalize a manner root or a result root, but not both (Levin & Hovav 2013: 2).

A central assumption underlying this approach is that lexicalized meaning must be distinguished from contextual inference: only meaning components that are invariant across all uses of a given root count as part of its lexical semantic contribution, whereas context-dependent enrichments, pragmatic inferences, and constructionally induced interpretations are excluded from the lexical representation (e.g. Dowty 1991; Levin & Rappaport Hovav 2005). This distinction is crucial for the formulation of manner/result complementarity, since manner or result interpretations that arise only under particular syntactic or discourse conditions cannot be taken to reflect what a root lexically encodes. Accordingly, apparent result implications associated with manner predicates, or manner-like interpretations associated with result predicates (see Beavers & Koontz-Garboden 2020a), do not constitute counterexamples to the complementarity hypothesis.

Within this framework, manner and result roots are distinguished by the type of information they lexically encode: manner roots specify how an event unfolds without entailing a particular outcome, whereas result roots lexically entail a change along a scale or the coming about of a result state. Crucially, a single root is not taken to encode both types of information, a restriction commonly formulated as the lexicalization constraint (Levin & Hovav 2013), which is therefore understood as a constraint on lexicalized root meaning, rather than as a generalization derived from construction-specific patterns or surface distributions. According to Rappaport Hovav & Levin (2010), manner verbs specify as part of their lexical entry a non-scalar, complex manner of carrying out an action (e.g. *sweep, wipe*). These verbs describe the “stuff” of the event—the physical motions or processes—without encoding a specific endpoint or change of state. In contrast, result verbs specify a scalar change of state, denoting the coming about of a result state (e.g. *break, open*). Crucially, the outcome of a result verb is lexically entailed, whereas the manner in which that result is achieved is left underspecified. Conversely, for manner verbs, the action is specified, but any resulting state is at best pragmatically implicated, not logically entailed. (24) shows a list of verbs adapted from Rappaport Hovav & Levin (2010: 21), which reflects that the manner/result distinction cuts across the transitive/intransitive distinction, in that both manner and result verbs can occur in transitive as well as intransitive configurations.

- (24) a. *Manner verbs*
 nibble, rub, scribble, sweep, flutter, laugh, run, swim
 b. *Result verbs*
 clean, cover, empty, fill, kill, melt, open, arrive, enter, faint

The manner/result distinction is grammatically relevant insofar as the two classes differ systematically in argument realization (Rappaport Hovav & Levin 2010: 21–22). In particular, manner predicates readily appear with unspecified or non-subcategorized objects in simple, non-modal and non-habitual contexts, as in (25), whereas result predicates generally resist such uses, as in (26).

- (25) a. Kim scrubbed all morning.
 b. Kim scrubbed her fingers raw.
 (26) a. *The toddler broke.
 b. *The toddler broke his hands bloody.

As noted by Levin & Rappaport Hovav (2005: 232), verbs that lexicalize a manner component of meaning, such as *sweep, wipe, or sew*, display a wider range of argument realization options than verbs that lexicalize a result state component,

such as *break*, *open*, or *empty*. Importantly, this difference should not be understood as greater “flexibility” in any unconstrained sense. At this stage, the notion of “argument realization options” is intended to capture variation in the realization of the internal argument, such as object omission or alternative syntactic encodings, and does not concern the external argument.

Manner/result complementarity reflects systematic differences in what is lexically encoded by the root and, consequently, which components of event structure must be introduced compositionally in the syntax. Manner verbs are restrictive in their own way. In particular, they typically impose strong constraints on the external argument, which is canonically interpreted as an agent of an activity. At the same time, because manner roots do not lexically entail a result state, they are compatible with a range of event-structural augmentations that introduce or elaborate a result independently. This is reflected in their ability to appear with unspecified objects, path expressions, and resultative secondary predicates (Rappaport Hovav & Levin 1998: 97).

- (27) a. Terry swept.
b. Terry swept the crumbs into the corner.
c. Terry swept the floor clean.

These patterns do not indicate that manner verbs freely vary in argument realization; rather, they follow from the fact that the root specifies only the manner of action, leaving the result component underspecified. As a consequence, the syntax may either leave the internal argument implicit or introduce a result phrase without contradicting the lexical semantics of the verb. Result verbs, by contrast, lexically entail a change of state and therefore require an argument that undergoes this change to be projected in the syntax. This requirement makes object omission generally unavailable (Rappaport Hovav & Levin 1998: 117).

- (28) a. *Tracy broke.
b. Tracy broke the dishes.

As emphasized by Rappaport Hovav & Levin (2010), this asymmetry follows directly from the complementarity between manner and result encoding and reflects a fundamental property of the mapping from lexical semantics to syntax. Manner verbs specify “a manner of carrying out an action,” while result verbs specify “the coming about of a result state” (Rappaport Hovav & Levin 2010: 21). Although events may be described using both manner and result components, these components cannot be simultaneously lexicalized by a single verbal root. In other words, there is no single root **wipe-clean* that encodes both the specific circular motion and the state of cleanliness simultaneously. Thus, in a sentence

such as *Terry wiped the table clean*, the root *wipe* contributes the manner, while the result state is introduced by the secondary predicate *clean*, yielding a complex event interpretation without violating lexicalization constraints (see Hopperdietzel 2020). More generally, the fact that result states can be compositionally added, modified, or morphologically expressed elsewhere in the clause provides independent motivation for separating lexical root meaning from event-structural augmentation. If verbal roots were able to lexicalize both manner and result simultaneously, the availability of resultative constructions, causative morphology, and related compositional mechanisms would remain unexplained.

Subsequent work has refined the manner-result distinction by probing its empirical limits and theoretical consequences. Certain verb classes, such as motion verbs like *climb* or manner-of-killing verbs like *guillotine*, have been argued to combine manner-like and result-like properties. In particular, Beavers & Koontz-Garboden (2020a) argue that apparent counterexamples and gradient cases motivate a more precise characterization of what counts as a result, proposing that result roots be understood in terms of scalar change (cf. Levin & Hovav 2013). On this view, the crucial distinction is not between result and non-result in an intuitive sense, but between roots that lexically encode scalar change and those that encode non-scalar change (see also Fleischhauer 2021). While this refinement complicates the empirical landscape, it does not undermine the complementarity hypothesis itself, provided that lexical entailment is carefully distinguished from defeasible inferences derived from contextual enrichment. As emphasized by Rappaport Hovav & Levin (2010), such cases do not undermine the complementarity hypothesis once lexical entailment is carefully distinguished from presupposed or contextually inferred meaning. In these verbs, only one component is truth-conditionally asserted by the root, while the other arises as an implicational inference. Moreover, the existence of complex event structures derived in the syntax, such as resultative constructions, can be understood precisely as a strategy for combining manner and result components compositionally, thereby circumventing lexical restrictions without violating them.

Despite these edge cases, the binary distinction between manner and result roots remains empirically and theoretically intact. It accounts for why result predicates, typically associated with accomplishments and achievements, entail a specific endpoint and resist object deletion, whereas manner predicates, commonly activities, describe unbounded processes and permit a wider range of event-structural augmentations. These contrasts play a central role in the present study, as they interact systematically with the encoding of causation and the distribution of causative morphology. Crucially for the purposes of this study, manner/result complementarity is not treated as a purely lexical phenomenon. Lexical entailments

are not assumed to project directly to syntactic structure. Instead, they constrain the inventory of event-structural primitives available for composition, thereby determining whether a predicate is compatible with mono-eventive or bi-eventive configurations. In this sense, lexical semantics, event decomposition, and syntactic structure are related indirectly, via a mediating level of event structure. If manner and result roots differ in the event-structural configurations they license, these differences should be empirically detectable. The next subsection therefore introduces a set of diagnostics designed to track the presence or absence of a result state, providing independent criteria for distinguishing manner and result predicates in the analyses that follow.

2.3.2 Diagnostics for manner and result verbs

In order to empirically classify verbal roots in the dataset examined in this study, a set of established diagnostics is employed. These diagnostics are designed to track the presence or absence of a result state and thus to distinguish manner verbs from result verbs on independent syntactic and semantic grounds. The criteria adopted here are drawn primarily from Beavers & Koontz-Garboden (2020a) and related work on event structure and argument realization. The diagnostics discussed in this section serve two purposes. First, they motivate the classification of roots as manner or result predicates in a theory-neutral way. Second, they provide the empirical basis for later analyses of causation and causativization, where differences in event-structural complexity play a central role. Although judgments vary as to whether all result verbs are necessarily telic (Rappaport Hovav & Levin 2010), the diagnostics considered here rely primarily on entailments associated with result states, rather than on telicity alone.

A defining property of manner verbs is that they lexicalize a specific type of action or process, which typically imposes restrictions on the external argument. In particular, manner predicates generally require an agent capable of intentionally performing the specified activity, giving rise to characteristic selectional restrictions on external arguments (Beavers & Koontz-Garboden 2020a: 174).

- (29) a. ^{ok}John scrubbed / wiped the floor with a stiff brush.
 b. #The stiff brush / #The earthquake scrubbed / wiped the floor.
- (30) a. ^{ok}John broke / shattered the vase with a hammer.
 b. ^{ok}The hammer / ^{ok}The earthquake broke / shattered the vase.

In addition, manner verbs allow continuations that explicitly deny any change of state, since no result is lexically entailed by the root. Result verbs, by contrast,

disallow such continuations due to their inherent result entailments (Beavers & Koontz-Garboden 2020a: 167; see also Beavers 2013).

- (31) a. ^{ok}Tracy just swept the floor, but nothing is different about it.
b. ^{ok}Tracy just wiped the floor, but nothing is different about it.
- (32) a. #Shane just broke the vase, but nothing is different about it.
b. #Shane just destroyed the house, but nothing is different about it.

Because manner verbs describe an activity rather than a change of state, they do not entail a result state beyond the manner itself. As a result, manner verbs allow object deletion, whereas result verbs generally require the internal argument to be overtly realized (Beavers & Koontz-Garboden 2020a: 168–169).

- (33) a. Kim scrubbed the floor.
b. ^{ok}All last night, Kim scrubbed.
- (34) a. Kim broke the vase.
b. *All last night, Kim broke.

A further diagnostic concerns participation in the causative alternation. Transitive result verbs, which lexically encode a change of state, commonly allow an anticausative variant lacking an external argument. This absence of an agent can be diagnosed using the *by itself* test (Alexiadou et al. 2015: 21; Hopperdietzel 2020: 45). Manner verbs, by contrast, generally resist this alternation.

- (35) a. Peter wiped the table.
b. *The table wiped (*by itself*).
- (36) a. Peter opened the door.
b. ^{ok}The door opened (*by itself*).

Overall, these diagnostics reflect the core semantic distinction articulated by Rappaport Hovav & Levin (2010): manner verbs specify a manner of carrying out an action, whereas result verbs specify the coming about of a result state. Although not all diagnostics might be applicable in every language, English data illustrate how tests such as denial of result, restrictions on external arguments, object deletion, and agent deletion can be used to diagnose whether a verbal root lexicalizes manner or result meaning. These diagnostics collectively support the view that manner verbs are mono-eventive, while result verbs are bi-eventive.

The diagnostics introduced in this section provide the methodological foundation for the analyses in the following chapters, where they are applied prior to the structural analysis of Turkish causatives where relevant as well as utilized for the classification of verbs in the corpus data. Table 2.3 summarizes the diagnostics

employed in this study and contrasts manner and result verbs with respect to their morphosyntactic and semantic properties (see also Hopperdietzel 2020: 50). Only those diagnostics relevant for the analysis of Turkish are included.

	Manner (mono-eventive)	Result (bi-eventive)
<i>Argument-structural diagnostics</i>		
Only agentive external arguments	✓	✗
Object deletion	✓	✗
(Anti)causative alternation	✗	✓
<i>Event-structural diagnostics</i>		
Denial of result	✓	✗
Intermediate subevents	✗	✓
Restitutive reading of <i>again</i>	✗	✓
<i>Aspectual correlates</i>		
TELICITY	✗	✓
DURATION	✓	✓
<i>Vendlerian classes</i>		
ACTIVITY	✓	✗
ACCOMPLISHMENT	✗	✓
ACHIEVEMENT	✗	✓

Table 2.3: Diagnostics for transitive manner and result verbs

Having established the verb-internal dimensions that condition the expression of causation, the discussion now turns from properties of predicates to properties of causative constructions. Section 2.2 introduced the argument-structural backbone relevant for causativization, in particular the split between unaccusative and agentive predicates and the aspectual classes of transitive dynamic events. Section 2.3 then refined this picture by showing that root semantics constrains event decomposition, distinguishing manner predicates compatible with mono-eventive configurations from result predicates that involve a result state and, in the present approach, a bi-eventive structure. In Section 2.5.1, I present the structural configurations of manner/result complementarity, determining how roots and their inherent event structures are represented in the syntax.

Overall, these assumptions delimit the space in which causativization can operate: they determine which event components are lexically encoded, which are com-

positionally introduced, and which arguments are structurally required. Against this background, the next step is to consider causation itself as a grammatical relation between an initiating event and a resulting eventuality, rather than as a meaning component attributable to individual verb classes and root-level constraints alone. While Section 2.2 and Section 2.3 established the verb-internal semantic and structural dimensions relevant for causativization, Section 2.4 now shifts to cross-linguistic and theoretical perspectives on causatives, surveying how causation and causativization are encoded across languages and how different frameworks define and model causativization in terms of form, event structure, and argument realization.

2.4 Causation and causativization

Causativization has been approached from markedly different theoretical perspectives, resulting in divergent definitions of what counts as a causative construction and what role causative morphology plays in the grammar. These differences do not merely reflect terminological variation, but follow from deeper assumptions about whether causativization should be analyzed primarily in terms of argument structure or in terms of event structure. Accordingly, theories of causatives diverge with respect to whether the defining property of causativization is the introduction of an argument or the introduction of a causing event. Recurring questions concern the function of causativization, the grammatical and semantic status of the embedded subject, and the formal and semantic distinctions among different types of causative constructions. How these questions are answered depends primarily on the theoretical assumptions adopted about argument structure, event structure, and the mapping between semantic roles and syntactic positions: typological accounts define causativization primarily as a valency-increasing operation that introduces an additional argument (e.g. Dixon 2000; Zúñiga & Kittilä 2019), whereas formal approaches analyze causativization in terms of event structure and functional projections (e.g. Pylkkänen 2008; Harley 2017). By contrasting argument-based and event-based conceptions of causativization, this section motivates the need for a structural treatment in which causativization is modeled as a relation between events rather than solely as an operation on argument structure.

Section 2.4.1 gives an overview of cross-linguistic patterns observed and analyzed by typological approaches to causatives. Based on the cross-linguistic variation regarding the robust similarities observed in the causativization of unaccusative predicates and the greater diversity that arises when unergative and transitive verbs are causativized, Section 2.4.2 presents Pylkkänen (2008)'s

causativization theory based on parameters of bundling and selection. Section 2.4.3 complements this theoretical comparison by surveying semantic dimensions of causatives that recur cross-linguistically, including the relation between causing and caused events, the interpretation of the embedded subject, and distinctions between direct and indirect causation. Section 2.4.4 introduces the working definitions and scope adopted in this monograph, specifying the types of causative constructions investigated in the following chapters and clarifies the terminological distinctions that will be employed, in particular the distinction between lexical and productive causatives and its relation to unaccusative versus unergative/transitive bases. Together, these clarifications establish the conceptual prerequisites for the decompositional approach presented in Section 2.5.1, where causative meaning is derived from the interaction of event structure, Voice, and verbal projections.

2.4.1 Cross-linguistic patterns in causatives

Traditionally, causativization is defined as a valency-increasing operation (Dixon & Aikhenvald 2000; Shibatani & Pardeshi 2002). Under this view, the causative morpheme increases the number of arguments of the predicate it attaches to, typically by introducing an additional participant interpreted as the causer (Zúñiga & Kittilä 2019; Bahrt 2021). Within this paradigm, research has focused primarily on three aspects: the function of causativization as argument introduction (Dixon 2000; Zúñiga & Kittilä 2019), the grammatical relation of the embedded subject or causee (Comrie 1974; Cole 1983), and the thematic role assigned to the embedded subject (Wali 1981; Dowty 1991; see Kulikov 2001 for an overview).

Within typological accounts, causative constructions are commonly classified according to their formal realization into three types: i. lexical causatives; ii. morphological causatives; iii. syntactic (or periphrastic) causatives. Lexical causatives are predicates that encode causative meaning without overt productive causative morphology, such as *kill*, *open*, or *feed* (Kulikov 2001: 887). Morphological causatives involve overt morphological marking, most commonly affixation, as found in agglutinative languages such as Japanese, Finnish, and Turkish (Zúñiga & Kittilä 2019: 26); e.g. Japanese *-sase-* and Turkish *-Dir* (see Dixon 2000: 34 for a full typology of morphological processes for marking causatives). Syntactic causatives, by contrast, are expressed by means of causative light verbs, such as *let* and *make* in English, and are characteristic of Germanic and Romance languages. It has been argued that the availability of morphological versus syntactic causatives correlates with broader typological properties of languages, in particular their morphological profile: “isolating languages tend to use auxiliary causative verbs, and agglutinative languages tend to use affixes” (Shibatani 1976: 3). The examples

in (37b)-(39b) illustrate the three formal types using causativization of intransitive predicates in English and Turkish: lexical causatives, as in (37b), morphological causatives, as in (38b), and syntactic causatives, as in (39b).

- (37) a. The door opened.
 b. John opened the door. (Kulikov 2001: 886)
- (38) a. Hasan öl-dü.
 Hasan die-PST
 'Hasan died.'
 b. Ali Hasan'ı öl-dür-dü.
 Ali Hasan-ACC die-CAUS-PST
 'Ali killed Hasan.' (Comrie 1974: 5)
- (39) a. John went.
 b. Peter made John go. (Kulikov 2001: 886)

Despite their formal differences, these constructions are argued to share a common semantic core, namely the encoding of a causative relation between a causing event and a caused event. Thus, predicates such as *opened*, *öl-dür-dü* 'killed', and *made go* are analyzed as expressing a complex event structure, thus bringing two events together, in which an action performed by an agent brings about a change or event involving another participant: 'John did something', 'Ali did something', 'Peter did something', as a result, 'the door opened', 'Hasan died', 'John went'. Within typological accounts, such constructions are commonly paraphrased as expressing a meaning of the form 'cause to V_o' (Kulikov 2001: 886): i.e. 'cause to open', 'cause to die', 'cause to go', respectively.

Within typological accounts, particular attention has been paid to the causativization of unaccusative predicates, which are often taken to represent the prototypical case of causative formation. The reason is that unaccusative verbs lack an external argument in their base form, such that causativization straightforwardly results in the introduction of an agentive argument and a corresponding increase in syntactic valency (Comrie 1974). A recent formulation of this view is provided by the notion of 'causative diathesis', defined as a "mapping of semantic roles onto grammatical roles" (Zúñiga & Kittilä 2019: 4). Under this approach, causativization is analyzed as the addition of an agent to the argument structure of the base predicate, yielding a transitive causative from an intransitive base and a ditransitive causative from a transitive base (Comrie 1989; Dixon 2000). The introduced agent surfaces as the subject of the causative construction, while the embedded subject may surface as a core argument or an adjunct (Zúñiga & Kittilä 2019: 15–16). This configuration is taken to define a

causative prototype that captures the cross-linguistically most stable patterns of causativization. Focusing on the analysis of causativization of unaccusatives in Turkish, as in (38), Zúñiga & Kittilä (2019) illustrate the causative prototype using diathetical representations, as in (40); see Zúñiga & Kittilä (2019: 16–18) for the analysis of other base predicates.

- | | |
|---|---|
| <p>(40) a. Unaccusative
(<i>öl-</i> ‘die’)</p> <p style="text-align: center;"><i>Hasan</i></p> <p style="text-align: center;"> </p> <p style="text-align: center;"><i>S_P</i></p> <p style="text-align: center;"> </p> <p style="text-align: center;">s</p> | <p>b. Transitive
(<i>öl-dür-</i> ‘kill’)</p> <p style="text-align: center;"><i>Ali Hasan</i></p> <p style="text-align: center;"> </p> <p style="text-align: center;">A P</p> <p style="text-align: center;"> </p> <p style="text-align: center;">s DO</p> |
|---|---|

This configuration is representative of the causative prototype, where causativization of an unaccusative base is treated as the introduction of an additional causer argument and a corresponding increase in valency. In (38b), the causative predicate *öl-dür-* differs from its unaccusative base *öl-* in that an agent argument *Ali* is added, while the participant that undergoes the change of state *Hasan* is realized as the internal argument of the causativized predicate. In this sense, causativization yields an $n+1$ argument structure in a maximally transparent way, which is why unaccusative bases are often taken to instantiate the most canonical causative pattern in typological work (e.g. Comrie 1974).

An important refinement of this pattern is what Zúñiga & Kittilä (2019) refer to as agent-related causation, where the patient of the unaccusative base predicate remains the patient after causativization and is “equally affected” in both the caused and the non-caused event (Zúñiga & Kittilä 2019: 18). Thus, in (38b), the participant *Hasan* is not an agent of the caused event but remains a patient, while the causative construction introduces an external agent. This type of causation is schematized in (41) using a decomposition of semantic roles based on volitionality, instigation, and affectedness (Næss 2007).

- (41) a. *Uncaused event*
‘the vase broke’
the vase [–VOL] [–INST] [+AFF]
- b. *Caused event*
‘the child broke the vase (on purpose)’
the child [+VOL] [+INST] [–AFF]
the vase [–VOL] [–INST] [+AFF]

The causative prototype outlined above captures the most stable cross-linguistic patterns, particularly in the causativization of unaccusative predicates. However, Kittilä (2009) also recognizes a range of causative constructions that deviate from this prototype, motivating the distinction between prototypical and non-prototypical causatives, to which the discussion now turns. Beyond prototypical cases of causativization that overtly increase syntactic valency, a class of non-prototypical causatives has been identified, in which causative meaning is present without an increase in the number of overt arguments. In other words, Kittilä (2009) classifies the exceptional cases under which this definition does not apply.

One example is ‘covert causativization’, which “refers to cases in which an external causer is introduced into the event denoted by the causativized clause, but in which the number of arguments is not affected” (Kittilä 2009: 75; see also Kittilä 2013). In such cases, the causative construction involves an additional semantic participant, yielding an $n+1$ semantic argument structure, while the syntactic valency remains identical to that of the non-causative base predicate. The causative relation is thus implied but not overtly reflected in argument realization. This phenomenon is typically attributed to language-specific restrictions on the maximal number of syntactic arguments allowed in monoclausal constructions (Zúñiga & Kittilä 2019: 20). As illustrated by Songhai causatives in (42a) and (42b), causativization of transitive and ditransitive predicates results in no overt increase in syntactic valency, even though a causer is semantically introduced.

- (42) a. Ali nga-ndi tasu di Musa se.
 A. eat-CAUS rice the M. IOBJ
 ‘Ali made Mousa eat the rice.’
- b. Garba neere-ndi bari di Musa se (*Ali se).
 G. sell-CAUS horse the M. IOBJ (A. IOBJ)
 ‘Garba had Musa sell the horse.’
 ‘Garba had the horse sold to Musa.’ (Zúñiga & Kittilä 2019: 20)

Zúñiga & Kittilä (2019) argue that when a ditransitive predicate is causativized, the expectation of a four-argument structure is not met; instead, one argument is omitted or remains implicit due to structural constraints on argument realization. This pattern is observed in Finnish, where multiple causative suffixes may be stacked without a corresponding increase in overt arguments, as shown in (43), which marks the causee in the adessive since the base verb is transitive (Zúñiga & Kittilä 2019: 32). It is argued that “Finnish allows multiple causativization, and there is no formal limit to how many causative affixes a verb may take, at least in principle, but only the first causative is valency-increasing” (Zúñiga & Kittilä 2019: 20) and that these cases demonstrate that causativization cannot be equated

straightforwardly with syntactic argument addition. Zúñiga & Kittilä (2019: 20) argue that the number of arguments is the same for each instances illustrated below, even though the number of causative suffixes increase, which would otherwise indicate argument introduction based on the causative prototype. They also note that if an additional argument is needed to be introduced, a periphrastic causative form must be used.

- (43) a. Rakennu-t-i-n talo-n Kalle-lla.
 build-CAUS-PST-1SG house-ACC K.-ADESS
- b. Rakennu-ta-t-i-n talo-n Kalle-lla.
 build-CAUS-CAUS-PST-1SG house-ACC K.-ADESS
- c. Rakennu-tu-ta-t-i-n talo-n Kalle-lla.
 build-CAUS-CAUS-CAUS-PST-1SG house-ACC K.-ADESS
- All three: 'I made Kalle build the house.'

Several factors have been proposed to account for covert causativization. First, many languages impose restrictions on the number of core arguments per clause, a constraint that becomes particularly salient in the causativization of ditransitive predicates (Kittilä 2009: 78–79). Second, speakers may avoid constructions that give rise to ambiguity, especially in languages where multiple semantic roles are encoded by the same case marker, such as dative-marked causees, recipients, or beneficiaries. Third, certain arguments may be inferable from context and thus remain unexpressed, given that causativization increases only the number of 'obligatory' semantic arguments, not necessarily the number of overt syntactic arguments. These considerations motivate the typological distinction between prototypical and non-prototypical causatives, while highlighting the limits of a purely valency-based characterization.

Typological-functional approaches to causativization provide a rich descriptive classification of causative constructions across languages. By treating causativization primarily as a valency-increasing operation, these approaches successfully capture a wide range of surface argument-structural patterns, including the introduction of an additional participant and the reorganization of grammatical relations. At the same time, however, they remain largely neutral with respect to the internal event structure of causative predicates. As a result, typological accounts do not systematically distinguish between mono-eventive and bi-eventive base predicates, nor do they offer formal tools for modeling the compositional derivation of causative meaning or recursive causativization. These limitations become particularly evident in the treatment of the embedded subject and its semantic status. Because typological classifications rely on argument count and role assignment, they face difficulties in accounting for cases in which causativiza-

tion does not straightforwardly introduce a new syntactic argument, but instead affects the interpretation or realization of an existing one. In such cases, causative morphology may serve to foreground thematic or event-related information rather than to increase syntactic valency, a possibility that is not easily accommodated within a strictly valency-based framework, as also pointed out by Wood & Myler (2019). More generally, the absence of operationalized criteria for distinguishing event-structural configurations means that typological approaches may group together constructions that are morphosyntactically similar but semantically distinct.

For the purposes of the present study, these shortcomings motivate a shift to formal-syntactic approaches that model causativization in terms of event structure rather than argument structure. Event-based frameworks make it possible to separate the introduction of causation from the introduction of external arguments, thereby capturing differences between causative alternation, agent introduction, and Voice-related phenomena. In particular, cases described in the typological literature as instances of ‘agent-related causation’ (Zúñiga & Kittilä 2019) can be reanalyzed as Voice alternations, in which the presence or absence of an external argument does not correlate with the presence or absence of a causative event (Alexiadou et al. 2015). This distinction is crucial for the analysis of recursive causatives of transitives, which require an explicit representation of causative relations between events rather than a mere increase in argument structure. The discussion now begins by outlining cross-linguistic patterns in causativization, focusing on shared properties and systematic asymmetries across verb classes, which will then serve as the empirical basis for presenting Pylkkänen (2008)’s theory of causativization.

Cross-linguistic work on causativization reveals a striking asymmetry across verb classes. While languages show a high degree of uniformity in the causativization of unaccusative predicates, they differ substantially with respect to the causativization of unergative and transitive predicates. This contrast plays a central role in shaping contemporary theories of causativization and provides a key empirical motivation for event-structural approaches to causativization. Across languages, causativization of unaccusative predicates systematically yields transitive predicates in which an additional argument, shown in bold below, is interpreted as the agent of a causing event (Pylkkänen 2008: 81). This pattern is illustrated by English, as in (44), Turkish, as in (45), and Finnish, as in (46). Although these languages differ morphologically, such that English lacks overt causative morphology in such pairs, while Turkish and Finnish employ causative suffixes, the semantic and argument-structural effect is uniform: a causative relation is established between a causing event and a caused state, resulting in a transitive result verb, i.e. lexical causative.

- (44) a. The ice melted.
 b. **John** melted the ice. (Pylkkänen 2008: 88)
- (45) a. Anahtar düş-tü.
 key fall-PST
 ‘The key fell.’
 b. **Ece** anahtar-ı düş-ür-dü.
 Ece key-ACC fall-CAUS-PST
 ‘Ece dropped the key.’
- (46) a. Ikkuna hajo-si.
 window.NOM break-PST
 ‘The window broke.’
 b. **Liisa** hajo-tt-i ikkuna-n.
 Liisa.NOM break-CAUS-PST window-ACC
 ‘Liisa broke the window.’ (Pylkkänen 2008: 81)

This configuration lies at the core of what is traditionally referred to as the causative alternation, where a change-of-state predicate alternates between an unaccusative variant lacking an external argument and a causative variant involving an external argument (e.g. Rappaport Hovav 2014). As will be discussed in detail in Section 2.5.2, this alternation provides crucial evidence for separating the introduction of causation from the introduction of external arguments.

Beyond unaccusatives, however, cross-linguistic patterns diverge sharply. Languages vary considerably in whether and how they allow causativization of agentive predicates, including unergatives and transitives. In this respect, causativization of unaccusatives gives rise to lexical causatives, which encode both a dynamic event and a resultant state and typically pattern as transitive result predicates (e.g. Alexiadou et al. 2015). By contrast, causativization of unergative and transitive predicates constitutes productive causativization, whose availability and morphosyntactic realization vary across languages. Whereas languages such as Turkish and Japanese freely form morphological causatives from all verbal classes, as in (47) and (48), English systematically resorts to analytical causative constructions in these cases (Pylkkänen 2008: 82), as in (49).

- (47) a. Adam-ı koş-tur-du-k.
 man-ACC run-CAUS-PST-1PL
 ‘We made the man run.’ (Zimmer 1976: 93)
 b. Öğretmen Ece’ye bir öykü oku-t-tu.
 teacher Ece-DAT a story read-CAUS-PST
 ‘The teacher made Ece read a story.’

- (48) a. John-ga kodomo-o nak-asi-ta.
 John-NOM child-ACC cry-CAUS-PST
 'John made the child cry.'
- b. John-ga Taroo-ni Eigo-o os-hie-ta.
 John-NOM Taro-DAT English-ACC learn-CAUS-PST
 'John made Taro learn English.'
 'John taught Taro English'. (Pylkkänen 2008: 82)
- (49) a. John made the baby cry.
 *John cried the baby.
- b. John made Mary learn Finnish.
 *John learned Mary Finnish. (Pylkkänen 2008: 82)

As the examples illustrate, English restricts productive causativization to analytical constructions, whereas Turkish and Japanese employ morphological causatives for this purpose. This sharp distinction between the uniformity observed in the causativization of unaccusatives and the variability observed elsewhere cannot be fully captured by valency-based descriptions alone. Instead, it calls for a structurally motivated analysis that treats causativization as a morphosyntactic realization of causation and allows the introduction of causative structure to be dissociated from the introduction of arguments.

2.4.2 Pylkkänen (2008)'s theory of causativization

Within the formal literature, Pylkkänen (2008)'s theory of causativization provides a particularly explicit articulation of causativization in terms of event decomposition and specifically designed to account for the patterns of cross-linguistic variation described above. By treating causative meaning as introduced by a dedicated functional head and by carefully distinguishing the locus of causation from the introduction of external arguments, this approach offers a transparent way of modeling causative relations between events. For the purposes of the present study, Pylkkänen (2008)'s framework serves as a point of departure for a decompositional analysis of causative constructions, as it allows causativization to be represented independently of surface valency changes and to be integrated with a layered view of verbal structure (Alexiadou et al. 2015). The analysis developed in the following chapters builds on these core assumptions, while extending them to account for the interaction between root semantics, event structure, and recursive causativization.

Causatives have been traditionally assumed to universally involve a causer argument that their non-causative counterparts lack; thus, it was traditionally argued that "causative verbs are derived by the addition of a head that introduces

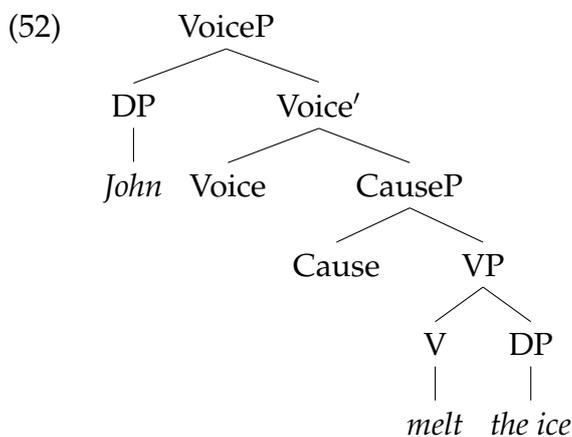
a causer argument to the semantics of a verb” (Pylkkänen 2008: 83). On the basis of the assumptions about the nature of external arguments, the Voice hypothesis, and *v* (Marantz 1984; Marantz 1997; Kratzer 1996), Pylkkänen (2008) proposes a syntactic analysis of causativization, which is thus far widely referred to in the syntactic literature. Pylkkänen (2008) argues, in complementary to the general assumption that causativization has the function to introduce a causer to the argument structure of a verb, that “causativization does not always increase the number of the verb’s syntactic arguments and that, therefore, introduction of a new syntactic argument is not a core property of causativization” (Pylkkänen 2008: 83).

Pylkkänen (2008) argues that unaccusatives, which express resultant states of non-specified causing events, there is a lack of agentivity but they still involve causation. Therefore, she argues, “what universally distinguishes causative verbs from their noncausative counterparts is a syntactically implicit event argument ranging over *causing events*”, more specifically, “all causative constructions involve the head *Cause*, which combines with noncausative predicates and introduces a causing event into their semantics” (Pylkkänen 2008: 83–84). (50) formally shows the universal causative element *Cause* (Pylkkänen 2008: 84).

- (50) *Universal causative element*
 Cause: $\lambda P.\lambda e. (\exists e') P(e') \ \& \ \text{CAUSE}(e, e')$

Arguing against the view that causativization introduces an external argument, Pylkkänen (2008) proposes the bi-eventive analysis, in which *Cause* merely introduces a causing event. (52) shows that the causative, as in (51b), has two relations that its unaccusative counterpart lacks, “where the predicate *Cause* first merges with the VP describing the caused event and where *Voice* then relates an agent to the event introduced by *Cause*” (Pylkkänen 2008: 88).

- (51) a. The ice melted.
 b. John melted the ice.

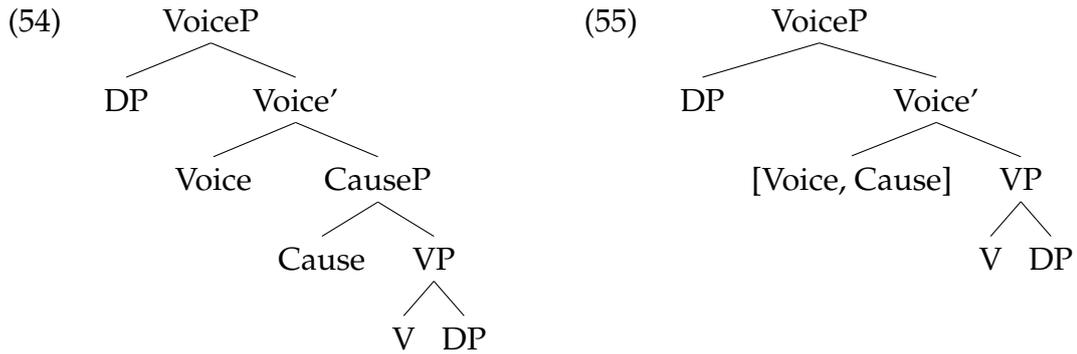


(53) spells out, step by step, how causal meaning is derived compositionally in a decompositional fashion. The denotation of VP introduces the caused event together with its internal argument, yielding an event predicate of type $\langle s, t \rangle$. Cause then takes such an event predicate as its argument and introduces a higher event that stands in the CAUSE relation to it: informally, a causing event e is asserted to bring about some caused event e' such that $f(e')$ holds. This yields CauseP, an event predicate describing a causative relation between two events without, by itself, introducing an external argument. Finally, Voice introduces the external argument independently by relating an individual to the causing event via an agent. On this architecture, VoiceP is built by combining Voice with CauseP, and an agent is added only if Voice is present.

- (53) a. $\llbracket \text{Voice} \rrbracket = \lambda x. \lambda e. \text{agent}(e, x)$
 b. $\llbracket \text{Cause} \rrbracket = \lambda f_{\langle s, t \rangle}. \lambda e. (\exists e') f(e') \ \& \ \text{CAUSE}(e, e')$
 c. $\llbracket \text{VP} \rrbracket = \lambda e. \text{melting}(e) \ \& \ \text{theme}(e, \text{the ice})$

A key consequence is that causativization is analyzed as event introduction rather than agent introduction. Because Cause is contributed by a dedicated functional head while external arguments are introduced by Voice (Kratzer 1996), the presence of a causing event does not entail the presence of an external agent. This is crucial for unaccusatives, which can encode a causative relation while lacking an external argument, and it challenges approaches that treat causativization as inherently agent-introducing. It is precisely this separation of CauseP from VoiceP, together with the resulting typology of possible complements and argument-realization patterns, that forms the point of departure for Pylkkänen (2008)'s cross-linguistic typology of causativization, to which I turn next.

According to Pylkkänen (2008), cross-linguistic variation in causativization arises from two independent parameters: *bundling* and *selection*. Bundling concerns the syntactic realization of Cause, specifically whether Cause is realized as a head distinct from Voice, as in (54), or bundled together with the external-argument-introducing head, as in (55). More specifically, “either Cause can occur as its own syntactic head, or it can be “bundled” with the external-argument-introducing Voice into a complex head”; when Cause is ‘bundled’ with Voice, this means that a causative head can “effectively introduces an external argument even though Cause is semantically separate from Voice” (Pylkkänen 2008: 84). The bundling parameter therefore distinguishes between *Voice-bundling* and *Voice-splitting* languages (Harley 2017). In Pylkkänen (2008)'s analysis, English lexical causatives are analyzed as Voice-bundling, whereas Finnish and Japanese lexical causatives instantiate Voice-splitting configuration (Pylkkänen 2008: 84).

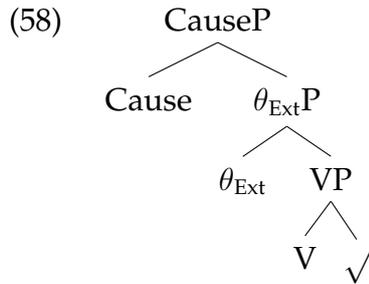


While the bundling distinction captures an important aspect of morphosyntactic variation, Pylkkänen (2008) argues that it is insufficient on its own to explain the full typology of causatives. In particular, bundling cannot account for differences in adverbial scope, verbal morphology, or the availability of certain argument-structural configurations. To address these gaps, Pylkkänen (2008) proposes that causative constructions also differ with respect to the size of the complement selected by the causative head. The selection parameter concerns therefore the size and type of syntactic constituent that the causative head may embed. Causative heads of this variation fall into three types (Pylkkänen 2008: 84): First, root-selecting causatives select a category-neutral root as their complement, that is, “something even smaller than a verb”. Second, verb-selecting causatives select a verbal projection “lacking an external argument”. Third, phase-selecting causatives are able to embed a constituent that already contains an external argument. The notion of *phase* follows McGinnis (2001) and includes any projection that introduces an external argument, such as VoiceP or high ApplP (Pylkkänen 2008: 85).



Root-selecting causatives, as in (56), involve a causative head that also serves as a category-defining head *v*, thereby deriving a verb directly from a category-neutral root (cf. Marantz 1997). Because there is only one verbal domain, modifiers can attach only after verbalization, yielding a single scope for verbal modification and predicting no scope ambiguities. For the same reason, no verbal morphology can intervene between the root and the causative head (Pylkkänen 2008: 104). Verb-selecting causatives, as in (57), embed a verbal projection that lacks an external argument. This predicts the availability of verbal morphology between the root and Cause and allows scope ambiguities with non-agent-oriented modifiers as well as low Appl projections inside the verbal projection, while still excluding

agent-oriented modification and arguments introduced by Voice or high Appl heads (Pylkkänen 2008: 105). Phase-selecting causatives, by contrast, as in (58), can embed a projection that already contains an external argument. As a result, no restrictions are imposed on adverbial scope, and verbal morphology between the root and Cause is predicted and all verbal heads, including Voice and high Appl, may intervene between the root and the causative head (Pylkkänen 2008: 106).



Building on the assumptions that external arguments are syntactically introduced by Voice (Kratzer 1996) and that category-neutral roots require functional heads *v*, *n*, or *a* for categorization (Marantz 1997), Pylkkänen (2008: 85–86) argues that the possible complements of Cause are determined by the architecture of the verbal domain. From this architecture follow two central correlations. First, the size of the complement selected by Cause correlates with the availability of verbal morphology and the scope of adverbial modification. Second, in root-selecting causatives, the availability of unaccusative causatives correlates with the possibility of causativizing unergative and transitive predicates (Pylkkänen 2008: 86). These correlations as well as the predicted properties of this three-way classification based on the selection parameter, as illustrated in Table 2.4 (adopted from Pylkkänen 2008: 106), will be evaluated for Turkish in Chapter 3.

	Root- selecting	Verb- selecting	Phase- selecting
1. VP modification of caused event possible?	✗	✓	✓
2. Verbal morphology possible between the root and Cause?	✗	✓	✓
3. Agent-oriented modification of caused event possible?	✗	✗	✓
4. High applicative morphology possible between the root and Cause?	✗	✗	✓

Table 2.4: Predicted properties of root-, verb-, phase-selecting causatives

Pylkkänen (2008)'s causativization theory offers a principled account of cross-linguistic variation in causative morphology, argument realization, and the availability of unaccusative causatives (e.g. adversity causatives in Japanese and desiderative causatives in Finnish). At the same time, it abstracts away from distinctions in the interpretation of causation itself. As noted by Lyutikova & Tatevosov (2014: 282), the same causative head gives rise to both direct and indirect causative readings depending on structural context, a contrast that is not explicitly encoded in the causative head itself. Before turning to a formal decomposition of causative meaning in Section 2.5, it is necessary to clarify the semantic dimensions that causative constructions are commonly argued to encode across languages. The next subsection therefore shifts focus from structural assumptions to semantic properties of causation, surveying distinctions such as the relation between causing events and caused eventualities, the thematic role of the embedded subject, and contrasts between direct and indirect causation.

2.4.3 Semantic dimensions of causation

Besides formal variation, causative constructions have long been classified according to semantic dimensions that cut across morphological and syntactic types (Kulikov 2001). These dimensions concern not only properties of the causative predicate itself, such as aspectual class or event structure, but also properties of the participants involved in the causative situation, including volitionality, control, affectedness, and intention (Dixon 2000; Song 1996; Diedrichsen 2015; Zúñiga & Kittilä 2019). These semantic distinctions are often systematized in terms of interacting parameters relating to the verb, the causee, and the causer.

Within typological work on causatives (Aikhenvald 2011: 98; Dixon 2000: 62–74), the semantic interpretation of causative constructions has been argued to depend on a cluster of parameters that can be grouped according to the locus at which they apply. A first set of parameters concerns properties of the predicate, including whether the verb denotes an action or a state and whether it is intransitive or transitive. A second group of parameters targets the causee, focusing on notions such as control, volitionality, and affectedness, which determine the degree to which the causee participates actively in the caused event. A third group relates to the causer and the causative relation itself, encompassing distinctions such as direct versus indirect causation, intentional versus accidental causation, and the extent of the causer's involvement in bringing about the result. While these parameters are often interrelated, they are not reducible to one another. For instance, direct causation is frequently associated with intentional and agentive causers, yet intention and directness do not always coincide (Aikhenvald 2011: 98).

Among these dimensions, one distinction has repeatedly been identified as central across theoretical traditions, namely, the distinction between direct and indirect causation, which concerns the relation between the causing event and the caused event, that is, the level of events rather than the level of participants (Song 2005). In what follows, the discussion narrows to the contrast between direct and indirect causation that is most directly relevant for event structure and causative relations, which will play a central role in motivating the decompositional analysis developed in later sections.

Direct causation is commonly characterized in terms of temporal adjacency between the causing event and the caused event, such that no independent intervening event separates the two (e.g. Song 1996; Levin & Rappaport Hovav 1999). Indirect causation, by contrast, involves a looser causal chain in which the causer initiates a situation that leads to the result only via one or more intervening events. This distinction has often been described in terms of temporal adjacency, but it also correlates with differences in control, responsibility, and predictability of the outcome. Therefore, it has been discussed along with or under a variety of labels, including manipulative vs. directive causation (Shibatani 1976; Song 1996), causer-controlled vs. causee-controlled causation (Shibatani & Pardeshi 2002), contact vs. distant causation, and immediate vs. mediated causation (see Kulikov 2001 for an overview), but they converge on the question of how tightly the causing event is linked to the caused event.

Direct causation has also been linked to the degree of control exercised by the external argument over the causal chain as a whole (Martin & Schäfer 2014: 241). On this view, what matters is not simply whether the cause immediately precedes the effect, but whether the causer retains control over the realization of the final outcome. Accordingly, Wunderlich (1997: 38) defines direct causation as a configuration in which the agent controls the final result, whereas indirect causation arises when the agent merely initiates the input situation but does not control all intervening stages leading to the effect. A further line of analysis characterizes the direct–indirect contrast in terms of the spatiotemporal organization of the causative situation as a whole (Shibatani & Pardeshi 2002). Direct causation is associated with a construal in which the causing and caused events form a single spatiotemporally unified event, with substantial overlap between the causer’s action and the resulting change. Indirect causation, by contrast, involves a configuration in which the causing event and the caused event are conceptualized as distinct subevents with at least partial temporal separation.

Shibatani & Pardeshi (2002) argue that the direct–indirect distinction correlates with the semantic status of the embedded subject, and that these correlations follow

from general cognitive principles rather than from grammatical necessity. In lexical causatives, the embedded subject is typically non-agentive and patient-like, and the caused change is conceived as fully dependent on the causer's action, resulting in strong spatiotemporal overlap between the causing and the caused event. In productive causatives, by contrast, the embedded subject is agentive and volitional, thus capable of initiating and executing the caused event independently, which makes it possible for the caused event to unfold with its own temporal and spatial properties. As a result, even when the embedded subject is patientive, a causative situation may still be construed as indirect if the caused event is perceived as sufficiently autonomous from the causing event. This relative autonomy of the embedded subject leads to a conceptual separation between the two subevents and motivates an indirect causation structure, which is reflected in more complex morphosyntactic expression.

Structurally, direct causation has been associated with lexical or monoclausal causatives, and indirect causation with productive or biclausal causatives (Shibatani 1976; McCawley 1978; Levin & Hovav 1995). Within this tradition, the formal contrast between lexical and productive causatives is taken to reflect a difference in how causal situations are conceptually structured: lexical causatives are assumed to encode a tightly integrated causal configuration, often described as one-event causation, whereas productive causatives introduce a structurally and conceptually separable caused event, yielding two-event causation. Decompositional accounts have formalized this contrast as a difference between single-*v*P configurations in lexical causatives and double-*v*P configurations in productive causatives (Lyutikova & Tatevosov 2012: 297; see Section 2.5.3). This distinction has been related to the monoclausality of lexical causatives, which permits only a single attachment site for adverbial modification, in contrast to productive causatives, which involve more articulated event structure (Pylkkänen 2008; see Section 2.5.1).

The contrast in (59), adopted from Shibatani & Pardeshi (2002: 141), illustrates how differences in event integration, rather than differences in participant roles alone, motivate the distinction between direct and indirect causation. Lexical causatives favor a single-event structure with strong spatiotemporal overlap, whereas productive or periphrastic causatives readily support a two-event structure in which the caused event is conceptually separable from the causing event. Within this tradition, lexical causatives, as *melt* in (59a), are often argued to be restricted to direct causation, while productive (or periphrastic) causatives using causative light verbs such as *cause* and *make*, as *cause to melt* in (59b), are taken to express indirect causation (Shibatani 1976; McCawley 1978; Levin & Hovav 1995; McCawley 1978: 249–250; see Martin & Schäfer 2014: 237–244 for an overview of the literature on direct vs. indirect causation).

- (59) a. John melted the metal.
Direct causation: the causing action and the melting are construed as a single spatiotemporally overlapping event.
- b. John caused the metal to melt.
Indirect causation: the causing event and the melting are construed as distinct subevents, allowing temporal separation and reduced event integration.

However, subsequent work has shown that this mapping is not one-to-one: productive causatives may give rise to both direct and indirect interpretations (Lyutikova & Tatevosov 2014), and lexical causatives may be compatible with indirect readings under particular contextual conditions (Martin & Schäfer 2014; Bellingham et al. 2020). These observations challenge approaches that derive semantic directness solely from clausal size or morphological fusion. At the same time, they do not entail that form is irrelevant to causative meaning. As Shibatani & Pardeshi (2002: 87) observes, Japanese systematically excludes productive causatives built on unaccusative bases, as illustrated in (60c), indicating that the availability of causative forms is subject to language-specific constraints. Such restrictions point to a non-trivial interaction between morphosyntactic form and causal interpretation, rather than a one-to-one mapping from structural size to semantic directness. This concern will be taken up in Section 2.5.3 regarding the structural decomposition of causative verbs.

- (60) a. *Unaccusative*
 Kabin-ga ware-ta.
 vase-NOM break-PST
 ‘The vase broke.’
- b. *Lexical causative*
 Taroo-ga kabin-o wat-ta.
 TAROO-NOM vase-ACC break-PST
 ‘Taro broke the vase.’
- c. *Productive causative*
 *Taroo-ga kabin-o ware-sase-ta.
 TAROO-NOM vase-ACC break-CAUS-PST
 ‘Taro made the vase break.’

This shift from purely temporal adjacency to broader notions of control, autonomy, and event unity sets the stage for experimental approaches that diagnose directness in terms of intervening causal structure rather than linear distance alone. Independent support for the relevance of the direct-indirect distinction comes from experimental and psycholinguistic studies. Wolff (2003) proposes the no-intervening-cause hypothesis, according to which a causative relation is construed

as direct if there is no independent intervening cause between the initial causer and the final effect (Wolff 2003: 4). Crucially, directness is not defined by the absence of intermediate entities as such, but by the absence of an intervening causal force at the relevant level of causal individuation. Intermediate entities may therefore be construed as enabling conditions rather than as independent causes. Wolff (2003) supports this with experimental evidence showing a systematic correlation between linguistic form and event construal: lexical causatives are preferred when describing causal chains without intervening causes or those that involve only enabling intermediaries, whereas periphrastic causatives are preferred when an intermediary is construed as an independent intervening cause.

Similarly, Muentener & Lakusta (2011) observes that children use lexical causatives significantly more often with intentional agents than with non-agentive causers, suggesting that agentivity and control modulate the perceived directness of causation. These findings define indirectness in terms of causal topology rather than temporal distance or physical contact, providing an empirically grounded diagnostic that can be integrated into an event-semantic and decompositional analysis of causative relations. Moreover, Martin & Schäfer (2014: 244) note that the direct–indirect causation distinction can also be recast in terms of *necessity* and *sufficiency*, following Lauer (2010). On this view, lexical causatives are both necessary and sufficient for the effect, whereas productive causatives split into two types: in English, *cause* + infinitive encodes a cause that is necessary but not sufficient, while *make* + infinitive encodes a cause that is sufficient but not necessary. While this distinction offers a useful refinement of causative semantics, it is not adopted as an independent diagnostic in the present study, which instead focuses on event-structural and intervention-based criteria for indirectness.

At this stage, the presentation of indirectness remains descriptive and comparative. The aim has not been to derive direct and indirect causation from formal structure, but to identify semantic dimensions that recur across languages and theoretical traditions. Across typological, theoretical, and experimental work, causative meaning has been shown to vary systematically with respect to how events are individuated and related to one another, in particular with regard to event integration, the role of intermediaries, and the interpretation of participant involvement. Judgments about (in)directness are influenced not only by properties of the causative construction itself, but also by world knowledge, discourse context, and the conceptualization of the causal chain. Experimental work (e.g. Wolff 2003) shows that the same causal configuration may be construed as direct or indirect depending on whether intermediaries are interpreted as enabling conditions or as independent causes, and on whether the causer is intentional or sentient.

Overall, these observations suggest that direct and indirect causation cannot be treated as fixed labels tied to particular morphosyntactic forms, but must instead be modeled as distinct semantic relations. For the purposes of the present study, this distinction is crucial because it bears directly on how causative meaning should be decomposed into event-structural components. If causation was uniformly represented by a single causative head, the source of the direct–indirect contrast would have to lie elsewhere in the structure. Section 2.5.3 takes up this issue by adopting and extending the semantic approach developed by Lyutikova & Tatevosov (2012) and Lyutikova & Tatevosov (2014), in which differences in causal interpretation are derived from the interaction between event structure, argument realization, and the internal semantics of the causative predicate.

Since the following chapters require a consistent vocabulary that tracks both morphological type and causal interpretation, I now make the relevant choices explicit. Section 2.4.4 states the working definitions and delimitations adopted here, specifying which causative constructions count as lexical and productive in the sense of this study, how these types relate to the unaccusative vs. agentive verbs, and how the direct-indirect causation distinction will be understood in the analysis that follows.

2.4.4 Working definitions and scope

Within the scope of this monograph, morphological causatives are divided into two classes: ‘lexical causatives’ and ‘productive causatives’. Lexical causatives comprise both ‘marked lexical causatives’, in which a causative morpheme attaches to an unaccusative root and encodes a change and resultant state, and ‘unmarked lexical causatives’, that is, non-derived transitive result verbs in which causative morphology is null. By contrast, causatives derived from unergative and transitive bases are referred to as productive causatives.

This classification is independent of whether causativization is realized morphologically or analytically, and instead reflects whether the causative operation applies to a non-agentive or an already agentive event structure. This usage departs in part from typological terminology. In particular, what is often labeled a morphological causative in typological work may correspond to a lexical causative in the sense adopted here, insofar as it derives from an unaccusative base and encodes a resultant state. Conversely, productive causatives may be realized morphologically or periphrastically, but are unified by the fact that they introduce a causative relation over an event that already contains agentive structure.

The distinction between ‘direct’ and ‘indirect’ causation will not be equated mechanically with particular morphosyntactic forms (i.e. morphological vs. an-

alytical). Instead, it will be understood in terms of the event-structural relation between causing events and caused eventualities, following the semantic diagnostics introduced in Section 2.4.3. The distinction between unaccusative and agentive base verbs thus has consequences at two levels: syntactically, it correlates with the distinction between lexical and productive causatives; semantically, it correlates with the distinction between direct and indirect causation. These correlations are treated as tendencies rather than categorical equivalences. Following a decompositional approach within DM, these contrasts are syntactically represented in Section 2.5, and applied to the analysis of Turkish causatives in Chapter 3 and Chapter 4.

Finally, this study adopts a consistent terminology for participant roles in causative constructions. In lexical causatives, the external argument is referred to as the ‘agent’, insofar as it directly instigates and carries out the action leading to the change of state, while the internal argument undergoing the change is labeled the ‘theme’, as illustrated in (61a). In productive causatives, the participant introducing the causing event is referred to as the ‘causer’, and the embedded subject of the caused event is referred to as the ‘causee’, as illustrated in (61b). Through this classification, the traditional distinction between patientive causee and agentive causee becomes irrelevant as the causee is obligatorily an agent within the present terminology. As shown below, the ‘theme’ remains the participant that undergoes the resultant change of state in both constructions. This terminological distinction reflects the difference between direct participation in an event and mediation via a causative relation, and it will be maintained throughout the analysis.

(61) a. *Lexical causative*

Ziroo-ga_{AGENT} kabin-o_{THEME} wat-ta.
 ZIROO-NOM vase-ACC break-PST
 ‘Jiro broke the vase.’

b. *Productive causative*

Taroo-ga_{CAUSER} Ziroo-ni_{CAUSEE} kabin-o_{THEME} wara-se-ta.
 TAROO-NOM ZIROO-DAT vase-ACC break-CAUS-PST
 ‘Taro made Jiro break the vase.’ (Shibatani & Pardeshi 2002: 87)

These working definitions establish the scope of the present study and provide the terminological framework for the investigation of causativization, argument realization, and event decomposition in the chapters that follow. In the following section, I present a unified analysis of causativization in the verbal domain by bringing together assumptions about event decomposition, argument introduction, and causative relations within the decompositional framework within DM as adopted in this monograph.

2.5 The verbal domain and event composition

This section presents a unified analysis of causativization in the verbal domain by bringing together assumptions about event decomposition, argument introduction, and causative relations. The goal is to make explicit the verbal architecture within which causative constructions will be analyzed in the remainder of this monograph, and to clarify how syntactic structure and event semantics interact in the derivation of different causative interpretations. Rather than surveying the full range of existing approaches, the focus is on establishing the assumptions that underlie the analysis of Turkish causatives developed in Chapter 3 and Chapter 4.

2.5.1 A decompositional model of causativization

This subsection introduces the decompositional framework that will be adopted throughout the syntactic analysis of Turkish causatives. The goal is to make explicit the assumptions about event decomposition, argument introduction, and functional structure. In particular, this subsection clarifies the division of labor between Voice and *v*, motivates the separation of causative semantics from external-argument introduction, and establishes the verbal architecture within which causative constructions in Turkish will be analyzed.

I assume a syntactic architecture in which argument introduction and event semantics are distributed across distinct functional heads. Following Kratzer (1996), external arguments are introduced by Voice, not by verbalizing heads. Within a decompositional view of verbal structure (Marantz 1997; Cuervo 2003; Alexiadou et al. 2015), roots are category-neutral and acquire verbal status only through combination with categorizing functional heads. In this framework, *v* verbalizes its complement and introduces event-related semantics, while Voice determines whether an external argument is syntactically projected and how it is related to the event. This separation is crucial for causative constructions. If causative meaning were inherently tied to agent introduction, causatives without external arguments would be unexpected as established in Section 2.4.2. However, unaccusatives provide clear evidence that causative relations can be expressed independently of agentive participants (Pylkkänen 2008). The framework adopted here is therefore designed to allow causative semantics in the absence of Voice.

Within formal approaches to causative semantics, two partially competing ideas can be distinguished (Hopperdietzel 2020). One line of analysis posits a designated causative head (Caus⁰ or CauseP) that introduces causative semantics directly (e.g. Pylkkänen 2008; Harley 2017), whose semantic contribution explicitly binds a causing event *e* to a caused event *e'*. On the other hand, work in

the event-decompositional tradition argues that causative interpretations need not be encoded by a specialized causative operator, but instead arise from the structural composition of subevents within the verbal domain (Higginbotham 2000; Ramchand 2008; Alexiadou et al. 2015; Wood & Marantz 2017). On this view, causation is not encoded in a single head but is read off from the interaction between verbalization, argument structure, and Voice.

In configurational accounts, little *v* has the syntactic function of verbalizing category-neutral roots and serves as the semantic locus for a range of interpretive processes (Wood & Marantz 2017). Crucially, *v* does not introduce argument DPs, nor does it assign thematic roles. Instead, its morphological realization may be sensitive to the presence of an external argument introduced by Voice. This sensitivity has been argued to underlie idiosyncratic causative morphology in lexical causatives in languages such as Japanese and Turkish (see Harley 2008 for Japanese; Tat & Key 2009 for Turkish). On this view, the appearance of a causative suffix does not necessarily imply the introduction of causative semantics (Wood & Marantz 2017: 257), but may reflect the spell-out of *v* in the context of an external-argument-introducing Voice head (see also Mitchley 2023).

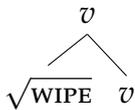
This monograph adopts a decompositional view of verbal structure in which event semantics and argument structure are built syntactically by the interaction of distinct functional heads. In line with work within DM (Marantz 1997; Alexiadou et al. 2015; Wood & Marantz 2017; Cuervo 2003; Folli & Harley 2005; Hopperdietzel 2020), I assume that causative semantics, event introduction, and external-argument introduction are not bundled into a single head, but distributed across the verbal domain. I maintain the core insight of Pytkänen (2008) that causativization is fundamentally related to the introduction of causative semantics rather than responsible for agent introduction to semantic argument structure. However, departing from an analysis that posits a dedicated Cause head as a primitive, I assume that causative semantics is introduced by a flavor of the event-introducing *v*, namely v_{CAUS} . Under this view, v_{CAUS} relates a causing event to a caused eventuality and establishes a causal dependency between them, thus it projects an underspecified causative relation between these eventualities (Kratzer 2005; Lyutikova & Tatevosov 2014), while external arguments are introduced by Voice (Kratzer 1996; Alexiadou et al. 2015). This separation allows causative semantics to be present even in the absence of an external argument, a crucial property of causative alternation, as will be outlined in Section 2.5.2.

A further distinction becomes relevant once we turn to the internal structure of the lower *v*P. In particular, transitive predicates require a more articulated event structure, a point that follows directly from manner/result complementarity as

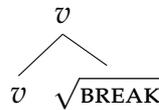
established in Section 2.3. Moving from the lexical-semantic descriptions of Levin and Rappaport Hovav (e.g. Rappaport Hovav & Levin 1998) to a generative syntactic implementation within DM, Alexiadou et al. (2015) propose that manner/result complementarity is reflected in the structural position of the root relative to the functional head v . In their framework, roots are acategorial entities and must be categorized by a functional head in order to be interpreted. Within this system, manner and result are treated as ontological categories that determine how verb meaning is associated with event structure. Manner roots give rise to mono-eventive predicates, whereas result roots participate in the formation of change-of-state and change-of-location verbs (Alexiadou et al. 2015: 13).

The distinction between manner and result is derived from the distinct merge positions available to roots. Specifically, manner roots merge as modifiers of v , whereas result roots merge as the complements of v , as in (62) and (63), respectively (Alexiadou et al. 2015: 14). Thus, manner roots typically surface as modifiers of event structure, whereas result roots occupy complement positions associated with change-of-state predicates, a difference that correlates with the presence or absence of a caused state.

(62) modifiers of v , *direct Merge*
e.g. 'wipe' (manner)



(63) complements of v
e.g. 'break' (result)



Under this view, a manner root like $\sqrt{\text{RUN}}$ or $\sqrt{\text{HAMMER}}$ is adjoined to the verbalizing head v . Because it functions as a modifier, it elaborates on the nature of the activity introduced by v , but does not saturate the complement position (Alexiadou et al. 2015). This structural independence leaves the complement position of v available for other elements, such as path phrases or resultative secondary predicates (Kratzer 2005), thereby providing the necessary slots for event structure extension as also put forward by previous literature (e.g. Levin & Hovav 2013; Beavers 2013; Hopperdietzel 2020). Conversely, a result root like $\sqrt{\text{OPEN}}$ or $\sqrt{\text{BREAK}}$ is merged as the complement of the relevant functional head. By occupying this complement position, the root fixes the result state structurally and thereby blocks the introduction of result-defining elements that might compete for the object position or define a different result.

As illustrated in (64), a result verb such as *open* fixes the resultant state structurally. While manner modification is possible, either via a *by*-phrase, as in (64b), or by an adverbial modifier, as in (64c), these additions do not alter the core event structure or the resultant state introduced by the root.

- (64) a. John opened the door.
 b. John opened the door by turning the handle.
 c. John opened the door carefully.

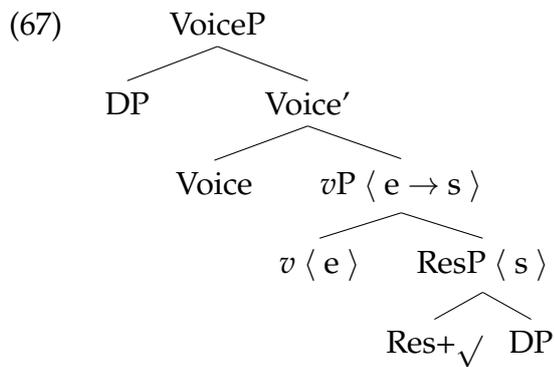
This structural asymmetry has important consequences for argument realization. Manner roots, despite their compatibility with event-structural expansion, impose comparatively strict constraints on the external argument. As illustrated in (65), manner predicates impose strict constraints on the external argument, requiring an intentional and volitional agent capable of performing the specified action. Thus, while agentive subjects are allowed, as in (65a), non-agentive causers are excluded, as in (65b). Result predicates, by contrast, do not impose such restrictions on the external argument, as illustrated in (66). Because the result root is embedded within the event structure and the external argument is introduced independently by Voice, result verbs readily admit agents, as in (66a), instruments, as in (66b), and non-agentive causers, as in (66c).

- (65) a. The boy ran.
 b. *The wind ran.
- (66) a. John opened the door.
 b. The key opened the door.
 c. The wind opened the door.

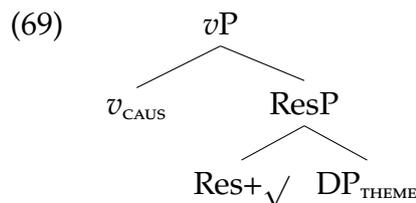
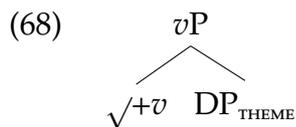
Overall, the modifier–complement distinction provides a principled syntactic implementation of manner/result complementarity. The contrast is not merely a matter of lexical classification, but reflects a deeper architectural trade-off between event-structural extensibility and constraints on argument realization. Building on these insights, this monograph adopts the view that the lexical semantics of transitive roots directly determines event-structural complexity. Transitive manner predicates are analyzed as compatible with mono-eventive configurations, in which the *v*P describes an activity carried out by an agent. Transitive result predicates, by contrast, are analyzed as requiring a bi-eventive configuration, involving an underspecified causing subevent and a result state that encodes a change of state (Rappaport Hovav & Levin 2010; Lyutikova & Tatevosov 2014).

In many decompositional approaches, this structure of result roots is associated either directly with *v*, RootP or with a more specialized Result Phrase (ResP) head that introduces a resultant state component (cf. Higginbotham 2000; Ramchand 2008). Different flavors of *v* are responsible for different eventualities. In particular, I assume an eventive $v_{\langle e \rangle}$ introducing a dynamic event variable, and a stative $v_{\langle s \rangle}$ introducing a state variable (Higginbotham 2000; Ramchand 2008; Hopperdietzel 2021; see Section 2.5.3). ResP represents this stative eventuality, thus hosts the

category-neutral root together with its internal argument, and encodes resultant state information. For lexical causatives, the semantics of v_{CAUS} arise from the composition of a dynamic event with a resultant state. When a dynamic eventive v (the causing eventuality e) combines with a stative ResP (the caused state s), the resulting structure forms a telic pair of eventualities $\langle e \rightarrow s \rangle$. Following Higginbotham (2000) and Ramchand (2008), I assume that the syntactic formation of such a telic pair is sufficient to give rise to a causative interpretation at LF (Hopperdietzel 2020). On this view, causation is not encoded by a primitive syntactic operator, but is instead derived from the dependency between a dynamic event and a resultant state. Specifically, I assume that result roots enter the derivation inside a non-categorical ResP that introduces a caused state, while an eventive verbalizer $v_{\langle e \rangle}$ introduces a dynamic event. When these two layers are combined, they form a telic pair $\langle e \rightarrow s \rangle$, as illustrated below in (67) adopted from Hopperdietzel (2021: 120).

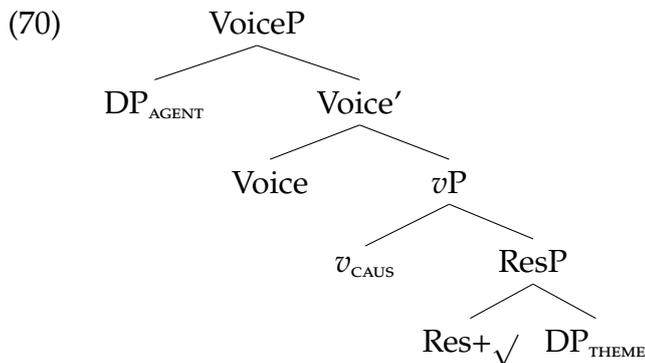


I follow this tradition in treating the verb–object complex as ResP, rather than a VP in the traditional sense. Accordingly, I reinterpret Pylkkänen (2008)’s VP as ResP, preserving her insights about selection and event composition while aligning the analysis with a more articulated verbal domain. This event-semantic distinction is structurally represented differently for manner verbs, as in (68), and for result verbs, as in (69). These differences are reflected in the structural representations adopted throughout the subsequent chapters and form the basis for the analysis of causativization in transitive eventive verbs.

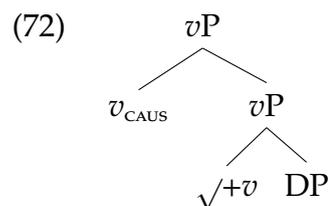
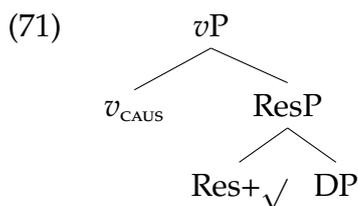


The verbal domain assumed in this monograph consists minimally of three core layers: ResP, vP , and VoiceP. VoiceP, when present, introduces an external argument

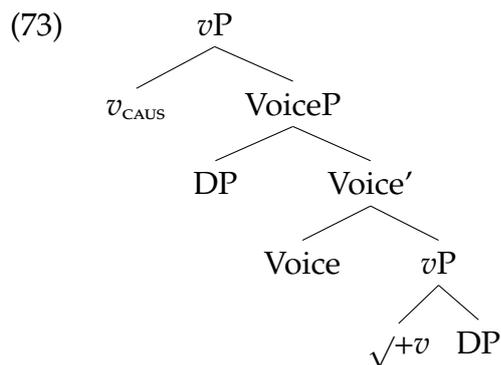
and specifies its thematic relation to the event described by its complement and v_{CAUS} introduces causative semantics and verbalizes the non-categorical ResP (Kratzer 1996; Folli & Harley 2005; Alexiadou et al. 2015). The basic architecture of the verbal domain assumed here is illustrated in (70), which allows for a uniform treatment of causative constructions while maintaining a clear separation between event introduction and argument realization.



Under this architecture of the verbal domain, differences in causative constructions arise from the selectional properties of v_{CAUS} , that is, it may select ResP, $v\text{P}$, or VoiceP, yielding distinct structural configurations with different morphosyntactic and semantic consequences. ResP-selecting causatives, as shown in (71), contain only one verbal head, corresponding to the structure of unaccusatives. Since there is only a single $v\text{P}$, there is only one possible attachment site for verbal modifiers, and scope ambiguities are not expected. Moreover, no verbal morphology can intervene between the causative morpheme and the root, since the root is verbalized only once (cf. Pylkkänen 2008).



$v\text{P}$ -selecting causatives, as in (72), embed a constituent that is already verbalized but does not introduce an external argument. Scope ambiguities are predicted only with non-agent-oriented verbal modifiers (Pylkkänen 2008). The highest type of causative involves the selection of a VoiceP, as in (73). Scope ambiguities are predicted for agent-oriented adverbial modification. Note that the predictions outlined here align with those proposed by Pylkkänen (2008), reflecting the shared selection-based architecture. The difference concerns the locus of causative semantics and the semantic properties assigned to the verbal projections involved.



This selection-based typology provides the structural backbone for the analyses developed in the remainder of this section. Because causative semantics is decoupled from external-argument introduction, the presence of a causative relation does not entail the presence of an agent. In the absence of Voice, a causative *vP* yields an anticausative interpretation. When Voice is merged on top of a causative *vP*, the external argument is interpreted as the agent of the causing event. Consequently, the causative alternation is analyzed as a Voice alternation, while causative meaning itself is grounded in event composition rather than argument realization. This separation between event composition, causative semantics, and argument introduction provides the foundation for the next subsection, where I turn to causative alternation and the role of Voice in lexical causatives, including the Voice typology as presented in Alexiadou et al. (2015).

2.5.2 Causative alternation as Voice alternation

This subsection develops the claim that the causative alternation is best analyzed as a Voice alternation. Building on the decompositional architecture introduced in the previous subsection, I show that causatives of unaccusatives, unmarked anticausatives, and marked anticausatives share the same underlying causal event structure. What varies across these constructions is not the presence of causation, but the realization of Voice. This move is essential for the analysis of Turkish causatives developed in Chapter 3, where causatives interact systematically with passives, anticausatives, and recursive causative morphology.

Event decompositions are representations of verbal meaning in terms of primitive predicates that recur across verb classes and languages. They provide a structured representation of grammatically relevant meaning components, such as causation, change, and result states (Levin & Rappaport Hovav 2005: 69; Fleischhauer 2021: 77). Within this tradition, causative verbs are standardly analyzed as involving at least two subevents: a causing event and a resulting state. These components are commonly expressed using predicates such as CAUSE and BECOME, together with a result state (Parsons 1990; Ramchand 2008; Martin &

Schäfer 2014). Early derivational approaches to the causative alternation assume that causative verbs are derived from non-causative ones or vice versa, with causativization or decausativization applying either in the lexicon or in the syntax (e.g. Dowty 1979; Shibatani 1976; Levin & Hovav 1995). Under this view, anticausatives lack both an external argument and a CAUSE component, while causatives introduce both. A representative decomposition is given in (74), where the causative predicate is built by adding a causal layer to the unaccusative base.

- (74) a. The door opened.
 b. John opened the door.
- (75) a. λy [BECOME [y <STATE>]]
 b. $\lambda y.\lambda x$ [x CAUSE [BECOME [y <STATE>]]]

While such representations capture the intuition that causatives are semantically more complex than anticausatives, they face well-known problems. In particular, they fail to explain why anticausatives behave like causatives with respect to diagnostics for causation, resultant states, and event structure (Schäfer 2009; Alexiadou et al. 2015; Martin & Schäfer 2014). In response to these issues, decompositional approaches argue that causatives and anticausatives share the same underlying event structure and differ only in argument realization. Within this framework, anticausatives are not derived by removing a causal component. Instead, both alternants include causation, and the alternation is attributed to the presence or absence of a Voice layer (Kratzer 1996; Alexiadou et al. 2006; Alexiadou et al. 2015; Wood 2016). A central result of this line of work is that anticausatives lack agentivity but still involve causation. That is, causative events can occur without an external argument, and a causative relation can hold between an event and a state even in the absence of an agent (Martin & Schäfer 2014: 223). Consequently, the causative alternation is analyzed as a Voice alternation: causatives project Voice, anticausatives do not. Under this view, (76) replaces the earlier derivational analysis. Both variants contain a causative relation between an event and a resulting state. The difference lies in whether an external argument is present.

- (76) a. λy [CAUSE [y <STATE>]]
 b. $\lambda y.\lambda x$ [x CAUSE [y <STATE>]]

The decomposition of anticausatives relies on the assumption that causative events can occur without an external argument and that a causative relation can hold between an event and a state (Martin & Schäfer 2014: 223). Accordingly, an anticausative such as *The door opened* is interpreted as asserting the existence of an event *e* (an opening event) that caused a state *s* (the door being open), while leaving the agent of the opening event unspecified (Martin & Schäfer 2014: 223).

This analysis correctly predicts that the internal argument of the causative variant corresponds to the sole argument of the anticausative variant, and it explains why anticausatives pattern as unaccusatives and license result states despite lacking an agent. Diagnostics based on modification further support this decomposition. In particular, decompositional accounts show that certain adverbials are sensitive to the internal event structure of causatives. Alexiadou et al. (2015) show that the interpretation of the adverb *again* provides a diagnostic for the internal event structure of causative and anticausative constructions. Building on earlier work by von Stechow (1996) and Pylkkänen (2008), they argue that different readings of *again* correspond to different syntactic scope positions and therefore to different numbers of event predicates in the structure. Unaccusatives, as in (77), which lack Voice, allow two readings of *again*: a repetitive reading, as in (77a), where the entire change-of-state event is repeated, and a restitutive reading, as in (77b), where only the resultant state is restored. Causatives, by contrast, as in (78), involve a Voice layer and therefore allow an additional intermediate reading, as in (78c), in which the causing action is repeated while the result state is newly achieved.

- (77) The door opened again.
- a. *the opening event is repeated*
 - b. *the door returned to a state of openness*
- (78) John opened the door again.
- a. *John performed the opening action again*
 - b. *the door returned to its previous open state*
 - c. *John did something again and as a result the door opened*

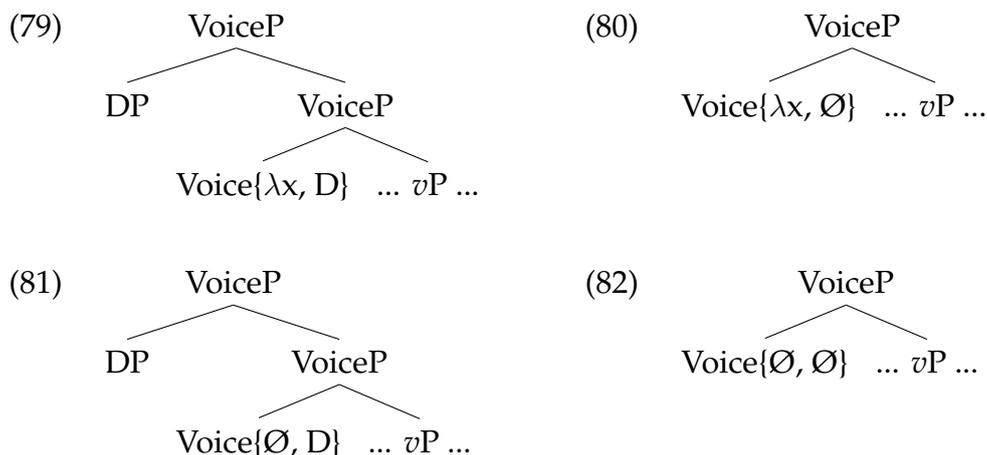
The availability of the intermediate reading of *again* is argued to follow from its scope position between two eventive layers. Specifically, in lexical causatives, this reading arises when *again* scopes between VoiceP and a lower *v*P, thereby targeting the causative relation rather than the entire event (Alexiadou et al. 2015: 28). As Alexiadou et al. (2015) argue, if the repetitive and restitutive readings of *again* result from distinct syntactic scope relations, then causatives and anticausatives must differ in the number of events they introduce. This supports a Voice-based analysis of the causative alternation, according to which causatives and anticausatives share the same basic causal decomposition but differ in whether an external-argument-introducing Voice layer is present.

By contrast, manner adverbs such as *grumpily*, as in *John awoke Bill grumpily*, can only modify a single event and therefore do not give rise to comparable ambiguities (Pylkkänen 2008: 102). As Alexiadou et al. (2015: 28) argue, Since Voice does not introduce an additional event but merely relates the external argument to the

event introduced by the CAUSE component, the decomposition correctly predicts that only a single event is available for adverbial manner modification. As a result, manner adverbs necessarily modify the causing event as a whole and cannot give rise to distinct scope-based readings, in contrast to adverbs such as *again*, whose interpretive flexibility reflects access to multiple eventive layers.

Within this line of work, extending from Kratzer (1996) to more recent contributions, the causative alternation is assumed to be a Voice alternation, fundamentally determined by whether or not an external argument is projected (Wood 2016: 3; see also Alexiadou et al. 2006; Alexiadou 2010; Alexiadou & Iordachioaia 2014; Alexiadou et al. 2015; Alexiadou & Anagnostopoulou 2020). On this view, it is not the CAUSE component that alternates, but the Voice layer: the unaccusative counterpart lacks Voice altogether. As a result, causatives and anticausatives are taken to have the same underlying event decomposition and to differ only in the presence versus absence of Voice (Martin & Schäfer 2014: 222).

A crucial refinement of the Voice-based analysis is the typology of Voice proposed by Alexiadou et al. (2015), which distinguishes between active and non-active Voice, as well as between thematic and expletive variants. This typology is essential for understanding the relation between causatives, anticausatives, and passives. The four relevant Voice types are illustrated schematically as follows. (79) shows the structure of thematic active Voice and (80) shows the structure of thematic non-active Voice; (81) shows the structure of expletive active Voice and (82) shows the structure of expletive non-active Voice.



The four-way Voice typology allows for a principled comparison between lexical causatives, passives, unmarked anticausatives, and marked anticausatives. All three types of constructions are analyzed to share the same causative event structure in the *v* domain, but differ systematically with respect to the presence and interpretation of Voice. In particular, passives are argued to involve a thematic non-

active Voice, where the external argument is semantically present but syntactically unexpressed, as depicted by $\text{Voice}\{\lambda x, \emptyset\}$, while marked anticausatives involve an expletive non-active Voice, which neither introduces nor binds an external argument, as shown by $\text{Voice}\{\emptyset, \emptyset\}$. These distinctions will play a central role in Chapter 3, where Turkish causatives are compared to passives and anticausatives with respect to their Voice properties. In relation to the present study and the analyses presented in the subsequent chapters, lexical causatives, unmarked anticausatives, and marked anticausatives share the same causal event structure in the v domain: v_{CAUS} introduces causative semantics, understood as a dependency relation between a causing event and a caused state. What varies across the alternation is not the presence of causation, but the realization of Voice.

This subsection has restricted attention to lexical causatives and anticausatives, where the caused eventuality is a result state introduced by ResP and the causing subevent lacks an agentive structure. This restriction is not accidental. It isolates the contribution of Voice and v_{CAUS} in their simplest configuration and establishes a baseline for the interpretation of causative semantics in the absence of embedded agentivity. In the following subsection, I move on to a more in-depth description of the function of v_{CAUS} in transitive bases, that is to say, productive causatives, and the semantics of v embedded under v_{CAUS} and the types of causative relations. Productive causatives introduce an additional layer of event structure below v_{CAUS} , namely an embedded VoiceP. I show that the contrast between direct and indirect causation does not follow from the presence of v_{CAUS} itself, but from how v_{CAUS} relates the causing event to an already structured caused eventuality (e.g. Lyutikova & Tatevosov 2014). This decompositional analysis provides the foundation for the analysis of Turkish causatives in Chapter 3 and Chapter 4, where anticausatives, lexical causatives, productive causatives as well as recursive causatives of transitive manner and result verbs are analyzed based on an understanding of the interaction of v_{CAUS} and the different types of Voice realizations.

2.5.3 Causative relations and event semantics

Despite differences in terminology, theoretical background, and empirical focus, the accounts discussed in Section 2.4.3 converge on a shared semantic contrast. Shibatani & Pardeshi (2002)'s distinction between lexical and productive causatives, framed in terms of spatiotemporal integration of events, and Wolff (2003)'s no-intervening-cause criterion, grounded in experimental evidence on event individuation, diagnose the same underlying opposition. In both approaches, direct causation corresponds to a construal of the causal situation as a single, integrated event, whereas indirect causation involves the conceptual separation of causing

and caused events due to the possibility of an independent intervening subevents. This convergence suggests that the direct–indirect distinction is not an artifact of a particular theoretical framework, but reflects a robust semantic contrast that is independently motivated by typological patterns, syntactic behavior, and cognitive judgments about causal structure.

I therefore assume that causative semantics involves more than one causative relation. In direct causation, the causative relation requires a non-interrupted causal chain between the causing event and the caused state, yielding a structure in which the two eventualities form a single causal complex. In indirect causation, by contrast, the causative relation merely encodes causal dependency between events, without imposing constraints on intervening causal structure. This distinction prepares the ground for differentiating between two causative relations, labeled *D-CAUSE* and *I-CAUSE*, borrowing the terminology from Lyutikova & Tatevosov (2014), which will be formally defined in what follows.

Pylkkänen (2008) proposes that causativization universally involves a dedicated Cause head that introduces causative semantics in terms of a relation between a causing event and a caused event. Under this view, causativization amounts to introducing a causing event that stands in a causative relation to the eventuality described by the verb–object complex. Unlike the definition of the universal causative element Cause proposed by Pylkkänen (2008), Lyutikova & Tatevosov (2014) argue that Cause must differ on the direct vs. indirect distinction, which they link close to the distinction between lexical and productive causatives. Lyutikova & Tatevosov (2014: 285) argue that the definition of Cause fails to account for the difference between lexical causatives and productive causatives, in the sense that causing and the caused events are assumed to not differ in terms of the type of causation, hence the direct-indirect causation distinction is not explained.

Upon data from Karachay-Balkar (Turkic), Lyutikova & Tatevosov (2014: 283–5) argue that “the semantics of the relation between causing and caused subevents is different for causatives of unaccusatives and causatives of transitives/unergatives”. In support of their argument, the following two examples are given to illustrate the contrast between direct, as in (83), and indirect causation, as in (84), where the first interpretation involves an intermediary causal link and the second interpretation involves an intermediary causer (cf. Neu 2023).

- (83) Alim direktor-nu öl-dür-dü.
 Alim director-ACC öl-CAUS-PST
 (i) ‘Alim killed the director.’
 (ii) *‘{Having paid \$100,000 to the killer,}
 Alim organized the director’s assassination.’

- (84) Ustaz Alim-ni erišiü-le-de cap-tır-dı.
 teacher Alim-ACC competition-PL-LOC run-CAUS-PST
 (i) ‘The teacher made Alim run at the competition
 (e.g. by pushing him on the lane).’
 (ii) ‘{Having convinced the coach that Alim is a good runner,}
 the teacher organized Alim’s running at the competition.’

Lyutikova & Tatevosov (2014: 279–280) argue in complementary to these distinctions that “the relation between subevents in the event structure is directly represented in the grammar” and that “directness/indirectness has consequences for the morphology, is conditioned by grammatical factors (in particular, by syntactic configurations), and interacts in a number of ways with other grammatical mechanisms of a language (e.g. with its case system)”. Thus, they argue that “causation is a relation on events” and that (in)directness are accounted for by “intermediate events separating causes and effects in a chain of causally related eventualities”. They further argue that while Pylkkänen (2008)’s causativization theory is “successful in dealing with the structure and interpretation of the causative in a variety of languages, it faces a fundamental complication in not providing a satisfactory account for the direct/indirect distinction”.

Lyutikova & Tatevosov (2014)’s proposal therefore follows from the assumption that lexical causatives are distinct in terms of causative relation than productive causatives, and provides improvement in that “relations between subevents in a syntactically represented event structure are introduced independently from subevent descriptions” (Lyutikova & Tatevosov 2014: 297). In other words, on the basis of Kratzer (2005), they argue that relations between subevents are introduced by derivational morphology “located in between syntactic heads that determine descriptive content of the event structure” (Lyutikova & Tatevosov 2014: 280). Based on the assumptions of Kratzer (2005) with regard to resultatives, such as *John drank the teapot empty*, which are essentially related to “events denoted by the verb (‘drink’) by a derivational morpheme that bears the [cause] feature” (Lyutikova & Tatevosov 2014: 298; see also Hopperdietzel 2020).

Adopting the relational framework developed by Kratzer (2005) and Lyutikova & Tatevosov (2014), this monograph treats the v_{CAUS} head as a functional element that relates a causing event to an existentially bound caused eventuality. Under this view, the primary function of v_{CAUS} is to make the causal dependency explicit by establishing an underspecified causative relation between these two eventualities (Kratzer 2005; Lyutikova & Tatevosov 2014). Crucially, I assume that v_{CAUS} does not merely introduce a causing event as part of its inherent lexical meaning; rather, it operationalizes causative semantics by linking a causing event

to the specific eventuality denoted by its complement. In lexical causatives, for instance, the dynamic event introduced by v and the result state introduced by ResP are distinct eventualities, even though only one of them is eventive in the narrow sense. Voice, in turn, merely relates an external argument to the causing event and does not contribute an additional eventive layer. The semantics of v_{CAUS} is formalized in (85).

$$(85) \quad \llbracket v_{\text{CAUS}} \rrbracket = \lambda P. \lambda e. \exists \varepsilon [R_{\text{CAUS}}(e, \varepsilon) \wedge P(\varepsilon)]$$

Under this denotation, v_{CAUS} is a purely relational operator. It takes two predicates as arguments: a predicate Q of the causing event e , and a predicate P of a caused eventuality ε . Under this view, v_{CAUS} relates a causing event e to an existentially bound caused eventuality ε via an underspecified causative relation R_{CAUS} , where ε is described by the complement of v_{CAUS} and ranges over events and states (e.g. Higginbotham 2000), that is, the caused eventuality ε may be either stative or eventive, depending on whether the complement of v_{CAUS} is a ResP or a VoiceP. I use the variable ε to range over eventualities, understood as a cover term for events and states in the sense of Parsons (1990) and Higginbotham (2000). Formally, the domain of ε is the union of events and states, i.e. $\varepsilon \in \text{Events} \cup \text{States}$. This allows the internal argument of v_{CAUS} to be either stative, as in ResP-selecting (lexical) causatives, or dynamic, as in VoiceP-selecting (productive) causatives, without requiring different causative operators. In this respect, ε corresponds to the subevent variables assumed in Ramchand (2008), which likewise range over distinct types of eventualities introduced at different layers of the verbal domain.

The contribution of v_{CAUS} is to assert a causative relation R_{CAUS} between these two eventualities. I assume that v_{CAUS} uniformly introduces a causative relation between eventualities, and that the distinction between direct and indirect causation is not encoded in the presence or absence of v_{CAUS} itself, but in the type of causative relation that v_{CAUS} introduces. Different causative relations impose different constraints on the internal structure of caused eventualities, thereby restricting what kind of event can serve as the internal argument of v_{CAUS} . In particular, I distinguish two types of causative relations, borrowing the terminology from Lyutikova & Tatevosov (2014): D-CAUSE and I-CAUSE.

The relation D-CAUSE encodes direct causation and requires a non-interrupted causal chain between the causing event and the caused state. As a result, the caused state must be non-autonomous and non-agentive, lacking independent causal force. Only event structures that do not introduce an autonomous external argument satisfy these requirements, which in the present framework corresponds to ResP-sized event structures. By contrast, the relation I-CAUSE encodes indirect causation and merely expresses causal dependency between events, without

imposing constraints on intervening causal structure. This relation tolerates event autonomy and allows intervening causes to be introduced between the causing event and the final outcome. Consequently, caused events that include their own external argument are admissible under I-CAUSE, corresponding to VoiceP-sized event structures. In other words, when v_{CAUS} embeds a ResP-sized constituent, the resulting causative relation is interpreted as direct causation (D-CAUSE), as no independently introduced event intervenes between the causing event and the resultant state. When v_{CAUS} embeds a VoiceP-sized constituent, the causative relation is interpreted as indirect causation (I-CAUSE), reflecting causal dependence between two events.

In this way, the type of causation follows compositionally from the size of the embedded structure. Formally, v_{CAUS} is assigned a uniform denotation, given in (85), where the causative relation introduced by v_{CAUS} is left underspecified and instantiated contextually as either D-CAUSE or I-CAUSE. The variable R_{CAUS} ranges over a restricted set of causative relations, as defined in (86):

$$(86) \quad R_{\text{CAUS}} \in \{\text{D-CAUSE}, \text{I-CAUSE}\}$$

This definition of v_{CAUS} contrasts with Pykkänen (2008)'s universal causative element *Cause*, which takes a single event predicate and introduces a new causing event that stands in a causative relation to the embedded event. While Pykkänen (2008)'s formulation is well suited to capturing cross-linguistic variation in the syntactic realization of causative heads, the present definition shifts the explanatory burden away from event introduction and toward event composition. As a result, differences in causative interpretations do not follow from different causative operators, but from the structural relation between causing events and caused eventualities. This move is central to the analysis pursued in this monograph. By separating causative semantics from event introduction, this framework allows direct and indirect causation to be derived from differences in event configuration and dependency between events, rather than from distinct lexical meanings.

Under this view, direct and indirect causation are derived compositionally from the interaction between the causative relation introduced by v_{CAUS} and the internal structure of the caused eventuality. Selectional differences between ResP- and VoiceP-sized complements are thus not primitive, but follow from the semantic constraints imposed by the respective causative relations. This allows a unified treatment of causatives in which v_{CAUS} remains a single operator, while systematic variation in causative interpretation is captured by the type of causative relation it introduces. D-CAUSE refers to the configuration where the single v head takes ResP as its complement (i.e. lexical causatives), as in (87) whereas I-CAUSE represents the higher v in a double v P structure (i.e. productive causatives), as in (88).

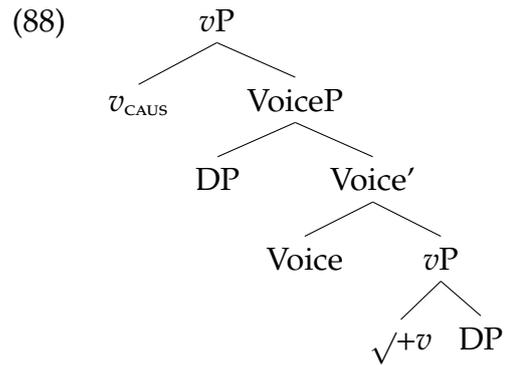
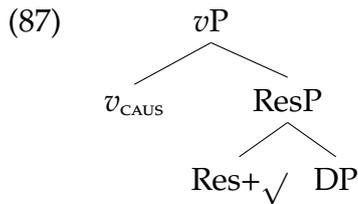


Table 2.5 provides a schematic overview of the default correlations assumed in the present analysis between verb classes, causative formation, and causative interpretation. The table is intended purely as an orienting device that brings together several distinctions introduced in this chapter, that is, lexical vs. productive causatives, ResP- vs. VoiceP-selection, and direct vs. indirect causation, in a single place. Importantly, the correlations summarized in the table are not meant to be categorical, thereby exceptions may exist. As argued throughout this chapter, both causative formation and causative interpretation are sensitive to structural and contextual factors, and the distinction between direct and indirect causation is inherently gradient. The table therefore does not constitute a typological classification, but merely reflects default pairings that emerge under standard assumptions about event structure and causative relations, and that will serve as a point of reference for the analyses developed in the following chapters.

	Unaccusatives	Unergatives	Transitives
Lexical (ResP-selecting)	✓	✗	✗
Direct causation			
Productive (VoiceP-selecting)	✗	✓	✓
Indirect causation			

Table 2.5: Default correlations between verb classes, causative formation, and causative relations

These correlations do not follow from the semantics of v_{CAUS} itself, which uniformly introduces a causative relation between eventualities, but from the internal structure of the event embedded under v_{CAUS} . This makes it necessary to examine more closely the semantics of the verbal projection that v_{CAUS} embeds, especially in configurations where the embedded event already contains an external argument.

Moving from the semantics of v_{CAUS} to the semantics of the verbal structure embedded under v_{CAUS} , I now turn to the properties of v in VoiceP-selecting causatives, that is, causatives of unergatives and transitives. These configurations instantiate a double v P structure in which the caused event is itself eventive and may introduce its own external argument, see (88). As a result, the semantic properties of the lower v P become important for determining how events are related and which type of causative relation is instantiated. Complementing the root-position approach (i.e. Alexiadou et al. 2015) discussed in Section 2.5.1, Lyutikova & Tatevosov (2014) develops a feature-based analysis in which the manner/result distinction is encoded directly in the functional structure of the v P embedded under v_{CAUS} . Focusing on causative syntax, this approach shifts attention from the categorial position of the root to the semantic properties of the causing event and their formal representation in the verbal domain. In particular, Lyutikova & Tatevosov (2014) argue that the semantics of v must accommodate a binary distinction between +MANNER and -MANNER, which regulates how roots integrate into event-structural configurations.

The feature +MANNER is taken to indicate that the descriptive properties of the causing event are specified in the lexical semantics of the predicate (Lyutikova & Tatevosov 2014: 302). Verbs bearing this feature lexicalize a concrete process or activity, typically associated with agentive control. This characterization aligns with standard treatments of manner predicates, which encode how an action is carried out rather than the outcome it brings about. Because the causing event is descriptively rich, predicates marked as +MANNER tend to require an intentional and volitional agent. By contrast, the feature -MANNER characterizes predicates whose causing event lacks descriptive specification (Lyutikova & Tatevosov 2014: 302). In such cases, the semantics of the predicate is centered on the result or change of state, while the nature of the causing event is left underspecified. This configuration corresponds to what is traditionally described as result verbs and thus mirrors the manner/result distinction discussed previously. The underspecification of the causing event also explains why -MANNER predicates are compatible with a broader range of external arguments, including non-agentive causers.

A key contribution of Lyutikova & Tatevosov (2014)'s analysis is the explicit linkage between root semantics and the functional properties of the v and Voice layers. Assuming that Voice introduces the external argument and hosts agentivity-related features, the \pm MANNER distinction captures whether the verbal predicate itself imposes constraints on the nature of the agent. In this respect, the feature-based approach converges with modifier-complement accounts in deriving argument realization asymmetries from differences in event-structural composition rather than from surface valency alone. While the feature-based analysis captures how

manner and result distinctions are encoded in the semantics of *v*, it does not by itself determine how the events introduced by *v* are related to one another in causative configurations. To address this issue, it is necessary to consider the relations that hold between eventualities in the denotation of verbal predicates, particularly in double *v*P configurations in VoiceP-selecting causatives.

As argued by Lyutikova & Tatevosov (2014: 302), “verbal predicates differ in how subevents in their denotation are related”. They propose three relations that are labeled as INCR, CAUSING, and CAUSE. The INCR relation refers to “(sub)events are related incrementally; agent’s activity and the change of state of the theme are temporally co-extensive”; the CAUSING relation refers to “activity (sub)event is an immediate cause of a process (sub)event; no intermediate causes are available; the change of state can occur at the final part of the activity”; the CAUSE relation refers to “one (sub)event is causally dependent on another; intermediate causes are available” (Lyutikova & Tatevosov 2014: 302). Comparing non-derived transitives to causatives, they argue that both types are different in terms of the parameters they propose, i.e. different based on the manner vs. result distinction. On the assumption that “subevents are represented independently of their relations” they provide the following evidence as shown in Table 2.6 below, pointing that result verbs such as *break* with the CAUSING relation depict an overlap with lexical causatives.

	MANNER	RESULT
INCR	‘read a novel’	‘assemble the model’
CAUSING	‘curse one’s enemy’	‘break the window’, lexical causatives
CAUSE	-	productive causatives

Table 2.6: Relations between subevents across manner/result complementarity

This distinction has direct consequences for the availability of intervening causal structure. Under the CAUSE relation, intermediate causes may intervene between the causing and the caused eventuality, yielding a configuration of non-immediate causation (Lyutikova & Tatevosov 2014: 306). By contrast, the CAUSING relation guarantees that no independent intervening causes can be introduced, since the causing event exhaustively contains all members of the causal chain leading to the effect. Within this system, the INCR relation is treated as a subrelation of CAUSING: incrementally related subevents are necessarily causally related in the stronger sense, but not vice versa (Lyutikova & Tatevosov 2014: 307). The three relations thus form an inclusion hierarchy, with INCR as the most specific relation, CAUSING as an intermediate relation, and CAUSE as the most general one.

In the terminology adopted in the following chapters, I collapse the *INCR* and *CAUSING* relations under the label *D-CAUSE*, as both exclude intervening causal structure and enforce a non-interrupted causal chain. The relation *CAUSE*, by contrast, is referred to as *I-CAUSE*, reflecting its compatibility with intervening causes and with autonomous caused events. This terminological choice allows the direct-indirect causation distinction to be stated transparently, while preserving the relational distinctions proposed by Lyutikova & Tatevosov (2014).

Overall, the feature-based analysis reinforces the view that manner/result complementarity is not merely a classificatory device, but reflects systematic differences in how events are encoded and related within the event structure. This perspective will be relevant in the subsequent chapters, where distinctions between types of causation and degrees of indirectness are derived from independently represented subevents and their relations. The lexical-semantic approach of Levin & Rappaport Hovav (2005), the structural implementation proposed by Alexiadou et al. (2015), and the feature-based analysis developed by Lyutikova & Tatevosov (2014) converge on a unified view of manner/result complementarity as a robust constraint at the lexicon-syntax interface. Across these frameworks, the distinction is not treated as a surface generalization, but as a consequence of how verbal roots contribute to event structure and how this contribution is structurally represented. This convergence yields clear predictions about morphosyntactic behavior, including argument realization in causative configurations.

2.6 Summary

This chapter has established the theoretical background for the analysis of causative constructions developed in the remainder of the monograph. I have argued that causativization provides a window into the interaction between event structure, root semantics, and argument realization, and that cross-linguistic variation in causative constructions reflects systematic differences in how these components are encoded. By situating causativization at the interface of verbal semantics and morphosyntax, the chapter has laid out the conceptual tools necessary for understanding both uniformities and asymmetries across verb classes. The chapter has first clarified the distinctions among unaccusative, unergative, and transitive predicates and has shown that these distinctions are crucial for explaining how different verb classes respond to causativization. I have shown that causativization of unaccusative predicates exhibits properties that sharply diverge from those found with unergative and transitive predicates, a difference that follows from their internal structural representations and event-semantic profiles. The discussion

has further introduced aspectual classes of dynamic events, which provide an essential basis for the empirical investigations in later chapters and for capturing systematic variation in productive causative structures.

Building on these class distinctions, the chapter has presented the notion of manner/result complementarity and has introduced a set of diagnostics used to classify predicates accordingly. I have shown that manner and result roots impose fundamentally different constraints on event decomposition, as evidenced by their compatibility with causative alternations, the presence or absence of a resultant state, and the syntactic realization of arguments and thematic roles. Result roots lexically encode a change of state and therefore determine the existence of a resultant state, whereas manner roots specify how an event unfolds without encoding a result component. This asymmetry has been shown to have direct consequences for causative formation, the interpretation of causative relations, and the extent to which causative morphology can affect event structure.

Finally, the chapter has sharpened the conceptual distinction between causation as a semantic relation between eventualities and causativization as a morphosyntactic operation that introduces such a relation into the verbal domain. By outlining the typology of causative constructions and clarifying dimensions such as (in)directness, the discussion has provided explicit working definitions that ensure terminological and analytical consistency throughout the monograph. Overall, the chapter has supplied the theoretical assumptions and diagnostic tools required for the subsequent structural analysis of causative formation and for the evaluation of recursive causativization and increasing indirectness in the chapters that follow.

Chapter 3

Morphosyntax of Turkish causatives

3.1 Overview

The morphosyntax of Turkish causatives provides a particularly rich domain for investigating how causative morphology interacts with argument structure and event composition. In this chapter, I present a detailed description of causatives in Turkish, focusing on how morphosyntactic and semantic properties correlate with the various types of causative formation. Section 3.2 outlines the core morphosyntactic properties of the Turkish language, introducing the interaction of case marking, flexible word order, and information structure. The discussion is organized around Differential Object Marking (DOM) and the discourse-related factors that correlate with object marking and constituent order, with particular attention to the extent of variability in word order permitted. Section 3.2.3 introduces the causative morpheme and distinguishes between irregular and regular allomorphy, presents an overview of causatives derived from different base predicate classes (unaccusatives, unergatives, transitives, ditransitives). It highlights interactions with other voice morphology, and closes with a discussion of causative iteration. Section 3.3 situates these forms within the broader alternation patterns between causative and anticausative verbs, that is to say, unaccusative-causative alternations and transitive-anticausative alternations, highlighting how event structure and argument configuration determine the locus of causativization. Section 3.4 examines productive causativization in more detail, tracing how different verb classes of unergative, transitive, and ditransitive verbs respond to causative morphology and how causer, causee, and theme arguments are realized, focusing on word order, case, and argument realization and omission. Together, these sections lay the groundwork for the subsequent discussion on recursive causatives, setting out the morphosyntactic patterns that underlie the theoretical analyses and empirical investigations pursued in the following chapters.

3.2 Structural profile of Turkish

This section introduces core typological, morphosyntactic, and morphophonological properties of Turkish that are relevant for the analyses developed in this monograph. The aim is not to provide a comprehensive reference grammar, but to foreground those aspects of Turkish structure that interact directly with the decompositional assumptions adopted in this monograph and with the empirical diagnostics employed in later chapters.

Turkish belongs to the southwestern branch of the Turkic language family and is spoken primarily in the Republic of Türkiye by approximately ninety million speakers (Underhill 1976; Lewis 2000; Kornfilt 1997; Göksel & Kerslake 2005; Öztürk 2005; Ketrez 2012; van Schaaik 2020). Turkish is a head-final, nominative-accusative language with a rich agglutinative morphology. Across morphological and syntactic domains, it exhibits a particularly transparent correspondence between form and function. As a predominantly suffixing language, Turkish builds complex words through the productive concatenation of derivational and inflectional morphemes (Oflazer 1994: 137; Göksel & Kerslake 2005; Ketrez 2012). The interpretation of complex words is therefore compositionally determined by the lexical contribution of roots and the ordered sequence of suffixes.

A central feature of Turkish morphology is its vowel and consonant harmony system, accompanied by voiced and voiceless alternations, which regulate the morphophonological shape of suffixes (Çetinoğlu 2009: 17; Ketrez 2012). Such phonological processes yield multiple allomorphic realizations of a single morpheme. For instance, the causative morpheme {CAUS} can be realized by the exponent *-DIr*, which surfaces as *-tir*, *-tir*, *-tur*, *-tür*, *-dir*, *-dir*, *-dur*, and *-dür*, depending on the phonological environment. Likewise, the plural morpheme {PL} is realized by the exponent *-lAr*, surfacing as *-lar* or *-ler*, as in *araba-lar* ‘car-PL’ and *ev-ler* ‘house-PL’. In this notation, capital letters indicate alternating segments within an exponent: *D* ranges over *d* and *t*, and *I* ranges over *ı*, *i*, *u*, and *ü*. Optional segments are indicated in parentheses, as with the accusative morpheme {ACC}, realized as the exponent *-(y)l*, illustrated by *araba-yı* ‘car-ACC’. The appearance of the buffer consonant [j] is phonologically conditioned and occurs with vowel-final nouns (Kornfilt 1997). These morphophonological processes ensure phonological well-formedness in agglutinative characteristic of the Turkish language and contribute to the surface transparency of morphological composition.

With the exception of a limited set of loanwords, Turkish morphotactics is highly regular and largely predictable, allowing for a potentially unbounded number of derivations from a single root (Çetinoğlu 2009: 17). This degree of morphological

transparency makes Turkish a particularly suitable testing ground for theories of causativization and argument structure. Boundaries between derivational and inflectional morphology are overtly realized, enabling a direct mapping between morphological form and syntactic structure. This agglutinative profile provides a surface-reflective environment in which syntactic operations such as causativization, Voice realization, case alignment, and argument introduction can be empirically tracked. Having introduced typological and morphophonological properties of Turkish, the discussion now turns to how these morphological patterns interact with syntactic, semantic and pragmatic domains.

3.2.1 Case, word order, and information structure

Turkish is canonically characterized as an SOV language; however, surface word order is flexible when grammatical relations are independently recoverable. This flexibility is tightly regulated by case morphology on nominal arguments: rich case marking allows argument roles to be identified independently of linear position. As a result, case-marked constituents may surface both preverbally and postverbally, and word-order variation in such clauses is primarily sensitive to information-structural factors, including focus (immediately preverbal position), topic (sentence-initial position), and presupposition (postverbal positions) (Kornfilt 1997: 91; Erguvanlı 1984; İşsever 2003; Özsoy 2019; Şener 2019; Kornfilt 2019), rather than grammatical well-formedness. By contrast, when noun phrases lack overt case-marking, Turkish displays a rigid canonical SOV order. In these configurations, linear order becomes the primary cue for identifying grammatical relations, and deviations from SOV result in a change in argument interpretation rather than a mere reordering, as in (89). As shown by Erguvanlı (1984: 5), this rigidity contrasts with the flexibility observed in clauses where case-marking and semantic features independently distinguish grammatical roles.

- (89) a. Mutluluk huzur getir-ir.
 happiness peace.of.mind bring-AOR
 (i) 'Happiness brings peace of mind.'
 (ii) *'Peace of mind brings happiness.'
- b. Huzur mutluluk getir-ir.
 peace.of.mind happiness bring-AOR
 (i) 'Peace of mind brings happiness.'
 (ii) *'Happiness brings peace of mind.'

A further restriction on word-order variation arises in subordinate clauses. Subordination in Turkish is predominantly expressed through suffixation, most notably

via nominalization markers that attach to verbal stems (Kornfilt 1997: 45–46). Once nominalized, these clauses pattern morphosyntactically with nominals rather than verb phrases, for instance, by selecting nominal person agreement morphology instead of verbal agreement. As a consequence, nominalized clauses may bear case suffixes. Despite this nominal behavior, subordinate clauses exhibit rigid verb-final order. Under unmarked conditions, a nominalized subordinate clause occupies the syntactic position of a corresponding noun phrase and obligatorily precedes the matrix verb (Kornfilt 1997: 45–47). Unlike case-marked constituents in the matrix clause, subordinate clauses do not undergo scrambling and must strictly respect verb-final order, as illustrated in (90).

- (90) [Huzur-un mutluluk getir-diğ-in]-i
 peace.of.mind-GEN happiness bring-RELZ-3SG-ACC
 bil-mi-yor-du-m.
 know-NEG-PROG-PST-1SG

‘I did not know that peace of mind brings happiness.’

Focusing on word-order variations, when the direct object bears overt accusative case, it may surface in a range of syntactic positions without affecting argument interpretation. As illustrated in (91), the object can remain in its canonical preverbal position, as in (91a), undergo topicalization to the left periphery, as in (91b). Constituents may appear postverbally in discourse-configurational structures, such that the object, as in (91c), or the subject, as in (91d), may be right-dislocated.

- (91) a. *Canonical preverbal object (SOV)*
 Ayşe kitab-ı oku-du.
 Ayşe book-ACC read-PST
 ‘Ayşe read the book.’
- b. *Clause-initial topicalization of the object*
 Kitab-ı Ayşe oku-du.
 book-ACC Ayşe read-PST
 ‘The book, Ayşe read.’
- c. *Postverbal scrambling of the object*
 Ayşe oku-du kitab-ı.
 Ayşe read-PST book-ACC
 ‘Ayşe read the book.’
- d. *Postverbal scrambling of the subject*
 Kitab-ı oku-du Ayşe.
 book-ACC read-PST Ayşe
 ‘Ayşe read the book.’

These variants illustrate that the position of a marked object is discourse-driven. Clause-initial placement is typically associated with topicality or contrast, while postverbal placement may occur in presentational, focus-heavy, or narrative contexts. The preverbal, focus position remains the default domain for new or neutral information. This word-order flexibility observed in marked objects contrasts sharply with unmarked objects, which are strongly preferred in immediately preverbal position and rarely undergo fronting (cf. Ketrez 2023), as in (92a).

- (92) a. **Unmarked object in topic position*
 *Kitap Ayşe oku-du.
 book Ayşe read-PST
 Intended: 'Ayşe read a book.'
- b. *Unmarked object in focus position*
 Ayşe kitap oku-du.
 Ayşe book read-PST
 'Ayşe read a book.'

The infelicity of (92a) underscores the role of case in licensing word-order freedom: without overt case-marking, linear order becomes the primary cue for argument identification. More generally, this contrast reflects the system of Differential Object Marking (DOM) in Turkish, whereby the presence or absence of accusative case is tied to broader issues of clause structure and information organization as well as the interpretive status of the object and its syntactic mobility. DOM is a cross-linguistically well-studied phenomenon where the morphological marking of a direct object varies systematically. In DOM languages, direct objects are not uniformly marked; instead, their case marking (or lack thereof) depends on various factors, usually reflecting the object's position on a prominence hierarchy (Aissen 2003; de Hoop & Malchukov 2008; Iemmolo 2010; Dalrymple & Nikolaeva 2011; Bárányi 2018; García et al. 2018).

Typologically, Turkish fits the profile of a DOM language where the overt accusative marking *-(y)I* on direct objects is described in terms of nominal parameters such as animacy and referentiality, verbal parameters such as affectedness and telicity, and information structure parameters such as topicality (von Heusinger & Kornfilt 2005; Enç 1991; von Heusinger et al. 2019; Kızılkaya 2024; von Heusinger et al. 2024). Recent corpus and experimental studies on DOM in Turkish demonstrate that these prominence-based factors interact with discourse linking such that previously introduced non-modified, indefinite, and human direct objects in focus position with overt accusative marking are anaphorically picked up in the subsequent discourse more frequently than unmarked direct objects under the same conditions (von Heusinger & Yıldız 2025).

DOM in Turkish is sensitive to referentiality, definiteness, and specificity (Dede 1986; Enç 1991; Kornfilt 1997; von Heusinger & Kornfilt 2005; von Heusinger & Bamyacı 2017; von Heusinger et al. 2019; Özge & von Heusinger 2020). As illustrated in (93) for definite expressions and in (94) for indefinite expressions, adopted from von Heusinger & Yıldız (2025: 4), objects that are interpreted as referential and specific are realized with overt accusative case. By contrast, unmarked objects receive a non-specific or non-referential interpretation, as in (94b) and (94c). Crucially, Turkish distinguishes two structurally and interpretively distinct types of indefinite direct objects. One type consists of bare nominals, which systematically yield non-referential or property-denoting readings, syntactically referred to as pseudo-incorporated NPs (e.g. Nilsson 1986; Öztürk 2003; Arslan-Kechriotis 2009; Sağ et al. 2025), as in (94c). The other type involves *bir*-marked noun phrases, which may surface either with or without accusative case and whose interpretation varies accordingly, as in (94a) and (94b). Since Turkish lacks a definite article, definiteness is not encoded by a dedicated determiner. Instead, the presence of accusative case on bare nominal objects functions as a key morphosyntactic signal licensing definite and specific interpretations, as in (93b).

(93) *Definite expressions*

- a. (Ben) bu mektub-u yaz-dı-m.
 I this letter-ACC write-PST-1SG
 'I wrote this letter.' *demonstrative*
- b. (Ben) mektub-u yaz-dı-m.
 I letter-ACC write-PST-1SG
 'I wrote the letter.' *definite*

(94) *Indefinite expressions*

- a. (Ben) bir mektub-u yaz-dı-m.
 I a letter-ACC write-PST-1SG
 'I wrote a certain letter.' *(specific) indefinite*
- b. (Ben) bir mektup yaz-dı-m.
 I a letter write-PST-1SG
 'I wrote a letter.' *(non-specific) indefinite*
- c. (Ben) mektup yaz-dı-m.
 I letter write-PST-1SG
 'I did some letter-writing.' *(non-referential) bare*

In ditransitive constructions, Turkish exhibits a NOM/DAT/ACC case alignment, in which the indirect object bears dative case, and the direct object is marked accusative. This s-IO-DO alignment is illustrated in (95), where case morphology unambiguously identifies grammatical relations independently of linear order.

- (95) Müdür_{AGENT} Hasan-a_{REC} mektub-u_{THEME} göster-di.
 director Hasan-DAT letter-ACC show-PST

‘The director showed the letter to Hasan.’ (adopted from Comrie 1974: 6)

Because both non-subject arguments are overtly case-marked, Turkish allows a wide range of constituent orders in ditransitive clauses without ambiguity in argument interpretation. Besides the expected s-IO-DO-V order, as in (96), alternative orders are possible, some of which are shown in (97).

- (96) Baba-m çocuklar-a para-yı dün ver-di.
 father-1SG.POSS children-DAT money-ACC yesterday give-PST

‘My father gave the money to the children yesterday.’ (Göksel 1993: 21)

- (97) a. Çocuklara parayı babam verdi dün. (IO, DO, S, V, ADV)
 b. Babam verdi çocuklara parayı dün. (S, V, IO, DO, ADV)
 c. Dün parayı verdi babam çocuklara. (ADV, DO, S, V, IO)

Overall, Turkish word order reflects an interaction between case, discourse prominence, and semantic specificity. Overt case morphology allows arguments to participate in a wide range of information-structural configurations, especially topicalization and focus movement, while zero-marked elements remain constrained. Although Turkish allows substantial word order variation under appropriate morphosyntactic conditions, corpus evidence shows that this flexibility is not reflected in uniform distributional frequencies. Based on the *Milliyet* Corpus (Özge et al. 2019), subject-initial word orders (SOV, SVO) are more frequent than object-initial ones, while a large proportion of clauses exhibit apparent OV order due to subject drop. Once subject-drop cases are excluded, verb-final orders remain dominant, with verb-medial and verb-initial orders occurring considerably less frequently. This dynamic will be relevant later when examining how causativization affects argument realization and the distribution of overt NPs (see Section 6.5).

3.2.2 Argument realization and omission

This subsection addresses how arguments are morphosyntactically realized in Turkish and under which conditions they may be omitted. Turkish is a *pro*-drop language, allowing the omission of pronominal arguments when their referential features are recoverable from morphosyntactic and discourse cues. Subject omission is licensed by overt agreement morphology on the verbal predicate, while possessors may likewise be omitted in possessive NPs, where agreement morphology on the head encodes the relevant person and number features (Kornfilt 1997; Turan 1995). Examples of subject and possessor omission are given in (98) and (99), adopted from Konuk & von Heusinger (2021: 112).

- (98) a. Ben ev-e gel-di-m.
1SG house-DAT come-PST-1SG
'I came home.'
- b. *pro* ev-e gel-di-m.
pro house-DAT come-PST-1SG
'I came home.'
- (99) a. Ben-im ev-im
1SG-GEN house-1SG.POSS
'my house'
- b. *pro* ev-im
pro house-1SG.POSS
'my house'

With the exception of third person singular, subject agreement in Turkish is overtly realized on finite verbs and appears as the outermost suffix of the verbal complex. As noted by Kornfilt (1997: xviii), the third person singular agreement marker is null in finite clauses; accordingly, I do not gloss this morpheme. The absence of overt agreement morphology in the third person singular renders subject omission in these contexts more dependent on discourse recoverability than in other persons. This asymmetry is illustrated in (100), which shows the past tense conjugation of the lexical causative verb *çık-art-* 'remove' across person and number. While first and second person subjects are morphologically marked on the verb, third person singular lacks an overt agreement morphology, as in (100c), where 3sg is not glossed, leaving the subject underspecified unless retrievable from discourse.

- | | |
|--|---|
| (100) a. <i>Çık-art-tı-m.</i>
exit-CAUS-PST-1SG
'I removed.' | d. <i>Çık-art-tı-k.</i>
exit-CAUS-PST-1PL
'We removed.' |
| b. <i>Çık-art-tı-n.</i>
exit-CAUS-PST-2SG
'You removed.' | e. <i>Çık-art-tı-nız.</i>
exit-CAUS-PST-2PL
'You removed.' |
| c. <i>Çık-art-tı.</i>
exit-CAUS-PST
'Ø removed.' | f. <i>Çık-art-tı-lar.</i>
exit-CAUS-PST-3PL
'They removed.' |

As will become clear in later chapters, patterns of argument realization are crucial for diagnosing degrees of indirectness in (double) causatives of transitives. These properties form the empirical basis for testing the interaction between causative formation and verbal semantics in Chapter 5 and Chapter 6. In addition, reflections on the findings of argument omission and argument order in contexts of both

single and double causatives in Turkish reported from the corpus study will be discussed in Section 6.5. I now turn to causativization and case alignment in Turkish, providing a descriptive account of the causative morpheme, its allomorphy, and how causativization reshapes argument structure.

3.2.3 Causativization and case alignment

This subsection provides a descriptive account of morphological causatives in Turkish and the case-alignment patterns that arise when a verb is causativized. The first part summarizes the causative morpheme and its allomorphy, including idiosyncratic forms. The second part gives a typology-oriented overview of causatives derived from different base predicate classes (unaccusatives, unergatives, transitives, ditransitives), which provides a comparative backdrop for the analyses based on my dataset. The final part addresses interactions between causativization and other voice morphology (passive, reflexive, reciprocal), as well as the possibility of causative iteration, since these interactions constrain surface orders and inform the decomposition assumed later in this monograph.

Morphologically-marked causatives in Turkish are formed by attaching a form of the causative morpheme to a verbal root or a verbal stem through suffixation (Sebüktekin 1971; Aissen 1974; Kornfilt 1997; Knecht 1986; Key 2013). After causativization, the case of the embedded subject undergoes change (Sebüktekin 1971; Aissen 1974; Zimmer 1976; Knecht 1986; Comrie 1989; Kornfilt 1997; Göksel & Kerslake 2005): the subject of the base verb is marked by the accusative case if the base is intransitive, and by the dative case if the base is transitive (see Zúñiga & Kittilä 2019 for the most recent causative typology of Turkish causativization).

Regular, predictable, and productive causative allomorphy include *-t* and *-Dir*. The distribution of *-t* and *-Dir* is determined by the morphophonological properties of a verbal root or a verbal stem to which the causative morpheme is added. *-t* selects verbal elements ending in a vowel. *-Dir*, on the other hand, selects verbal elements ending in a consonant, which has a variety of allomorphs according to the vowel harmony and voiced/voiceless alternations.

The denotation of the causative morpheme *-Dir* with capital letters represents the fact that Turkish is a harmonic language, and that suffixation is determined by certain rules such as vowel harmony and alternations of voiced/voiceless consonants that accord suffixes with the sound combinations of the word they attach to (e.g. Ketrez 2012). The result of this is the appearance of a variety of phonologically conditioned allomorphy of *-Dir*: *-tir*, *-tir*, *-tur*, *-tür*, *-dir*, *-dir*, *-dur*, and *-dür*. The predictability of the morphophonological allomorphy relies on certain rules, as presented in (101) for *-Dir* and in (101) for *-t*.

(101) *-Dir*

- a. can attach to most monosyllabic verbs that end in a consonant:
e.g. *dur-* ‘stop’ → not **dur-t-*, but *dur-dur-* ‘stop (tr.)’;
- b. can attach to most polysyllabic verbs that end in any consonant except for liquid consonants *l* and *r*:
e.g. *daral-* ‘become narrow’ → not **daral-dir-*, but *daral-t-* ‘narrow’.

(102) *-t*

- a. can attach after most polysyllabic verb stems that end in vowels or in liquid consonants *l* and *r*:
e.g. *oku-* ‘read’ → not **oku-dur-*, but *oku-t-* ‘make read’;
- b. can also attach after the regular causative suffix *-Dir* as well as after the irregular suffixes *-Ir* and *-Ar*:
e.g. *piş-ir-* ‘cook’ → not **piş-ir-dir-*, but *piş-ir-t* ‘make cook’

Irregular (and thus unpredictable) causative allomorphy include *-Ir*, *-It*, *-Ar*, and *-Art*, each with phonologically root-conditioned allomorphy of their exponent, i.e. *-ir*, *-ir*, *-ur*, and *-ür* for *-Ir*; *-it*, *-it*, *-ut*, and *-üt* for *-It*; *-ar* and *-er* for *-Ar*; *-art* and *-ert* for *-Art*. The irregular allomorphy across the four variant of *-Ir*, *-It*, *-Ar*, and *-Art* does not rely on any predictable rules, which would determine their distribution, except for the phonologically conditioned allomorphy of their exponent. However, they are said to attach to “around thirty monosyllabic stems, most of which are intransitive” (Göksel & Kerslake 2005: 75). Sebüktekin (1971: 81) points to a “free variation” between *-Ar* and *-Art*, as in *çık-ar-* vs. *çık-art-* ‘extract’. Key (2013: 119–121) observes that this alternation between *-Ar* and *-Art* is only visible with certain roots, referring to the same semantic content, as in (103) and (104), but some roots strictly allow one suffix or the other, as in (105).

(103) a. *çık-ar-*
√-CAUS
‘eject’

b. *çık-art-*
√-CAUS
‘eject’

(104) a. *kop-ar-*
√-CAUS
‘break off’

b. *kop-art-*
√-CAUS
‘break off’

(105) a. **çök-er-*
√-CAUS
‘crush’

b. *çök-ert-*
√-CAUS
‘crush’

In addition, Key (2013: 119–121) notes that the two alternants are nominalized independently of one another, referring to distinct semantic contents, e.g. *çıkarma* ‘military debarkation’ vs. *çıkartma* ‘sticker’. Table 3.1 provides an overview of the surface allomorphs of the Turkish causative morpheme, with representative base verbs and their causativized counterparts.

Regular allomorphy	Base verbs	Causativized verbs
-Dir	<i>gez-</i> ‘travel’	<i>gez-dir-</i> ‘make travel’
	<i>kazan-</i> ‘win’	<i>kazan-dir-</i> ‘make win’
-t	<i>yıka-</i> ‘wash’	<i>yıka-t-</i> ‘make wash’
	<i>oyna-</i> ‘play’	<i>oyna-t-</i> ‘make play’
Irregular allomorphy	Verbal roots	Causativized verbs
-Ir	<i>düş-</i> ‘fall’	<i>düş-ür-</i> ‘drop’
-It	<i>kork-</i> ‘fear’	<i>kork-ut-</i> ‘scare’
-Ar	<i>çık-</i> ‘exit’	<i>çık-ar-</i> ‘extract’
-Art	<i>çök-</i> ‘collapse’	<i>çök-ert-</i> ‘crush’

Table 3.1: Allomorphs of the Turkish causative morpheme

Moving forward, I now transition to argument structure of causatives that are formed based on different base predicates. Causativization of unaccusatives results in a simple transitive construction in which an agent is realized in the nominative as the subject of the predicate and the embedded theme subject becomes the theme direct object of the resulting predicate, receiving the accusative case, as in (106b). Typologically, the embedded subject has been referred to with different labels, e.g. ‘non-agentive complement subject’ (Cole 1983: 117); ‘non-agentive causee’, (Kornfilt 1997: 333); ‘patientive causee’ (Shibatani & Pardeshi 2002). This type of causativization has been argued to involve one-event causation (Shibatani 1976; Shibatani & Pardeshi 2002, cf. Harley 2008; Tat & Key 2009) and to typically encode direct causation.

(106) Unaccusative base (*düş-* ‘fall’)

- a. Anahtar_{THEME} düş-tü.
key fall-PST
‘The key fell.’
- b. Ece_{AGENT} anahtar-ı_{THEME} düş-ür-dü.
Ece key-ACC fall-CAUS-PST
‘Ece dropped the key.’

Causativization of unergatives is similar to causativization of unaccusatives, in that the embedded subject receives the accusative marking, as in (107b); however, this construction differs from causatives of unaccusatives given the existence of two agents, i.e. the causer and the causee (Zúñiga & Kittilä 2019).

(107) Unergative base (*çalış-* ‘work’)

- a. Ece_{AGENT} çalış-tı.
Ece work-PST
‘Ece worked.’
- b. Müdür_{CAUSER} Ece’yi_{CAUSEE} çalış-tır-dı.
supervisor Ece-ACC work-CAUS-PST
‘The supervisor made Ece work.’

Causativization of transitives results in a surface ditransitive construction, the embedded agent *Ece* becomes the causee (the agent of the (lower) causing event) and receives the dative case, and a new agent *Hasan* (as the causer of the (higher) causing event) is realized as the surface subject (Aissen 1974; Comrie 1974; Zimmer 1976; Zúñiga & Kittilä 2019), as in (108b).

(108) Transitive base (*aç-* ‘open’)

- a. Ece_{AGENT} kapı-yı_{THEME} aç-tı.
Ece door-ACC open-PST
‘Ece opened the door.’
- b. Hasan_{CAUSER} Ece’ye_{CAUSEE} kapı-yı_{THEME} aç-tır-dı.
Hasan Ece-DAT door-ACC open-CAUS-PST
‘Hasan made Ece open the door.’

Since causatives of transitives display a monoclausal case alignment, in which the causee receives the dative case and the theme receives the accusative case, the accusative causee is disallowed, as in (109b), adopted from Akkuş (2021: 215).

- (109) a. Bütün misafir-ler araba-yı temizle-di(-ler).
all guest-PL car-ACC clean-PST (-3PL)
‘All the guests cleaned the car.’
- b. Bütün *misafir-ler-i / misafir-ler-e araba-yı temizle-t-ti-m.
all *guest-PL-ACC / guest-PL-DAT car-ACC clean-CAUS-PST-1SG
‘I made all the guests clean the car.’

Causativization of ditransitives raises different views on argument structure, especially with regard to the realization of the causee. Considering base-generated positions of arguments, the causee is realized within the *tarafından* ‘by’-phrase, as in (110b). Due to the distinctness condition (Richards 2010), two (adjacent)

dative arguments, that is, the causee and the recipient, as in (110c), adopted from Comrie (1974: 7), are strongly dispreferred (Kural 1996; Öztürk 2005; Akkuş 2021; Hopperdietzel & Yıldız 2025; but see Göksel 1993). Judgments regarding two adjacent datives as well as alternative strategies to rescue the derivation and satisfy the distinctness condition are largely discussed in Section 4.2.1 and Section 4.3.

- (110) a. Müdür_{AGENT} Hasan'a_{REC} mektub-u_{THEME} göster-di.
 director Hasan-DAT letter-ACC show-PST
 'The director showed the letter to Hasan.'
- b. Dişçi_{CAUSER} [müdür tarafından]_{CAUSEE} Hasan'a_{REC} mektub-u_{THEME}
 dentist director by Hasan-DAT letter-ACC
 göster-t-ti.
 show-CAUS-PST
 'The dentist made the director show the letter to Hasan.'
- c. *Dişçi_{CAUSER} müdür-e_{CAUSEE} Hasan'a_{REC} mektub-u_{THEME} göster-t-ti.
 dentist director-DAT Hasan-DAT letter-ACC show-CAUS-PST
 'The dentist made the director show the letter to Hasan.'

Since causatives of ditransitives require additional distinctions beyond what is needed here (see Hopperdietzel & Yıldız 2025), I restrict the present discussion to the alignment patterns. These concerns regarding the argument structure of causatives of ditransitives will be outlined in detail in Section 4.3, which will form the empirical basis for the analysis of recursive causatives of transitives.

With this restriction in place, I now turn to a brief overview of voice morphology in Turkish and its interaction with derivational processes. For the purposes of this monograph, voice morphology play important roles as parts of derivational morphology. Voice morphemes include causative, passive, reciprocal, and reflexive suffixes. These morphemes may occur in a single word, which means that the derived verb may have more than one voice morpheme occurring simultaneously. The order is such that the causative morpheme precedes the passive morpheme and follows the reciprocal/reflexive morphemes (Ketrez 2012: 154), as in (111) and (112), adopted from Ketrez (2012: 154).

- (111) a. *Causative with reciprocal*
 Yönetmen başrol-de-ki oyuncu-lar-ı öp-üş-tür-dü.
 director leading.role-LOC-RELZ actor-PL-ACC kiss-RECIP-CAUS-PST
 'The director made the actors that are in the leading role kiss each other.'
- b. *Causative with reciprocal and passive*
 Oyuncu-lar öp-üş-tür-ül-dü.
 actor-PL kiss-RECIP-CAUS-PASS-PST
 'The actors were caused to kiss each other.'

- (112) a. *Causative with reflexive*
 Bakıcı çocuklar-ı giy-in-dir-ip dışarı-ya çık-ar-dı.
 caretaker children-ACC dress-REFL-CAUS-CVB outside-DAT exit-CAUS-PST
 ‘The caretaker dressed the children and took them outside.’
- b. *Causative with reflexive and passive*
 Çocuklar giy-in-dir-il-di.
 children dress-REFL-CAUS-PASS-PST
 ‘The children were dressed.’

A note on passivization is necessary. As shown below, when a causative of transitive is passivized, it is the theme argument that undergoes change in case and promotes to the subject position (Akkuş 2021), as in (113b), not the causee, as in (113c). These concerns will be taken up in subsequent sections, especially in comparison to Japanese (Key 2013; Harley 2017); see Section 3.4.2 and Section 4.3.

- (113) a. Hasan Ece’ye kapı-yı aç-tır-dı.
 Hasan Ece-DAT door-ACC open-CAUS-PST
 ‘Hasan made Ece open the door.’
- b. Kapı Ece’ye aç-tır-il-di.
 door Ece-DAT open-CAUS-PASS-PST
 ‘The door was made (by Hasan) to be opened by Ece.’
- c. *Ece kapı-yı aç-tır-il-di.
 Ece door-ACC open-CAUS-PASS-PST
 ‘Ece was made to open the door.’

A different case alignment pattern arises when the embedded transitive verb has a pseudo-incorporated object (cf. Akkuş 2021: 272), as in (114b). Although Akkuş (2021) does not mention passivization, I argue that if the theme is a pseudo-incorporated NP, then the causee promotes to the subject position, not the theme, as in (115), similar to Japanese (see Harley 2008; Key 2013; Harley 2017).

- (114) a. Bütün misafir-ler araba temizle-di(-ler).
 all guest-PL car clean-PST (-3PL)
 ‘All the guests did some car-cleaning.’
- b. Bütün ?misafir-ler-i / misafir-ler-e araba temizle-t-ti-m.
 all ?guest-PL-ACC / guest-PL-DAT car clean-CAUS-PST-1SG
 ‘I made all the guests clean the car.’ (adopted from Akkuş 2021: 272)
- (115) Bütün misafir-ler araba temizle-t-il-di(-ler).
 all guest-PL car clean-CAUS-PASS-PST-(3PL)
 ‘All the guests were made to do some car-cleaning.’

These issues regarding the interaction of voice morphology, especially passive-over-causative constructions as illustrated above, and case alternations based on whether the direct object is a pseudo-incorporated noun raise key theoretical and empirical questions about Turkish morphosyntax, thus constitute an important line of research, which future work should address.

Last but not least, the most relevant for the present study is the phenomenon in which the causative morpheme is recursively used, as in (116); corresponding to double causatives of transitives. Multiple causativization is possible, as in (117). In fact, it is argued that there is “no upper limit as to how many times the causative morpheme may be iterated” (Kural 1996: 76). This type of causative formation is particularly seen in agglutinative languages, in which causative affixes “easily combine with each other and iterate” (Kulikov 2001: 893), for instance, Finnish (Zúñiga & Kittilä 2019).

(116) Saç-ım-ı berber-e kes-tir-t-ti-m.
 hair-1SG.POSS-ACC hairdresser-DAT cut-CAUS-CAUS-PST-1SG
 ‘I got the hairdresser cut my hair.’ (Göksel & Kerslake 2005: 133)

(117) Ahmet soğan-lar-ı Ali-ye doğra-t-tır-t-tır-t-ti.
 Ahmet onion-PL-ACC Ali-DAT chop-CAUS (x5)-PST
 ‘Ahmet had the onions chopped by Ali.’ (Kural 1996: 77)

The phenomenon of causative recursion is discussed in detail in Chapter 4. At its core, causative recursion concerns the possibility of recursively embedding productive causative morphology, yielding structures in which multiple causative relations are encoded within a single verbal complex. The availability and interpretation of such recursive structures provide a particularly sharp diagnostic for the internal architecture of causative constructions, as they reveal how many causative heads are projected, where they attach, and whether they introduce independent causing events (Key 2013; Nie 2022).

The following section establishes an event-decompositional analysis of lexical causatives in Turkish and argues that lexical causatives instantiate a single causative event layer in which the causing event and the resultant change of state or location are structurally and semantically integrated. Under this view, causative meaning is encoded directly within the verbal structure, such that the causative morpheme spells out direct causation and no independent intermediary event can intervene between the causing event and the caused state. Marked lexical causatives are analyzed as selecting a ResP complement within the verbal domain, yielding a tight mapping between event structure and argument structure.

3.3 Event decomposition of lexical causatives

Lexical causatives in Turkish are used to describe situations in which an agent has direct control or influence over the change of state or location of the embedded eventuality defined by the verb plus its theme. Formally, lexical causatives are analyzed to consist of two types: marked lexical causatives, as in (118a), corresponding to causatives of unaccusatives (also classified under different labels such as ‘inner causatives’ Key 2013; ‘low-attachment causatives’ Harley 2008; ‘monocausal causatives’ Nie 2020a), and unmarked lexical causatives, as in (118b), corresponding to non-derived transitive result verbs.

(118) Lexical causatives in Turkish

a. *Marked lexical causatives*

Ece tren-i kaç-ır-dı.
Ece train-ACC flee-CAUS-PST
‘Ece missed the train.’

b. *Unmarked lexical causatives*

Ece vazo-yu kır-dı.
Ece vase-ACC break-PST
‘Ece broke the vase.’

Unmarked lexical causatives are equivalent of the English *zero*-causatives (Pylkkänen 2008), in that they do not have overt causative morphology, but still encode causation, i.e. the telic pair of eventualities of cause and state, e.g. *kır-* ‘break (tr.)’, *yak-* ‘burn (tr.)’. As transitive result verbs are inherently transitive, derivational approaches argue that their intransitive counterparts are derived via anticausativization (e.g. *kır-* ‘break (tr.)’ vs. *kır-ıl-* ‘break (intr.)’, see Haspelmath 1987; Zúñiga & Kittilä 2019). Typologically, anticausatives are defined as “the opposite of causatives” (Zúñiga & Kittilä 2019: 41) and have the syntactic valency corresponding to one less than that of the base verb. More importantly, they are argued to have no agentivity present both syntactically and semantically. Thus, this alternation shows that “the single argument of the intransitive verb bears the same thematic relationship to the verb as the object of the transitive variant” (Alexiadou et al. 2015: 19; cf. ‘agent-related causation’ Zúñiga & Kittilä 2019).

Anticausatives in Turkish are used to describe the change of state or location of the embedded eventuality defined by the verb plus its theme without an external argument, that is, the stative eventuality described by anticausatives refer to the otherwise underspecified causative situations described by lexical causatives; thus, they are the structurally ‘opposite’ counterparts of lexical causatives. Formally,

anticausatives are also of two types: marked anticausatives, as in (119a), and unmarked anticausatives, as in (119b), corresponding to unaccusatives.

(119) Anticausatives in Turkish

- a. *Marked anticausatives*
 Vazo kır-ıl-dı.
 vase break-PASS-PST
 ‘The vase broke.’
- b. *Unmarked anticausatives*
 Tren kaç-tı.
 train flee-PST
 ‘The train fled.’

Table 3.2 shows a selection of marked lexical causatives and their unaccusative counterparts presented as unmarked anticausatives as well as a selection of unmarked lexical causatives (i.e. non-derived transitive result verbs) and their anticausative counterparts presented as marked anticausatives. The selection of the verbs involving in the unaccusative-causative alternation is listed in Sebüktekin (1971: 82), and the selection of the verbs involving in the transitive-anticausative alternation is listed in Key (2021: 3); see also Gündoğdu (2017).

Lexical Causatives		Anticausatives	
marked	unmarked	marked	unmarked
<i>bat-ır-</i> ‘sink’	<i>aç-</i> ‘open’	<i>aç-ıl-</i> ‘open’	<i>bat-</i> ‘sink’
<i>bit-ir-</i> ‘finish’	<i>ayır-</i> ‘separate’	<i>ayr-ıl-</i> ‘separate’	<i>bit-</i> ‘finish’
<i>büyü-t-</i> ‘grow’	<i>boz-</i> ‘spoil’	<i>boz-ul</i> ‘spoil’	<i>büyü-</i> ‘grow’
<i>dol-dur-</i> ‘fill’	<i>devir-</i> ‘topple’	<i>devr-il-</i> ‘topple’	<i>dol-</i> ‘fill’
<i>dur-dur-</i> ‘stop’	<i>burk-</i> ‘sprain’	<i>burk-ul-</i> ‘sprain’	<i>dur-</i> ‘stop’
<i>düş-ür-</i> ‘drop’	<i>dök-</i> ‘spill’	<i>dök-ül-</i> ‘spill’	<i>düş-</i> ‘drop’
<i>eri-t-</i> ‘melt’	<i>kır-</i> ‘break’	<i>kır-ıl-</i> ‘break’	<i>eri-</i> ‘melt’
<i>geç-ir-</i> ‘pass’	<i>soy-</i> ‘peel’	<i>soy-ul-</i> ‘peel’	<i>geç-</i> ‘pass’
<i>uç-ur-</i> ‘fly’	<i>yay-</i> ‘spread’	<i>yay-ıl-</i> ‘spread’	<i>uç-</i> ‘fly’
<i>piş-ir-</i> ‘cook’	<i>yırt-</i> ‘rip’	<i>yırt-ıl-</i> ‘rip’	<i>piş-</i> ‘cook’

Table 3.2: Lexical causatives and anticausatives in Turkish

As clearly shown, although exceptions exist, such as *eri-t-* ‘melt (tr.)’ and *dur-dur-* ‘stop (tr.)’, marked lexical causatives in Turkish mostly occur with one of the irregular ‘lexical’ causative suffixes (Göksel & Kerslake 2005; Tat & Key 2009). As

for the transitive-anticausative alternation, Key (2021: 3) argues that there are no anticausatives appearing with the passive suffix *-(I)l* involving in the alternation; unmarked lexical causatives (i.e. transitive result verbs) only display alternation with the passive suffix *-(I)l*. Counterexamples include pairs of the alternation such as *kapa-* ‘close (tr.)’ vs. *kapa-n-* ‘close (intr.)’ and *böl-* ‘divide (tr.)’ vs. *böl-ün-* ‘divide (intr.)’, which are allomorphs of *-(I)l* in environments where *-(I)l* cannot be inserted (Key 2021: 3). This restriction is by all means governed by the root-conditioned allomorphy and should therefore be analyzed similarly to the restriction seen in the regular causative suffixes occurring with unaccusative roots such as *öl-dür-* ‘kill’ and *dol-dur-* ‘fill’. Key (2013: 52–53) argues that *-Dir* is the Elsewhere form that “wins the competition” in environments where the root in question cannot merge with any of the other suffixes in the list such as *-Ir* and *-It*.

These classifications between lexical causatives and anticausatives are important to understand the causative alternation in Turkish as a whole as they bring valuable insights into the morphosyntax of Turkish causatives. As examples above illustrated, lexical causatives and anticausatives are distinguished into two types as marked and unmarked: unmarked anticausatives are typically unaccusatives, as in (*bit-* ‘finish (intr.)’), and unmarked lexical causatives are typically transitives (*kır-* ‘break (tr.)’). As a result, to avoid confusion, I rely on the following classification throughout this section. I refer to these distinctions with their specific classifications: the unaccusative-causative alternation (e.g. *düş-* ‘fall’ vs. *düş-ür-* ‘drop’) and the transitive-anticausative alternation (e.g. *kır-* ‘break’ vs. *kır-ıl-* ‘break (intr.)’). The following subsections are essential in order to draw a distinction between the unaccusative-causative alternation, as in (120), on the one hand, and the transitive-anticausative alternation, as in (121), on the other, as the anticausative alternants of the two are governed by different principles in terms of Voice.

(120) *The unaccusative-causative alternation*

- a. Anahtar düş-tü.
key fall-PST
‘The key fell.’
- b. Ece anahtar-ı düş-ür-dü.
Ece key-ACC fall-CAUS-PST
‘Ece dropped the key.’

(121) *The transitive-anticausative alternation*

- a. Anne-m kapı-yı aç-tı.
mother-1SG door-ACC open-PST
‘My mother opened the door.’

- b. Kapı aç-ıl-dı.
door open-PASS-PST
'The door opened.' (Haspelmath 1987: 2)

The remainder of this section develops an event-decompositional analysis of lexical causatives in Turkish within a decompositional approach to event structure and argument realization (Alexiadou et al. 2015; Wood 2016; Hopperdietzel 2021). Adopting the assumption that the causative alternation is fundamentally a Voice alternation (see Section 2.5.2), I argue that lexical causatives and anticausatives share the same underlying event structure, determined by the combination of v_{CAUS} and its ResP-sized complement, while differing in the realization of Voice. On this view, the alternation does not involve variation in the causative relation itself, but rather in whether an external argument is structurally introduced, with unmarked anticausatives (i.e. unaccusatives) lacking Voice altogether (Kratzer 1996; Wood 2016; Martin & Schäfer 2014: 222).

Building on the four-way Voice typology (see Section 2.5.2) proposed by Alexiadou et al. (2015), this section compares lexical causatives and anticausatives in Turkish, including both morphologically marked and unmarked variants, and situates them with respect to passives. The aim is to show that the observed contrasts among these constructions follow from different Voice types, without positing distinct causative operators or alternative event decompositions. This analysis fixes the invariant bi-eventive core of transitive result verbs and isolates Voice as the locus of variation, providing the necessary foundation for the analysis of productive causatives of transitive manner and result verbs in Section 3.4.

Section 3.3.1 argues that causatives of unaccusatives in Turkish instantiate a bi-eventive structure, supported by diagnostics that motivate a v_{CAUS} -ResP decomposition while the anticausative counterpart lacks a Voice layer. Section 3.3.2 examines the transitive-anticausative alternation in Turkish and shows that morphologically marked anticausatives, despite surface similarities to passives, involve a distinct Voice configuration rather than passive Voice.

3.3.1 Unaccusative-causative alternation

In this subsection, I analyze the two variants of the unaccusative-causative alternation, that is, unmarked anticausatives (=unaccusatives) and marked lexical causatives, to share the same causative event structure in the v domain, but differ systematically with respect to Voice. Before providing evidence in regards to v and Voice as well as the root semantics of the causative variant and the event semantics of causation, I present the alternation in question below.

(122) *Unmarked anticausatives*

- a. Balon şiş-ti.
balloon inflate-PST
'The balloon inflated.'
- b. Et piş-ti.
meat cook-PST
'The meat cooked.'
- c. Oyun bit-ti.
game end-PST
'The game ended.'
- d. Elma çürü-dü.
apple rot-PST
'The apple rotted.'

(123) *Marked lexical causatives*

- a. Ece balon-u şiş-ir-di.
Ece balloon-ACC inflate-CAUS-PST
'Ece inflated the balloon.'
- b. Ada et-i piş-ir-di.
Ada meat-ACC cook-CAUS-PST
'Ada cooked the meat.'
- c. Oya batarya-yı bit-ir-di.
Oya battery-ACC end-CAUS-PST
'Oya finished the battery.'
- d. Ece elma-yı çürü-t-tü.
Ece apple-ACC rot-CAUS-PST
'Ece rotted the apple.'

One test to diagnose the status of unaccusativity with the verbs in (122) is the ability to form adjectives with them using the adjectival participle *-Ik* (Acartürk & Zeyrek 2010; Neu 2023), as in (124).

(124) *Result-state adjectives*

- | | |
|--|--|
| a. şiş-ik balon
inflate-A.DER balloon
'inflated balloon' | c. bit-ik batarya
end-A.DER battery
'finished battery' |
| b. piş-ik et
cook-A.DER meat
'cooked meat' | d. çürü-k elma
rot-A.DER apple
'rotten apple' |

To test the existence of the resultant state encoded in the event semantics of marked lexical causatives, I use denial of result continuations (e.g. Beavers & Koontz-Garboden 2020a), as illustrated in (125). The infelicity of denial of result suggest that marked lexical causatives constitute transitive result verbs. In the next subsection, I analyze unmarked lexical causatives using the same architecture.

(125) *Denial of result*

- a. #Ece balon-u şiş-ir-di, ama balon inik-ti.
 Ece balloon-ACC inflate-CAUS-PST but balloon deflated-PST
 ‘Ece inflated the balloon, but the balloon was deflated.’
- b. #Ada şişe-yi dol-dur-du, ama şişe boş-tu.
 Ada bottle-ACC fill-CAUS-PST but bottle empty-PST
 ‘Ada filled the bottle, but the bottle was empty.’

Having illustrated that both unaccusative and causative variants pass the tests for their status, I now transition to tests to diagnose the presence of *v* domain using eventhood diagnostics and the presence or absence of Voice domain using agenthood diagnostics. The diagnostics employed below are standardly used in the literature, and include *again*-modification, manner modification, and agent-oriented modification (e.g. von Stechow 1996; Pylkkänen 2008; Alexiadou et al. 2015; Akkuş 2021; Nie 2022).

To begin with, the adverb *again* is commonly used to diagnose event complexity (Alexiadou et al. 2015; Akkuş 2021; Nie 2022), as it may scope over different eventive layers when more than one eventuality is present. In causatives of unaccusatives, *again* gives rise to multiple interpretations, indicating a structurally complex event. The ambiguity of *yine* ‘again’ in (126a) provides direct evidence for a structurally articulated event. Crucially, the available readings are not pragmatic variants of a single meaning, but correspond to distinct scopal options over distinct eventive layers, as shown in (126b).

(126) *again-modification*

- a. Ece balon-u yine şiş-ir-di.
 Ece balloon-ACC again inflate-CAUS-PST
 ‘Ece inflated the balloon again.’
- b. [VoiceP yine Voice [_{vP} yine v [_{ResP} yine Res [Res √]]]]

Three available interpretations are possible, where *yine* can scope over (127a) the stative eventuality *s* (restitutive reading) and (127b) the dynamic eventuality *e* (repetitive reading). In addition, given the presence of external argument, (127c) an intermediate reading is also possible, where *yine* scopes over Voice.

- (127) a. Repetition of result state: *In a context where the balloon had previously been fully inflated, subsequently deflated, and is then inflated once more, the sentence is interpreted as asserting the re-attainment of the result state. Under this reading, yine does not target the causative action itself, but the state of being inflated. This reading therefore diagnoses the presence of an independently represented result state in the event structure.*
- b. Repetition of causation: *Ece has already carried out an inflating event on a prior occasion and performs the same causative action again, irrespective of whether the balloon remained inflated in the meantime. Here, yine scopes over the causative event as a whole. This interpretation shows that the construction makes available an event corresponding to the causal bringing-about of the result, distinct from the result state itself.*
- c. Repetition of Ece’s activity: *In contexts where Ece repeatedly engages in the activity of blowing into the balloon (e.g. by stopping and restarting), the sentence is felicitous even if the balloon is already sufficiently inflated. This reading isolates the activity introduced by the verbal layer from both the causative relation and the resultant state, demonstrating that the agent’s activity constitutes a separate subeventual component.*

Overall, the availability of these three readings shows that *yine* can scope over the result state, the causative event, or the agentive activity. This pattern is only possible if the causative construction in question involves a structurally complex event with multiple eventive layers. In particular, the data motivate a decomposition in which a result state, a causative event, and an agentive activity are independently represented in the syntactic composition.

Manner modification is standardly employed as a diagnostic for the presence of an event introducing *v* layer (Pylkkänen 2008; Akkuş 2021; Nie 2022). In lexical causatives, manner adverbs are predicted to modify the causative event itself, rather than the result state. As a consequence, only a single interpretation is available: the manner adverb controls the causation, specifying how the causing event unfolds (Alexiadou et al. 2015). As illustrated in (128), the manner adverb *yavaşça* ‘slowly’ characterizes the unfolding of the cooking event, rather than the result state itself, supporting the view that lexical causatives instantiate a single causative event layer, in which causing events and caused states are not independently accessible to manner modification.

(128) *Manner modification*

Ada et-i *yavaşça* piş-ir-di.
 Ada meat-ACC slowly cook-CAUS-PST
 ‘Ada cooked the meat slowly.’

A parallel diagnostic concerns the presence of a thematic active Voice layer. Agent-oriented adverbial modification is standardly used in the literature to identify such a layer (Pylkkänen 2008; Akkuş 2021). In lexical causatives, where only a single agent is introduced, the prediction is that agent-oriented adverbs, as in (129), should exhibit no scope ambiguities. Specifically, adverbs such as *gönüllüce* ‘willingly’, as in (129a), and *isteksizce* ‘reluctantly’, as in (129b), are expected to modify only the agent’s activity subevent, with no alternative readings targeting the result state or the causative relation itself.

(129) *Agent-oriented modification*

- a. Ece balon-u *gönüllüce* şiş-ir-di.
Ece balloon-ACC willingly inflate-CAUS-PST
‘Ece inflated the balloon willingly.’
- b. Ada et-i *isteksizce* piş-ir-di.
Ada meat-ACC reluctantly cook-CAUS-PST
‘Ada cooked the meat reluctantly.’

As predicted, these adverbs are interpreted as modifying the agent’s participation in the event, rather than introducing ambiguity with respect to causation or result. This lack of scope ambiguity provides evidence that lexical causatives involve a single thematic Voice layer introducing exactly one agent.

Overall, the diagnostics discussed above converge on a uniform conclusion. Lexical causatives instantiate a single causal event structure in which causation and result are integrated within a single verbal domain, and Voice introduces exactly one external argument without contributing an additional event layer. The absence of scope ambiguities with agent-oriented and manner adverbs thus follows from the presence of a single thematic Voice layer, rather than from properties of the causative relation itself. This result motivates a structural analysis in which differences between causative constructions are not encoded in the availability of causation per se, but in how Voice and *v* are articulated in the verbal domain. This structural perspective is particularly well suited to Turkish, which is a Voice-splitting language in the sense of Pylkkänen (2008) and Harley (2017), since unergatives and transitives in Turkish can be morphologically causativized (unlike Voice-bundling languages such as English).

As Pylkkänen (2008)’s typology of Voice-splitting causatives suggest, VoiceP, which introduces the external argument together with its agentive semantics, is not bundled with the verbal head that introduces the causative semantics. As a result, the external agent is introduced in Spec,VoiceP, while the causative semantics is contributed independently by v_{CAUS} , rather than by Voice itself (Kratzer 1996; Pylkkänen 2008; Alexiadou et al. 2015; Harley 2017).

To begin with, I analyze unmarked anticausatives, that is, unaccusative predicates, which lack a Voice projection altogether and therefore make it possible to examine the internal event structure of causative eventualities independently of external-argument introduction. In unmarked anticausatives, as in (130), the verbal predicate denotes a causative event structure despite the absence of an overt causer argument. ResP introduces a resultant state in which the theme *et* ‘meat’ is in a cooked state. This resultant state corresponds to the caused eventuality and constitutes the only eventive layer whose internal properties are fully specified by the verb. The causing event, by contrast, is semantically required but syntactically underspecified, considering the change of state denoted by *piş-* presupposes some prior causal process that brings about the cooking result. However, this causing event is solely associated with an independent event-denoting projection, not a specified agentive activity. Thus, it is represented as an abstract causal co-existence encoded by v_{CAUS} , which relates an implicit causing event to the result state introduced by ResP.

As a consequence, the event described by (130a) consists of a single causative complex in which only the caused subevent is lexically characterized, while the causing event remains implicit and non-individuated. The event structure remains causative, as illustrated in (130b): v_{CAUS} combines with ResP to establish a causal co-existence between a causing event introduced by the causative v and a caused state (resultant state) introduced by ResP. The absence of Voice yields an interpretation in which the causing event is structurally present but not linked to any participant, therefore underspecified without Voice. This configuration captures the characteristic property of unaccusatives, namely that a change of state occurs without an agentive argument.

(130) *Unmarked anticausatives (=Unaccusatives)*

- a. Et piş-ti.
 meat cook-PST
 ‘The meat cooked.’
- b.
-
- ```

graph TD
 vP --> v_CAUS
 vP --> ResP
 ResP --> Res_plus_PIŞ["Res+√PIŞ"]
 ResP --> DP_THEME["DP_THEME"]
 DP_THEME --> et

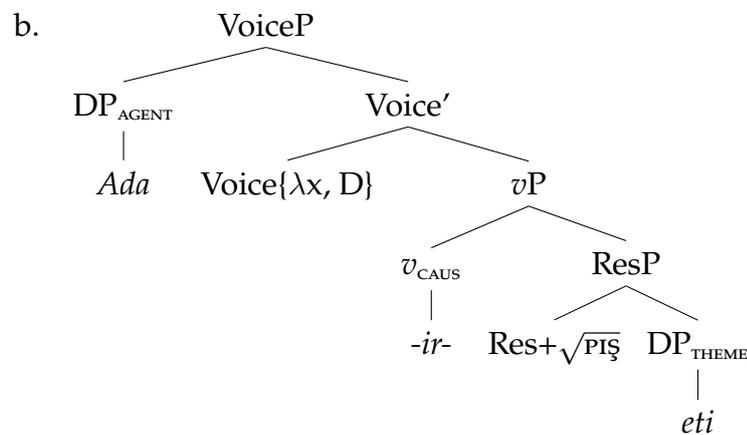
```

Moving forward, marked lexical causatives (=causatives of unaccusatives, derived transitive result verbs), on the other hand, as in (131a), project a thematic active Voice, as in (131b). This Voice head introduces an external argument via a  $\lambda$ -

binder and licenses a DP in its specifier, corresponding to the feature configuration  $\text{Voice}\{\lambda x, D\}$  of a thematic active Voice (Alexiadou et al. 2015). The external argument is interpreted as the agent of the causing event realized in  $\text{Spec, VoiceP}$ , while  $v_{\text{CAUS}}$  establishes a causal co-existence between that event and the result state. Structurally, this configuration yields a transitive result verb, in which the theme argument originates in  $\text{ResP}$  and the agent is introduced by Voice. The presence of both the  $\lambda x$ -binder and the D-feature ensures that the causing event is anchored to an overt external argument that is of event participant.

(131) *Marked lexical causatives*

- a. Ada et-i piş-ir-di.  
 Ada meat-ACC COOK-CAUS-PST  
 ‘Ada cooked the meat.’



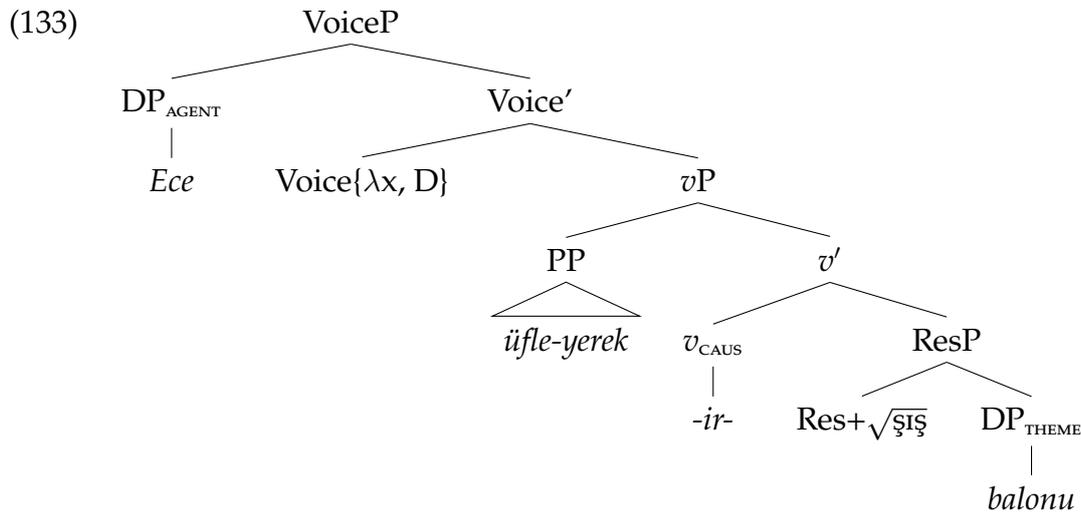
The  $v_{\text{CAUS}}$  layer encodes a causative relation whose semantic contribution depends on the size and internal structure of its complement. When  $v_{\text{CAUS}}$  selects a  $\text{ResP}$ -sized complement, the resulting structure gives rise to a direct causation interpretation at LF. The morphosyntactic realization of direct causation seen in marked lexical causatives corresponds to its classification as  $\text{ResP}$ -selecting, which refers to direct causation encoded as a relation in the semantics of  $v_{\text{CAUS}}$ . In configurations involving direct causation,  $v_{\text{CAUS}}$  targets the result structure directly and links either incrementally related subevents, where the agent’s activity and the theme’s change of state are two temporally dependent “co-identified” events (Ramchand 2014: 246), that is, the caused state is the sum of the members of causing event (Kratzer 2005), i.e.  $\text{INCR}$  relation (Lyutikova & Tatevosov 2014), or an activity subevent that immediately causes a process subevent, with no intermediate causal steps available (Levin & Rappaport Hovav 1999), i.e.  $\text{CAUSING}$  relation (Lyutikova & Tatevosov 2014). Both relations are categorized as direct causation, which reflects the no intervening cause criterion by Wolff (2003).

To test the unavailability of intermediary causes, I implement tests involving an instrumental PP, as in (132a), and a manner PP with the adverbial suffix *-ArAk*,

as in (132b), which diagnose that intermediary events, if anything, can only be used as an enabling function, without affecting the result state. Therefore, (132c) is disallowed. (133) shows the structure of (132b).

(132) *No intervening cause*

- a. Ada et-i fırın-da piş-ir-di.  
Ada meat-ACC oven-LOC cook-CAUS-PST  
'Ada cooked the meat in the oven.'
- b. Ece balon-u üfle-yerek şiş-ir-di.  
Ece balloon-ACC blow-ADV inflate-CAUS-PST  
'Ece inflated the balloon by blowing into it.'
- c. #Ece balon-u şarkı söyle-yerek şiş-ir-di.  
Ece balloon-ACC song sing-ADV inflate-CAUS-PST  
'Ece inflated the balloon by singing a song.'



Overall, these observations lead to the following conclusion: only subevents that do not affect the resultant state are admissible in marked lexical causatives. In particular, activities introduced by independent *-ArAk* clauses are infelicitous precisely because they introduce an autonomous event that intervenes between the causing activity and the result state. This pattern parallels diagnostics for resultative constructions, which are restricted to manner predicates and exclude independent activities (Kratzer 2005). The restriction shows that the result state in marked lexical causatives cannot be modified by intermediate subevents unless they encode an enabling function (Wolff 2003). Rather, only activities that are themselves part of the direct causal chain are permitted. This supports a direct causation analysis, under which the agent's activity and the caused change are either incrementally related or stand in an immediate causative relation, with no structurally available intervening causes (Lyutikova & Tatevosov 2014).

Having established the properties of direct causation and the limits on event modification in lexical causatives, I now turn to a related alternation that further illuminates the interaction between event structure and argument realization: the transitive–anticausative alternation.

### 3.3.2 Transitive-anticausative alternation

In this subsection, I analyze the two variants of the transitive-anticausative alternation, that is, unmarked lexical causatives (=non-derived transitive result verbs) and marked anticausatives, to share the same causative event structure in the *v* domain, but differ systematically with respect to Voice. Before providing evidence in regards to *v* and Voice as well as the root semantics of the transitive variant and the event semantics of causation, I present the alternation in question below.

(134) *Marked anticausatives*

- a. Pencere kır-ıl-dı.  
window break-PASS-PST  
'The window broke.'
- b. Kağıt yırt-ıl-dı.  
paper rip-PASS-PST  
'The paper tore.'
- c. Otobüs devr-il-di.  
bus topple-PASS-PST  
'The bus toppled.'
- d. Kapı aç-ıl-dı.  
door open-PASS-PST  
'The door opened.'

(135) *Unmarked lexical causatives*

- a. Ada pencere-yi kır-dı.  
Ada window-ACC break-PST  
'Ada broke the window.'
- b. Ada kağıd-ı yırt-tı.  
Ada paper-ACC tear-PST  
'Ada tore the paper.'
- c. Ada otobüs-ü devir-di.  
Ada bus-ACC topple-PST  
'Ada toppled the bus.'
- d. Ada kapı-yı aç-tı.  
Ada door-ACC open-PST  
'Ada opened the door.'

Similar to unaccusatives, one test to diagnose the status of transitive result verbs in (135) is their ability to form adjectives using the adjectival participle *-Ik* (Acartürk & Zeyrek 2010; Neu 2023), as in (136).

(136) *Result-state adjectives*

- |                                                                     |                                                                 |
|---------------------------------------------------------------------|-----------------------------------------------------------------|
| <p>a. kır-ık pencere<br/>break-A.DER window<br/>'broken window'</p> | <p>c. devr-ik otobüs<br/>topple-A.DER bus<br/>'toppled bus'</p> |
| <p>b. yırt-ık kağıt<br/>tear-A.DER paper<br/>'torn paper'</p>       | <p>d. aç-ık kapı<br/>open-A.DER door<br/>'open door'</p>        |

To test the existence of the resultant state encoded in the event semantics of unmarked lexical causatives, I use denial of result continuations (e.g. Beavers & Koontz-Garboden 2020a), as illustrated in (137). The infelicity of denial of result suggest that marked lexical causatives constitute transitive result verbs. In the next subsection, I provide the analysis of lexical causatives of both marked and unmarked variants using the same architecture. The examples in (137) pattern with the causative cases in (125) in that the result state introduced by the verb is non-deniable. Verbs such as *kır-* 'break' and *aç-* 'open' lexically encode a change leading to a specific result state, namely *a broken window* or *an open door*. Consequently, denying the attainment of this state gives rise to contradiction, where the continuation negates the very result entailed by the event description.

(137) *Denial of result*

- a. #Ada pencere-yi kır-dı, ama pencere sağlam-dı.  
Ada window-ACC break-PST but window intact-PST  
'Ada broke the window, but the window was intact.'
- b. #Ada kapı-yı aç-tı, ama kapı kapalı-ydı.  
Ada door-ACC open-PST but door closed-PST  
'Ada opened the door, but the door was closed.'

The infelicity of these continuations shows that, as with marked lexical causatives, the result state associated with unmarked lexical causatives (=transitive result verbs) is entailed by the event description and cannot be denied. This supports the analysis under which such verbs encode a ResP introducing a result state, rather than merely describing an activity whose outcome may fail to obtain.

Diagnostics contrasting unmarked anticausatives (i.e. unaccusatives), marked anticausatives, and passives have been widely used in the literature to probe the presence and semantic contribution of Voice. Historically, such diagnostics originate in work on split intransitivity, where contrasts between unergative and

unaccusative predicates were established using morphosyntactic tests, including passivization (e.g. Perlmutter 1978). In Turkish, unaccusative verbs are standardly taken to resist passivization, a property that can be reinterpreted in terms of the absence of a Voice layer and, consequently, the absence of an external argument with agentive semantics (Alexiadou et al. 2015).

Building on this line of work, Alexiadou et al. (2015) employ a range of diagnostics to show that only passives, but not anticausatives, introduce an implicit external argument. This contrast is illustrated by the difference between anticausatives such as (138a), which lack any implicit agent, and passives such as (139b), which allow for the realization of an implicit argument, for instance via a *by*-phrase (Alexiadou et al. 2015: 19–20). These diagnostics provide a baseline for distinguishing structures that project Voice from those that do not.

(138) *The causative alternation*

- a. The window broke.
- b. John broke the window.

(139) *The passive alternation*

- a. John broke the window.
- b. The window was broken (by John).

A standard way to test this contrast is through the distribution of *by*-phrases, following the diagnostics proposed for English by Alexiadou et al. (2015: 20–21). While passives can be licensed by a *by*-phrase, anticausatives generally cannot, as they lack an implicit external argument. However, the diagnostics must distinguish between marked and unmarked anticausatives. To begin with, constructions in (140) illustrate the well-known restriction that unaccusatives cannot undergo passivization (Perlmutter 1978: 177), as shown in (140b). Passivization becomes available only after causativization: that is, only the causative member of the unaccusative–causative alternation, as in (140c), can be passivized, yielding (140d). In the absence of a Voice layer, there is no external argument that could be passivized and subsequently backgrounded in the first place.

(140) a. *Unmarked anticausatives*

Elma çürü-dü.  
apple rot-PST  
'The apple rotted.'

b. *Passivization of unaccusatives*

\*Elma çürü-n-dü.  
apple rot-PASS-PST  
'The apple was rotted.'

- c. *Marked lexical causatives*  
 Ece elma-yı çürü-t-tü.  
 Ece apple-ACC rot-CAUS-PST  
 ‘Ece rotted the apple.’
- d. *Passivization of causatives*  
 Elma çürü-t-ül-dü.  
 apple rot-CAUS-PASS-PST  
 ‘The apple was rotted (by Ece).’

One could argue that unmarked anticausatives allow modification by a *by-itself* phrase, as in (141a), but categorically exclude both a *by*-phrase, as in (142a), and agent-oriented adverbials such as *isteksizce* ‘reluctantly’, as in (143a). The passive counterparts in (141b), (142b), and (143b) serve to illustrate the complementary pattern: the presence of a Voice layer blocks the use of *by-itself*, while simultaneously licensing agent-oriented diagnostics (Akkuş 2021; see Section 3.4.1).

(141) *by-itself* modification

- a. Elma *kendiliğinden* çürü-dü.  
 apple by.itself rot-PST  
 ‘The apple rotted by itself.’
- b. \*Elma *kendiliğinden* çürü-t-ül-dü.  
 apple by.itself rot-CAUS-PASS-PST  
 ‘The apple was rotted by itself.’

(142) *by*-phrase licensing

- a. #Elma Ece *tarafından* çürü-dü.  
 apple Ece by rot-PST  
 ‘The apple rotted by Ece.’
- b. Elma Ece *tarafından* çürü-t-ül-dü.  
 apple Ece by rot-CAUS-PASS-PST  
 ‘The apple was rotted by Ece.’

(143) *Agent-oriented* modification

- a. #Elma *isteksizce* çürü-dü.  
 apple reluctantly rot-PST  
 ‘The apple rotted *reluctantly*.’
- b. Elma *isteksizce* çürü-t-ül-dü.  
 apple reluctantly rot-CAUS-PASS-PST  
 ‘The apple was rotted *reluctantly*.’

Turning now to marked anticausatives, a preliminary clarification is in order. Due to the presence of the passive suffix *-(I)l*, examples such as those in (134) are

morphologically similar to passives and are therefore often a source of confusion (Gündoğdu 2017; Key 2021; Key 2024). To avoid this confusion, I adopt a set of diagnostics for Turkish (proposed by Alexiadou et al. (2015: 20–21) for English) to distinguish marked anticausatives from passives. The crucial difference between the two constructions lies in the status of the external argument: passives involve an implicit agent, which can be licensed by a *by*-phrase (*tarafından*) and is associated with thematic properties related to agentive participation in the event, whereas anticausatives lack any semantic contribution related to agent involvement in the syntax (Embick 1997; Embick 2004; Alexiadou et al. 2015; Legate et al. 2020). The diagnostics discussed below reveal systematic differences between anticausatives and passives, despite their superficial similarity arising from shared passive morphology *-(I)l*; see Gündoğdu 2017). As summarized by Key (2021: 2), “like passives, anticausatives are syntactically intransitive verbs whose subject corresponds to the object of a transitive verb; unlike passives, the anticausative has no implicit external argument corresponding to the transitive subject”.

The morphological similarity between marked anticausatives and passives is not unexpected, as comparable patterns are attested in other languages, such as Greek (see Schäfer 2007:28, fn. 11). It has previously been argued that the use of a *by*-phrase is restricted to passives, as in (142b), and is excluded with anticausatives, as in (142a). However, some of the diagnostics discussed below yield mixed results and do not fully align with the behavior of unmarked anticausatives, such as those illustrated earlier with *çürü-* ‘rot’. This difference follows from the structural distinction that marked anticausatives project a Voice layer, specifically an expletive Voice (Alexiadou et al. 2015), whereas unmarked anticausatives lack Voice altogether. Consequently, while (142a) is unacceptable with a *by*-phrase, (145) shows that marked anticausatives can license a *by*-phrase (Embick 1997; Legate et al. 2020). By contrast, the agent-oriented adverbial *gönüllüce* ‘willingly’ is not licensed with marked anticausatives, as shown in (146), paralleling the behavior of unmarked anticausatives in (143a). Finally, instrumental phrases such as *anahtarla* ‘with the key’ are licensed with marked anticausatives, as in (147).

(144) *by-itself modification*

Kapı kendiliğinden aç-ıl-dı.  
 door by.itself open-PASS-PST  
 ‘The door opened by itself.’

(145) *by-phrase licensing*

Kapı Ece tarafından aç-ıl-dı.  
 door Ece by open-PASS-PST  
 ‘The door opened by Ece.’

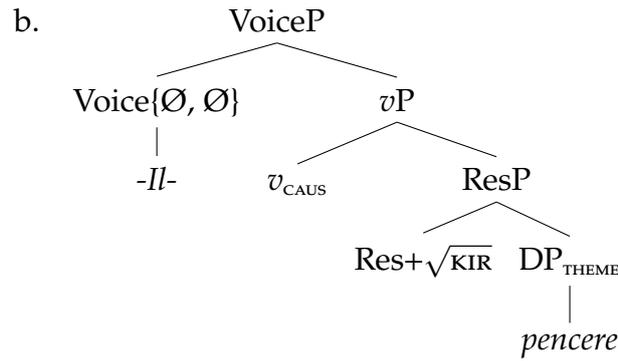
(146) *Agent-oriented modification*  
 #Kapı gönüllüce aç-ıl-dı.  
 door willingly open-PASS-PST  
 ‘The door opened willingly.’

(147) Kapı anahtar-la aç-ıl-dı.  
 door key-with open-PASS-PST  
 ‘The door opened with the key.’

The availability of *by*-phrases with marked anticausatives raises further questions for the typology of Voice. As illustrated in (145), a *by*-phrase may co-occur with passive morphology in anticausative environments. I argue, however, that this does not entail the presence of an agent introduced by Voice. Rather, the *by*-phrase itself saturates an agentive role only when it is overtly present (Akkuş 2021). In the absence of a *by*-phrase, no agentive participant is implied, and the construction remains non-agentive. On this view, the licensing of *by*-phrases reflects the availability of an optional agent saturation mechanism that is independent of the Voice head responsible for anticausative marking. Consequently, the presence of a *by*-phrase in marked anticausatives does not provide evidence for an underlying thematic Voice projection, but instead supports an analysis in which agentivity is introduced externally and only when explicitly expressed.

Marked anticausatives differ from unmarked anticausatives in that they project a VoiceP layer, albeit one that is expletive non-active in nature (Alexiadou et al. 2015; Wood 2016). While unmarked anticausatives lack Voice altogether, marked anticausatives contain a non-active Voice head that does not introduce an external argument and does not contribute agentive semantics. As illustrated in (148a) and schematized in the structure in (148b), this Voice head lacks both a  $\lambda x$ -binder and a D-feature, corresponding to the configuration Voice $\{\emptyset, \emptyset\}$ , and therefore merges without a DP specifier. The presence of this Voice layer is morphosyntactically visible through passive (or non-active) morphology, but it is semantically inert with respect to causation and argument introduction. In particular, the passive morphology associated with marked anticausatives does not realize causative semantics; rather, it spells out the presence of a non-active Voice projection. The causative relation itself remains encoded within the lower verbal domain, while the Voice head serves solely as a structural marker distinguishing marked anticausatives from their unmarked counterparts.

(148) *Marked anticausatives*  
 a. Pencere kır-ıl-dı.  
 window break-PASS-PST  
 ‘The window broke.’



These four types of constructions, namely, unmarked lexical causatives, marked lexical causatives, unmarked anticausatives, and marked anticausatives, demonstrate that causative semantics is invariant across the two-way alternation and introduced uniformly by  $v_{\text{CAUS}}$ . What varies is the realization of Voice: whether it is present or absent, thematic or expletive, active or non-active. Analyzing the causative alternation as a Voice alternation thus yields a unified account of lexical causatives and anticausatives, and explains why anticausatives systematically license result states and causative diagnostics despite lacking agents, and it captures well-established cross-linguistic generalizations in Voice morphology (Wood 2016 for Icelandic; Alexiadou et al. 2015 for Greek; Key 2024 for Turkish).

### 3.3.3 Interim summary and scope

I propose that the transitive counterpart of the transitive-anticausative alternation be analyzed similarly to the causative counterpart of the unaccusative-causative alternation. Thus, the structure in (149c) represents both (149a) and (149b). The contribution of  $v_{\text{CAUS}}$  in this configuration is to encode D-CAUSE relation with result specification (Lyutikova & Tatevosov 2014). Thus, the dynamic causing event  $e$ , *the breaking of the window*, as in (149a) and *the falling of the key*, as in (149b), is an immediate cause of a stative eventuality  $s$ , *the window broke* and *the key fell*.

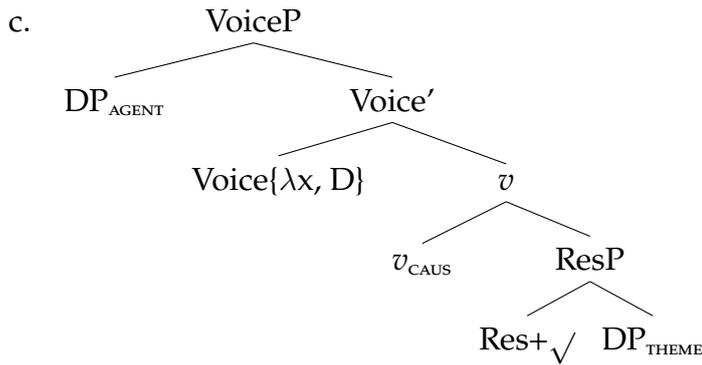
(149) Lexical causatives in Turkish

a. *Unmarked lexical causatives*

Ece pencere-yi kır-dı.  
 Ece window-ACC break-PST  
 ‘Ece broke the window.’

b. *Marked lexical causatives*

Ece anahtar-ı düş-ür-dü.  
 Ece key-ACC fall-CAUS-PST  
 ‘Ece dropped the key.’



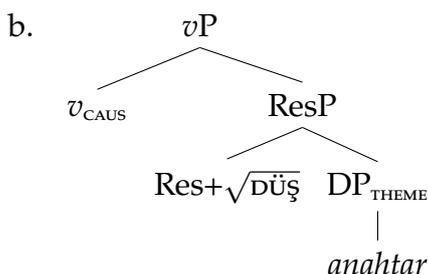
In the next section, I compare the properties of transitive manner verbs as opposed to transitive result verbs (=lexical causatives), demonstrating differences in the decomposition of events, and arguing that productive causatives of transitive result verbs involve two layers of  $v$  encoding  $v_{\text{CAUS}}$ . This supports the bi-eventive analysis and serves as a point of departure for the analysis of recursive causatives that I will develop in Chapter 4, in which I provide evidence to support the prediction that recursive causatives of transitive result verbs involve three layers of causative  $v$ .

I propose that the anticausative counterpart of the transitive-anticausative alternation be analyzed differently to the unaccusative counterpart of the unaccusative-causative alternation. Although extensive evidence suggests that “there are no principled and consistent semantic differences between marked and unmarked anticausatives across—but even within—languages” (Alexiadou et al. 2015: 98), the two constructions, in (150a) and (150c), nonetheless differ in their structural representations, as made explicit in (150b) and (150d), respectively. The marked anticausative exhibits an additional structural layer on top of the unmarked anticausative configuration, corresponding to an expletive non-active Voice projection, with the passive suffix *-Il* realized as the spell-out of Voice. By contrast, the unaccusative, that is, the unmarked anticausative *düş-* ‘fall’, does not encode a Voice projection of any kind (cf. Wood 2016).

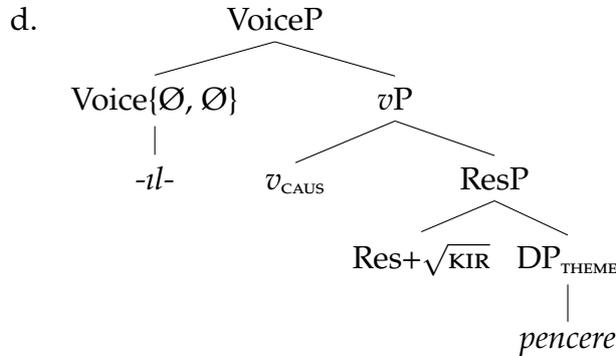
(150) Anticausatives in Turkish

a. *Unmarked anticausatives*

Anahtar düş-tü.  
 key fall-PST  
 ‘The key fell.’

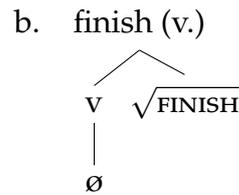
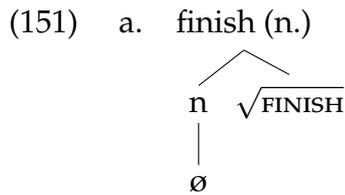


- c. *Marked anticausatives*  
 Pencere kır-ıl-dı.  
 window break-PASS-PST  
 ‘The window broke.’

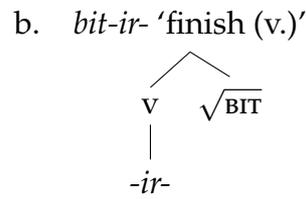
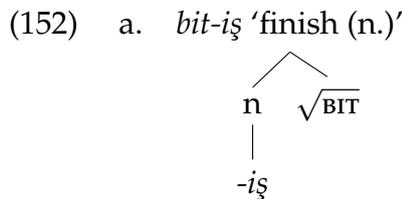


At this point, a brief clarification is in order concerning the theoretical status of causativization and the role of null morphology. As argued throughout the preceding sections, the distinction between unaccusativity and agentivity cannot be reduced to argument introduction alone, but depends on how causative relations are encoded in event structure (see Section 2.5.1). Against approaches that treat causativization primarily as an operation introducing an agent into the argument structure (e.g. Dixon 2000; Zúñiga & Kittilä 2019), the analysis adopted here follows Pylkkänen (2008) in assuming that causativization need not involve agentivity; see Pylkkänen (2008)’s analysis for Japanese and Finnish causatives, more specifically adversity and desiderative causatives. On this view, causative structure introduces a causative relation, while the specification of an external argument is mediated independently by Voice, in line with the general assumption that external arguments are introduced by Voice (Kratzer 1996). As a consequence, unaccusative predicates may already encode causal structure, even in the absence of an external argument.

A central motivation for this configurational perspective comes from cross-linguistic variation in causative morphology. As Pylkkänen (2008) shows, the Voice-bundling hypothesis alone cannot account for differences in distribution, interpretation, and adverbial modification across causative constructions. Instead, the size and nature of the complement selected by *vP* play a decisive role. In root-selecting causatives, a category-neutral root is first verbalized by a stative verbalizer, here treated as ResP, yielding a result-denoting predicate to which causation directly applies. In languages such as English, the relevant verbalizing heads may be phonologically null, rendering the distinction between nominal and verbal realizations of a root morphologically opaque, as illustrated in (151).



Turkish differs in this respect. As shown in (152), category-neutral roots may be overtly verbalized or nominalized, and lexical causatives may involve irregular causative morphology. Crucially, however, the presence or absence of overt causative morphology does not correlate straightforwardly with the presence or absence of causal structure. This mismatch motivates a null-morpheme analysis under which  $v_{\text{CAUS}}$  may be morphologically realized or remain  $\emptyset$ , while retaining a uniform semantic contribution. Under this view, morphological exponence is decoupled from the availability of causative semantics.



From this perspective, causativization is not a derivational operation on argument structure, but a property of event composition that interacts with the realization of Voice. This contrasts with analyses that treat idiosyncratic causative morphology primarily as a transitivizer or as encoding agent-related causation (e.g. Sebüktekin 1971; Kittilä 2009; Zúñiga & Kittilä 2019; Mitchley 2022, 2023). While such approaches capture recurrent surface correlations, they fail to account for the event-structural invariance observed across causative and anticausative pairs. By contrast, the analysis pursued here assumes a single  $v_{\text{CAUS}}$  encoding a causative relation whose semantic contribution depends on the size and internal structure of its complement. When  $v_{\text{CAUS}}$  selects a ResP-sized complement, the resulting structure gives rise to a direct causation interpretation at LF.

Having closed the analysis of lexical causatives and anticausatives in Turkish and provided the discussion as to what goes into the event structure of such constructions, I now move on to more complex causative constructions, namely, productive causatives, in which I deep dive into the realization of agentive arguments, observed through causativization of unergatives and transitives. The next section shows that productive causatives differ from lexical causatives both syntactically and semantically since they relate a causing event that is not conflated with the caused event and therefore allow for indirect causation (I-CAUSE). As a result, productive causatives involve two agentive participants associated with

distinct eventive components. This difference follows from the fact that productive causatives select already categorized Voice projections, rather than uncategorized result-denoting structures as it was the case with lexical causatives.

### 3.4 Argument structure of productive causatives

Productive causatives describe configurations in which one participant brings about an event by exerting control over another participant who is responsible for carrying out the activity described by the embedded predicate. The embedded predicate may be unergative or transitive. In the case of unergatives and transitive manner verbs, the caused event corresponds to an activity carried out by the causee, whereas in the case of transitive result verbs, the caused event additionally entails a caused change of state. From a morphosyntactic perspective, productive causatives therefore subsume causatives of unergatives, causatives of transitives, differing only with respect to the internal structure of the embedded predicate, whose analysis this section presents. The discussion on causativization of ditransitives will be separately given in Chapter 4.

(153) *Causatives of unergatives*

- a. Ece<sub>AGENT</sub> koş-tu.  
Ece run-PST  
'Ece ran.'
- b. Öğretmen<sub>CAUSER</sub> Ece'yi<sub>CAUSEE</sub> koş-tur-du.  
teacher Ece-ACC run-CAUS-PST  
'The teacher made Ece run.'

(154) *Causatives of transitive manner verbs*

- a. Ece<sub>AGENT</sub> bir öykü<sub>THEME</sub> oku-du.  
Ece a story read-PST  
'Ece read a story.'
- b. Öğretmen<sub>CAUSER</sub> Ece'ye<sub>CAUSEE</sub> bir öykü<sub>THEME</sub> oku-t-tu.  
teacher Ece-DAT a story read-CAUS-PST  
'The teacher made Ece read a story.'

(155) *Causatives of non-derived transitive result verbs*

- a. Ece<sub>AGENT</sub> kapı-yı<sub>THEME</sub> aç-tı.  
Ece door-ACC open-PST  
'Ece opened the door.'
- b. Öğretmen<sub>CAUSER</sub> Ece'ye<sub>CAUSEE</sub> kapı-yı<sub>THEME</sub> aç-tır-dı.  
teacher Ece-DAT door-ACC open-CAUS-PST  
'The teacher made Ece open the door.'

(156) *Causatives of derived transitive result verbs*

- a. Ece<sub>AGENT</sub> et-i<sub>THEME</sub> piş-ir-di.  
Ece meat-ACC cook-CAUS-PST  
'Ece cooked the meat.'
- b. Öğretmen<sub>CAUSER</sub> Ece'ye<sub>CAUSEE</sub> et-i<sub>THEME</sub> piş-ir-t-ti.  
teacher Ece-DAT meat-ACC cook-CAUS-CAUS-PST  
'The teacher made Ece cook the meat.'

As the examples above illustrate, productive causatives systematically involve two agentive participants: a causer, introduced by the matrix predicate, and a causee, responsible for the execution of the embedded event. In all cases, the caused event is dynamic. When the embedded predicate is a transitive result verb, this embedded dynamic event further gives rise to a stative eventuality corresponding to the resultant state encoded in the verbal root. The variation across unergative, transitive manner, and transitive result predicates thus does not affect the basic causative configuration itself, but follows from the internal event structure of the embedded predicate.

In this section, I show that this uniformity in causative structure is reflected in a shared set of diagnostics, while the observed differences in interpretation and argument realization can be traced back to the size and composition of the embedded verbal projection. I develop an analysis of productive causatives by first establishing the empirical properties that motivate it and then situating the proposal with respect to existing accounts. I begin by presenting a set of morphosyntactic and semantic diagnostics showing that productive causatives select already categorized structures, introduce an independent causing event, and systematically allow for indirect causation. These diagnostics include the availability of verbal morphology between the root and *v*, in favor of the size of the embedded constituent that is larger than ResP, and descriptive evidence for VoiceP selection based on agent-oriented modification, and eventhood modifications targeting the contribution of the double *v*P configuration and *v*<sub>CAUS</sub>, and case alternations in causatives of unergatives and transitives. In the case of transitive bases, I further show that productive causatives split according to manner and result roots and correlate with alternations in Voice realization.

Building on these findings, I propose explicit structural representations and event-semantic interpretations for productive causatives of unergative and transitive predicates. The final part of the section discusses previous accounts only insofar as they bear on the status of the embedded constituent and the interpretation of the causative morpheme. I argue that earlier analyses leave the semantic contribution of *v*<sub>CAUS</sub> underspecified and do not address the internal structure of

embedded transitive predicates as defined here. The section concludes by relating the optional realization of the causee in transitive causatives to the availability of indirect causation and by considering how the manner–result distinction bears on degrees of indirectness.

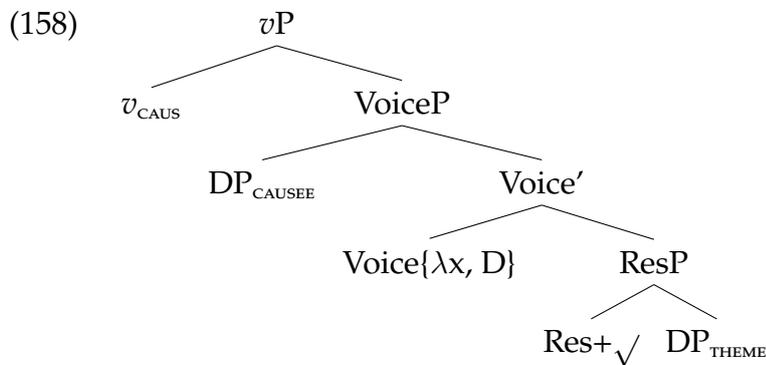
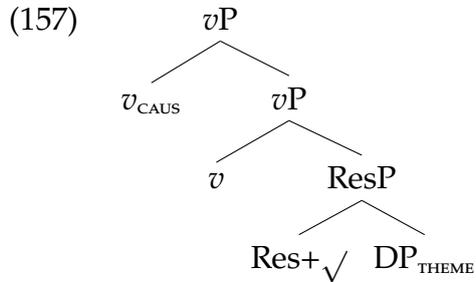
### 3.4.1 Voice and event structure

This subsection lays out the structural assumptions underlying the analysis of productive causatives adopted in this chapter. I first summarize the proposed causative configuration and its implications for event and argument structure. I then situate this proposal with respect to the ongoing debate in the literature concerning the size of the complement selected by the causative head and the syntactic status of the causee. This discussion sets up the diagnostics that will be used to motivate a VoiceP-selecting analysis of productive causatives.

I argue that productive causatives embed VoiceP-sized complements and therefore involve a causative configuration in which the causing and caused events are introduced independently. Productive causatives uniformly allow for indirect causation (I-CAUSE), encoded by the causative head  $v_{\text{CAUS}}$ , which relates a causing event to a caused event without structurally conflating them. Causatives of unergatives and transitive manner verbs are analyzed as involving a double  $v$ P configuration. A thematic active Voice head above the causative  $v$ P introduces the causer argument, while  $v_{\text{CAUS}}$  introduces the causative semantics and selects a thematic active VoiceP in its complement. This embedded Voice head introduces the causee as an external argument, and the lower  $v$ P hosts the event introduced by the base predicate. Causatives of transitive result verbs instantiate the same overall configuration. The difference lies in the internal structure of the embedded predicate: the lower  $v$ P decomposes into a dynamic eventuality and a stative result component, corresponding to  $v_{\text{CAUS}}$  and ResP, as independently motivated for unaccusative structures. Variation across base verb classes thus follows from the internal composition of the embedded  $v$ P, rather than from differences in the causative configuration itself.

While the analysis sketched above fixes the basic architecture of productive causatives, it directly bears on a set of unresolved questions in the literature concerning the size of the complement selected by  $v_{\text{CAUS}}$  and the syntactic status of the causee. These questions have been addressed from different perspectives, most prominently with respect to the availability of scope ambiguities involving agent-oriented modification between the causing and caused events (e.g. Pylkkänen 2008) and the syntactic realization of the causee, either as an adjunct (e.g. Key 2013) or as an external argument introduced by an embedded Voice head (e.g. Akkuş 2021).

For present purposes, these debates can be recast in more general structural terms: they reduce to the question of whether productive causatives select a *v*P-sized complement, as in (157), or a VoiceP-sized complement, as in (158). The two configurations make distinct predictions about the availability of Voice-related phenomena and the structural position of the causee.



Following Pylkkänen (2008), the two configurations differ systematically in their selectional and interpretive properties. In a *v*P-selecting causative, the causative head embeds an already categorized verbal projection rather than a Voice projection. A central prediction of this configuration is that agent-oriented modification of the caused event is unavailable, since no embedded Voice head is present to introduce an agent that such modifiers could target. Moreover, while low applicative heads may be introduced in *v*P-selecting causatives, the introduction of external arguments by high applicative heads or Voice is excluded. By contrast, VoiceP-selecting causatives impose no such restrictions. They allow agent-oriented modification targeting the caused event and permit the introduction of external arguments by both Voice and high applicative heads (Pylkkänen 2008; Akkuş 2019). These contrasting predictions provide a principled basis for distinguishing the two causative types.

Although the distribution of applicative heads is not central to the present discussion, it becomes relevant in causatives of ditransitives discussed in Chapter 4. Low applicatives introduce a relation between two individuals and typically imply a transfer relation (Pylkkänen 2008: 13), as illustrated by the contrast between *I baked a cake* and *I baked you a cake*, where the beneficiary *you* is introduced by

a low Appl head. High applicatives, by contrast, introduce a relation between an individual and an event and are therefore compatible with stative predicates such as *hold* as well as unergative predicates, as in *Sana çalışıyorum* ‘I work for you’ (Akkuş 2019; Key 2023). In Turkish, both beneficiary and recipient arguments introduced by Appl heads and causees introduced by Voice heads are realized with dative case, for instance, in causatives of transitives (e.g. verbs of creation, such as *build*) and ditransitives (e.g. verbs of transfer, such as *give*), resulting in structural ambiguity between the two independently introduced dative arguments (Knecht 1986). This ambiguity reflects the structural availability of both positions in the causative configuration and must therefore be resolved by syntactic and semantic diagnostics rather than by case morphology alone. This concern will be taken up in Chapter 4 in regards to the distinction condition (Richards 2010).

Before turning to the application of a set of diagnostics that distinguish between *v*P- and VoiceP-selecting causatives, it is important to rule out one potential test that does not do so. Both *v*P- and VoiceP-selecting causatives allow verbal morphology to intervene between the root and the causative morpheme. This is illustrated in (159a) and (159b), where reciprocal morphology intervenes between the root and *v*<sub>CAUS</sub> (see also Göksel & Kerslake 2005: 140), as well as in (159c), where passive morphology occurs in the same position.

- (159) Verbal morphology between  $\surd$  and *v*<sub>CAUS</sub>
- a. *koş-* ‘run’ → *koş-uş-* ‘run up’ → *koş-uş-tur-* ‘make sb. run up’)
  - b. *kok-* ‘smell’ → *kok-uş-* ‘stink’ → *kok-uş-tur-* ‘putrify’)
  - c. *bul-* ‘find’ → *bul-un-* ‘be found’ → *bul-un-dur-* ‘have present’)

Since verbal morphology between the root and the causative morpheme is compatible with both configurations, it cannot be used to distinguish between *v*P- and VoiceP-selecting causatives. It rather shows that productive causatives embed complements of larger sizes than ResP. As a result, the distinction between these two causative types must be established on independent grounds. The remainder of this subsection applies a set of diagnostics to determine whether productive causatives in Turkish pattern with *v*P-selecting or VoiceP-selecting configurations. These diagnostics target the presence of thematic active Voice, the independence of event layers, and the internal structure of embedded predicates, and are applied uniformly to causatives of unergatives and transitive manner and result verbs.

Agent-oriented modification has been widely used in the literature on Turkish causatives as a diagnostic for the presence of an active thematic Voice projection (e.g. Key 2013; Akkuş 2021; Nie 2022). The core question is whether agent-oriented adverbials can control the causee, which would indicate that the caused event is

associated with an independent Voice layer. Competing views differ on this point. One line of analysis argues that agent-oriented adverbials can only modify the causer, while another maintains that such adverbials may target either the causer or the causee, and in some cases exclusively the causee (see Akkuş 2021).

A frequently cited example in support of the former view is given in (160), where Key (2013) argues that the adverb *bilerek* ‘knowingly’ can only control the causer *Tarkan*, but not the causee *Hakan*. On this basis, he concludes that the caused event lacks an active Voice projection capable of introducing an agent.

- (160) Tarkan<sub>i</sub> Hakan’a<sub>j</sub> Mehmet’i bil-erek<sub>i/\*j</sub> döv-dür-dü.  
 Tarkan Hakan-DAT Mehmet-ACC know-PART beat-CAUS-PST  
 ‘Tarkan made Hakan beat Mehmet on purpose.’

However, this conclusion hinges on the properties of the adverbial form employed. As noted by Mitchley (2023), *bilerek* and related forms involving the adverbial suffix *-ArAk* are subject-oriented rather than agent-oriented. In particular, Mitchley (2023:86, fn. 15) argues that the *-ArAk* particle enforces control by the grammatical subject of the clause, independently of the thematic role borne by that DP. As a result, the inability of *bilerek* in (160) to target the causee follows from the morphosyntactic properties of the adverbial construction, not from the absence of an embedded Voice projection. Independent evidence for the subject-oriented nature of *-ArAk* comes from environments without causativization. As observed by Kornfilt (1997: 55–56), adverbial clauses formed with *-ArAk* cannot contain an overt subject distinct from the matrix subject, as illustrated in (161a) and (161b). This restriction holds even in the absence of causative structure, reinforcing the conclusion that *-ArAk* adverbials diagnose subjecthood rather than agenthood.

- (161) a. \*[Ahmet çok çalış-arak] Zeynep hedef-in-e ulaş-tı.  
 Ahmet very work-ADV Zeynep aim-3SG-DAT reach-PST  
 Intended reading: ‘Zeynep reached her goal while/because Ahmet worked a lot.’  
 b. Ahmet [çok çalış-arak] hedef-in-e ulaş-tı.  
 Ahmet very work-ADV aim-3SG-DAT reach-PST  
 ‘Ahmet attained his goal by working a lot’

Consequently, examples involving *bilerek* cannot be used to argue against the availability of agent-oriented modification of the causee in productive causatives. Once this confound is controlled for, agent-oriented adverbials that are not subject-oriented provide a reliable diagnostic for the presence of an embedded active Voice projection. In the following, I therefore restrict attention to adverbials that genuinely target agentive participants rather than grammatical subjects.

Recall that agent-oriented modification has been used in the literature as a diagnostic for the presence of a thematic active Voice projection (see Section 3.3). The logic of this diagnostic is straightforward: agent-oriented adverbs require an agentive participant introduced by Voice and can therefore be used to probe whether a given event layer hosts an active Voice head. On this basis, Akkuş (2021) compares unaccusatives and passives in Turkish, showing that unaccusatives lack Voice and consequently do not license agent-oriented adverbs, whereas passives do. He then extends this diagnostic to productive causatives. Following Akkuş (2021), I assume that Turkish productive causatives pattern with Japanese-type causatives (see below) in allowing agent-oriented modification of the causee. Akkuş (2021:228–229) shows that, once pragmatic factors such as saliency are controlled for, agent-oriented adverbs, instrumentals, and agent-oriented comitatives may be controlled by the causee. In particular, with inanimate matrix causers, agent-oriented adverbs can only modify the caused event, indicating the presence of an agentive causee introduced by an embedded Voice projection.

With this in mind, I illustrate the diagnostic with example contexts in which pragmatic asymmetries between the causer and the causee are minimized by choosing referents that differ systematically in social role. The examples below involve the agent-oriented adverbs *isteksizce* ‘reluctantly’, as in (162), *gönüllüce* ‘willingly’, as in (163), and show that these adverbs may control either the causer or the causee. Although not presented below, some agent-oriented modification such as instrumentals either controls the causee or the causer, but not both (Akkuş 2021; Hopperdietzel & Yıldız 2025).

(162) *Agent-oriented modification*

Müdür memur-u *isteksizce* çalış-tır-dı.  
 supervisor officer-ACC reluctantly work-CAUS-PST

‘The supervisor made the officer work *reluctantly*.’

- a. Lower Voice modification (causee-oriented): *The officer does not want to work, for example because they are tired, unhappy with the task, or feel treated unfairly. Nevertheless, once instructed by the supervisor, the officer carries out the work unwillingly. The adverb describes the officer’s attitude towards the working event.*
- b. Higher Voice modification (causer-oriented): *The supervisor does not want to assign extra work, for instance because they sympathize with the officer or disagree with the decision. However, due to external pressure (company policy, deadlines, instructions from higher management), the supervisor ends up forcing the officer to work. The adverb describes the supervisor’s attitude towards the causing event.*

(163) *Agent-oriented modification*

Aşçı garson-a bulaşık-lar-ı gönüllüce yıka-t-tı.  
chef waiter-DAT dish-PL-ACC willingly wash-CAUS-PST

'The chef made the waiter wash the dishes willingly.'

- a. Lower Voice modification (causee-oriented): *The waiter is unusually cooperative today. Earlier, the chef asks the waiter to wash the dishes and the waiter is happy to do it (e.g. to help out, to show initiative, or because it is part of a bet). The adverb describes the waiter's attitude toward washing.*
- b. Higher Voice modification (causer-oriented): *The chef is in a good mood and decides to delegate politely. Usually the chef orders people around harshly, but today the chef chooses to get the waiter to wash the dishes in a friendly, considerate way (e.g. politely asking, encouraging, not threatening). The adverb describes the chef's attitude in the causing event.*

In (164), *süratle* 'swiftly' scopes over either the higher causative *vP* or the embedded *vP*, modifying the manner of the causing event or the caused running event, respectively. Unlike agent-oriented adverbs such as *gönüllüce* or *isteksizce*, the manner adverb *süratle* does not target Voice. Instead, it modifies event structure directly. In productive causatives of unergatives, this yields two possible attachment sites: modification of the higher (causative) *vP*, corresponding to the rapid initiation or execution of the causative event, and modification of the embedded *vP*, corresponding to the speed of the caused running event itself.

(164) *Manner modification*

Antrenör sporcu-yu süratle koş-tur-du.  
trainer athlete-ACC swiftly run-CAUS-PST

'The trainer made the athlete run swiftly.'

- a. Lower *vP* modification (embedded event): *The athlete runs at high speed, for instance during a sprint drill or timed exercise. The trainer causes the athlete to run, and the resulting running event itself is fast. The adverb describes the manner of the embedded running event.*
- b. Higher *vP* modification (causing event): *The training session is tightly scheduled. The trainer quickly initiates and carries out the causative action, for example by immediately giving the command to run or rapidly setting the exercise in motion. The adverb describes the manner of the causing event, not the speed of the running itself.*

Similar in spirit, Akkuş (2021: 225) employs manner modification as a diagnostic for event decomposition in productive causatives. His example combines two distinct manner modifiers with different scope properties, one of them targets the

higher *v* layer, and the other modifies the embedded *v* layer. The availability of such split manner modification supports an analysis in which productive causatives of transitives involve a double *v*P configuration, corresponding to a causing event and a caused event.

As previously applied to lexical causatives, *again*-modification diagnoses that productive causatives embed two *v* layers. Consider the productive causative in (165a), where the adverb *yine* ‘again’ gives rise to multiple scope interpretations. The availability of distinct readings follows if *yine* can attach at different structural positions within the causative configuration. In particular, the sentence allows for four possible scope positions for *yine*. These attachment sites correspond to the articulated structure in (165b), where each occurrence of *yine* targets a different event component within the causative complex. Short contextual interpretations for each scope position of *yine* are given in (166). Each context highlights which event component is presupposed to have occurred before. The existence of these distinct scope positions provides evidence that productive causatives decompose into multiple event layers, each of which can be independently targeted by *yine*.

(165) *again*-modification

a. Aşçı garson-a bulaşık-lar-ı *yine* yıka-t-tı.  
 chef waiter-DAT dish-PL-ACC again wash-CAUS-PST  
 ‘The chef made the waiter wash the dishes again.’

b. [VoiceP *yine*<sub>a</sub> Voice [vP *yine*<sub>b</sub> v [VoiceP *yine*<sub>c</sub> Voice [vP *yine*<sub>d</sub> v [√YİKA] ] ] ] ]

(166) a. *yine* above higher VoiceP: *The chef had previously been involved in a similar causing situation. Once again, the chef caused an event in which the waiter washed the dishes.*

b. *yine* below higher VoiceP, above higher *v*: *Someone had already caused the waiter to wash the dishes before. This time, the chef caused that same type of causative event again.*

c. *yine* below higher *v*, above lower Voice: *The waiter had previously been made to wash the dishes by someone. The chef now caused the waiter to repeat that washing event.*

d. *yine* below lower Voice, above embedded *v*: *The waiter had already washed the dishes before. The chef caused the waiter to perform the dish-washing action again.*

Moreover, Akkuş (2021: 227) argues that the embedded *v*P in productive causatives does not project a TP layer. As a consequence, independent temporal modification of the embedded event is blocked. This is illustrated in (167), where the causative predicate is marked for past tense and temporal adverbs targeting the embedded

event yield degraded judgments. Nie (2022) shows, however, that acceptability improves when the causative predicate is marked for future tense, as in (168), suggesting that tense specification at the matrix level can partially rescue temporal interpretation of the embedded event.

- (167) \*Patron dün işçi-ler-e buzdolab-ın-ı bugün taşı-t-tı.  
 boss yesterday employee-PL-DAT fridge-3SG-ACC today carry-CAUS-PST  
 ‘The boss, yesterday, made [the workers carry the fridge today].’
- (168) Yarın Özlem Ali-yi cumartesi günü koş-tur-acak.  
 tomorrow Özlem Ali-ACC Saturday day run-CAUS-FUT  
 ‘Tomorrow Özlem will make Ali run on Saturday.’ (Nie 2022:7, fn. 4)

Negation provides an additional diagnostic for eventhood and further supports a double *v*P analysis of productive causatives. Kural (1997) observes that negation appears to violate the Mirror Principle (Baker 1985) in that the negation morpheme can take scope below the causing event. He captures this pattern by exploiting the contrast between coercive and permissive readings, arguing that MAKE > NEG is equivalent to NEG > LET, as illustrated in (169). Under this configuration, “negation uniformly takes scope over CAUSE in Turkish without violating the Mirror Principle” (Kural 1996: 50; Baker 1985). As also noted by Akkuş (2021:227, fn. 10), negation can “negate anything in its scope”, giving rise to interpretations such as *I didn’t make/let Emine work today, (=but she might have worked on her own yesterday, or I might have made/let her work yesterday, but not today)*, which remain compatible with contrastive scenarios in which Emine worked or was made or allowed on her own at another time or on a different occasion. This flexibility in scope further supports the view that productive causatives decompose into multiple event layers that can be independently targeted by eventhood diagnostics involving tense and negation.

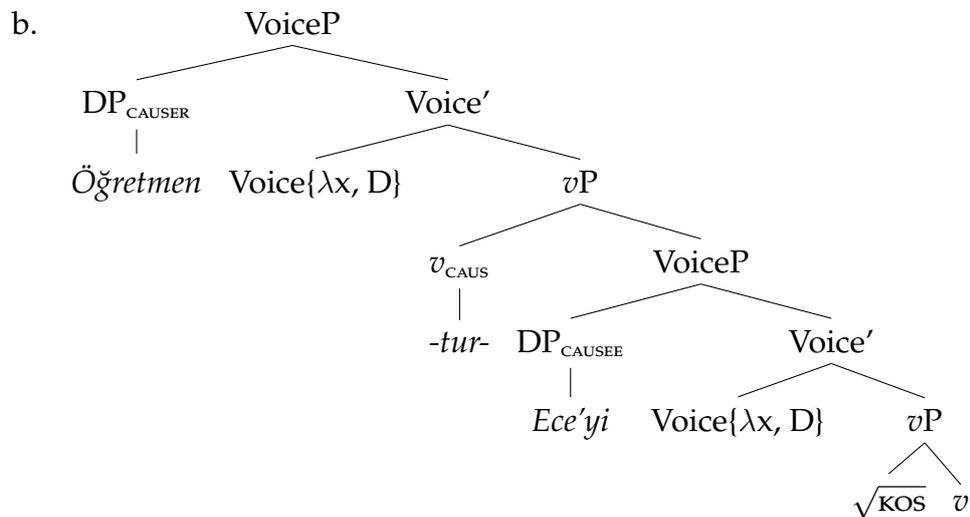
- (169) *pro* Emine-yi bugün çalış-tır-ma-dı-m.  
 1SG Emine-ACC today work-CAUS-NEG-PST-1SG  
 (i) ‘I didn’t make Emine work today’ (= she might have worked on her own)  
 (ii) ‘I made Emine not work today’ (= I didn’t allow her to work)

Overall, these observations support a VoiceP-selecting analysis of productive causatives in Turkish. Under the typology proposed by Pylkkänen (2008), the availability of agent-oriented modification of the causee requires an embedded active Voice projection. The fact that agent-oriented adverbs can control causees in productive causatives therefore argues against *v*P-selecting and adjunct-based analyses (e.g. Key 2013; Harley 2017) and in favor of a bicausal and biagentive structure, borrowing from Nie 2020a. In this respect, the Turkish data pattern with VoiceP-selecting causatives, as also argued by Akkuş (2021).

Based on the diagnostics discussed above, I propose the following analysis for the causativization of unergatives. The structure in (170b) illustrates a configuration in which two thematic active Voice projections are present. Each Voice head introduces an external argument via a  $\lambda x$ -binder and licenses a DP in its specifier, corresponding to the feature configuration  $\text{Voice}\{\lambda x, D\}$  characteristic of thematic active Voice (Alexiadou et al. 2015). The higher Voice head, merged above the causative  $vP$ , introduces the causer of the causing event in  $\text{Spec, VoiceP}$ . The lower Voice head, merged below the causative  $vP$ , introduces the causee of the embedded event in its specifier, with the embedded event itself introduced by the lower  $vP$ .  $v_{\text{CAUS}}$ , realized by the morpheme *-tur-*, establishes a causal dependency between the causing event associated with the higher Voice projection and the caused event associated with the lower  $vP$ . The presence of both a  $\lambda x$ -binder and a D-feature on each Voice head ensures that the two separate events are anchored to distinct external arguments that function as event participants.

(170) *Causativization of unergative verbs*

- a. Öğretmen Ece'yi koş-tur-du.  
 teacher Ece-ACC run-CAUS-PST  
 'The teacher made Ece run.'



In this structure, two Voice heads introduce two agentive arguments that are linked by a causative relation contributed by  $v_{\text{CAUS}}$ . The semantics of  $v_{\text{CAUS}}$  corresponds to an I-CAUSE relation rather than a D-CAUSE relation, a consequence of the fact that  $v_{\text{CAUS}}$  embeds a VoiceP-sized constituent rather than a ResP-sized constituent. As a result, the causing event associated with the higher VoiceP and the caused event introduced by the lower  $vP$  are related causally without forming a single, uninterrupted causal chain. Intervening causes may therefore be accommodated between the two subevents, yielding a configuration of indirect causation (Lytikova & Tatevosov 2014). By contrast, D-CAUSE relations exclude such intervention,

as the causing event exhaustively contains the causal chain leading to the effect, which cannot be temporally or causally autonomous from its causer (Kratzer 2005; Ramchand 2008; Lyutikova & Tatevosov 2014).

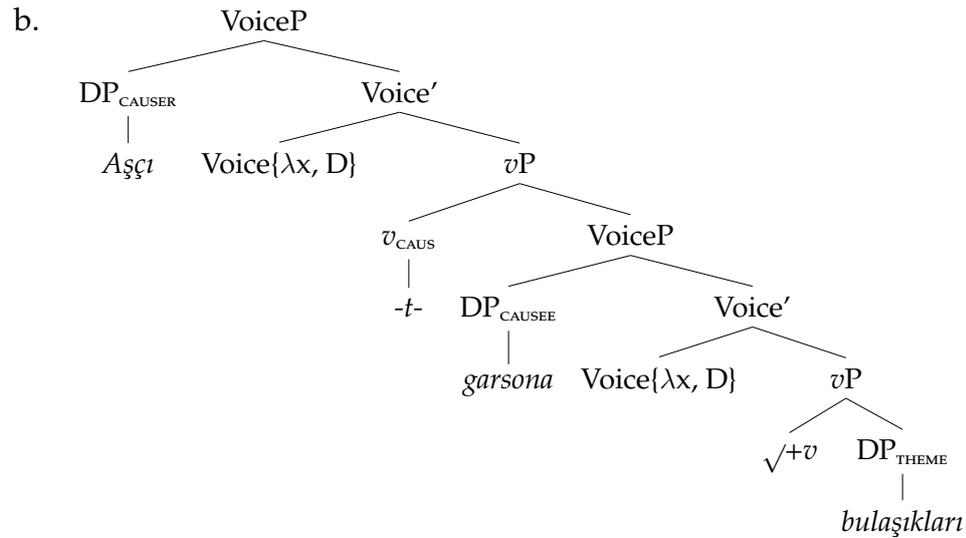
In the example in (170b), this distinction is reflected in the separation between the teacher’s causing activity and Ece’s running event. The teacher’s action constitutes a causing event associated with the higher VoiceP, while Ece’s running is an autonomous caused event introduced by the lower *v*P. The causal dependency established by *v*<sub>CAUS</sub> relates these two events without collapsing them into a single causative complex, unlike lexical causatives. This separation accounts for the availability of diagnostics that target multiple event layers and scope ambiguities with agent-oriented modification.

The analysis of causativized transitives must explicitly take into account the manner–result distinction (see Section 2.3, Section 2.5.1, and Section 2.5.3). I argue that causativization of transitives falls into two major types: (i) causatives of transitive manner verbs, such as *yıka-* ‘wash’, and (ii) causatives of transitive result verbs, including both unmarked lexical causatives (e.g. *kır-* ‘break’) and marked lexical causatives (e.g. *piş-ir-* ‘cook’).

I begin with causatives of transitive manner verbs, which are analyzed as involving two thematic active Voice projections and a causative verbal layer. The higher Voice head introduces the causer, and the lower Voice head introduces the causee. Each Voice head introduces an external argument via a  $\lambda x$ -binder and licenses a DP in its specifier, corresponding to the feature configuration Voice{ $\lambda x$ , D} characteristic of thematic active Voice (Alexiadou et al. 2015). *v*<sub>CAUS</sub> mediates the causal dependency between the two event layers. Below this, a mono-eventive *v*P introduces the manner event itself, hosting the  $\sqrt{+v}$  complex and taking the theme DP as its complement. Following the classification proposed by Lyutikova & Tatevosov (2014), manner verbs are characterized by the fact that descriptive properties of the event are specified by the root. The resulting structure is illustrated in (171b). As in the case of causativized unergatives, the presence of two thematic active Voice projections ensures that the causing event and the caused event are independently anchored to distinct external arguments. The chef’s activity constitutes the causing event introduced by *v*<sub>CAUS</sub>, while the waiter’s dish-washing event, involving the theme *bulaşıkları* ‘the dishes’, constitutes the caused event introduced in the lower *v*P.

(171) *Causativization of transitive manner verbs*

- a. Aşçı garson-a bulaşık-lar-ı yıka-t-tı.  
 chef waiter-DAT dish-PL-ACC wash-CAUS-PST  
 ‘The chef made the waiter wash the dishes.’



The causal dependency established by  $v_{\text{CAUS}}$  corresponds to an I-CAUSE relation: the chef's action brings about the waiter's washing event without collapsing the two into a single, uninterrupted causal chain. As a result, the caused event retains a degree of autonomy, and intervening causal structure can in principle be accommodated between the two separate events, paralleling the behavior observed for causativized unergatives.

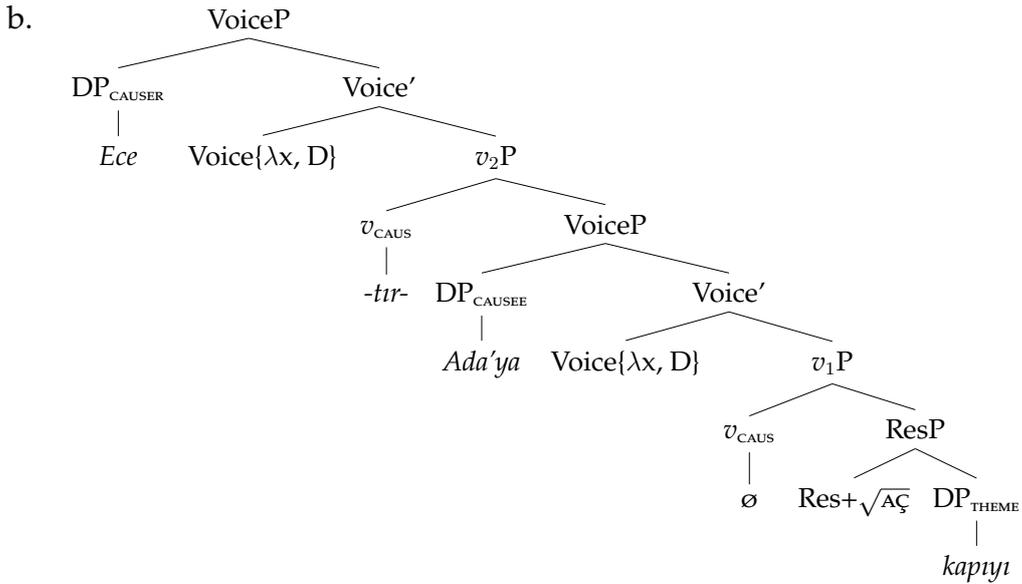
With this analysis in place, the discussion can now turn to causatives of transitive result verbs. These differ fundamentally from manner verbs in that the result state is lexically specified by the root. Causatives of transitive result verbs further divide into two subtypes: non-derived transitive result verbs (unmarked lexical causatives, e.g. *kes-* 'cut') and derived transitive result verbs (marked lexical causatives, e.g. *piş-ir-* 'cook').

Causatives of transitive result verbs are analyzed as projecting two Voice layers, parallel to causatives of manner verbs. The sole difference, however, lies in the internal causative structure. In addition to the higher causative  $v_2\text{P}$  licensing an I-CAUSE relation, these constructions contain a lower causative layer associated with a D-CAUSE relation introduced by the lower causative  $v_1\text{P}$ . The lower  $v_1\text{P}$  corresponds to a causative projection that introduces a D-CAUSE relation. This projection selects a non-categorical ResP, which introduces an independent state variable via the configuration  $\text{Res}+\sqrt{\phantom{x}}$  and embeds the DP theme in its complement (Alexiadou et al. 2015). The resulting configuration yields a tightly integrated result structure in which the event introduced by the root stands in a direct causative relation to the resultant state. The higher  $v_2\text{P}$ , by contrast, is associated with an I-CAUSE relation and mediates the causal dependency between the higher-causing event and the lower causative complex. As in other productive causatives, this higher causative layer does not enforce an uninterrupted causal chain, but instead relates

two independently anchored events. These layered configurations are illustrated in (172b) for causatives of non-derived transitive result verbs and in (173b) for causatives of derived transitive result verbs.

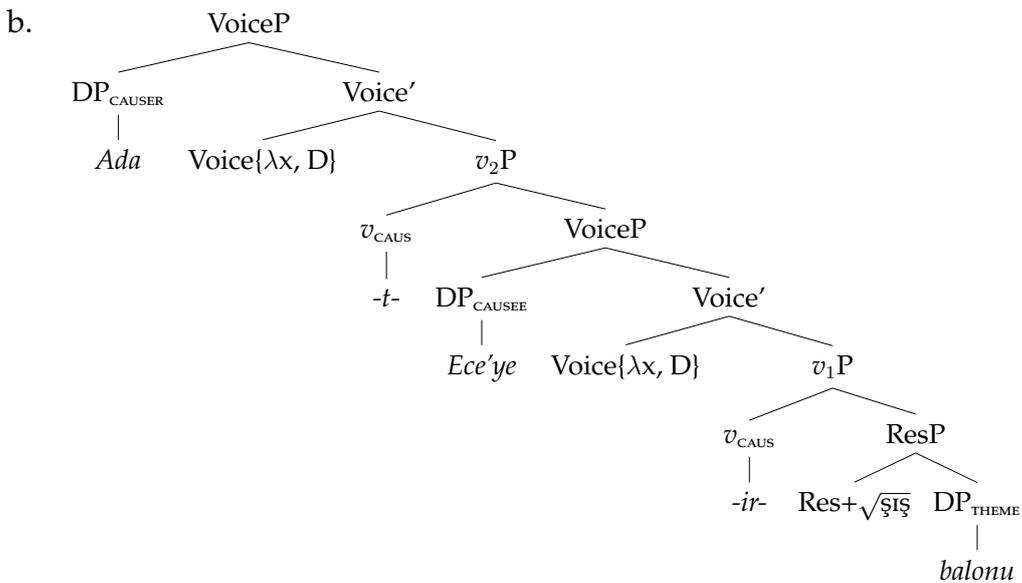
(172) *Causativization of non-derived transitive result verbs*

- a. Ece Ada'ya kapı-yı aç-tır-dı.  
 Ece Ada-DAT door-ACC open-CAUS-PST  
 'Ece made Ada open the door.'



(173) *Causativization of derived transitive result verbs*

- a. Ada Ece'ye balon-u şiş-ir-t-ti.  
 Ada Ece-DAT balloon-ACC inflate-CAUS-CAUS-PST  
 'Ada made Ece inflate the balloon.'



Having established the event-structural analysis of causatives of both non-derived and derived transitive result verbs, a short note on causative recursion can now be made. As will be shown in Chapter 4, productive causatives in Turkish are recursive, and marked lexical causatives pattern with unmarked ones under productive causativization in allowing additional causative layers, particularly, by bearing two additional I-CAUSE relations on top of an embedded D-CAUSE relation. As a consequence, triple causativization of unaccusatives exhibits the same structural profile as double causativization of non-derived transitive result verbs.

The discussion now turns to earlier analyses in light of productive causatives and explores their theoretical implications. I begin with causatives of unergatives and then turn to causatives of transitives, showing how the structural analyses proposed so far differ from previous work implementing similar event-decompositional assumptions within DM.

### 3.4.2 Previous analyses and implications

**ResP-selecting causatives of unergatives.** Neu (2023) argues that (direct) causatives of unergatives in Turkish are ResP-selecting and structurally parallel to lexical causatives. On this view, an otherwise unergative predicate is coerced into an unaccusative configuration under causativization, such that the causee is realized as an internal argument bearing a theme role, while the agent is introduced by a higher Voice head. Neu supports this analysis with examples such as (174b), which she takes to be semantically and syntactically identical to lexical causatives, and argues that the embedded argument is deagentivized and interpreted as passively affected and lacking control. In the terminology adopted in this monograph, the projection labeled as *vP* in her analysis corresponds to a ResP-sized complement, allowing for the internal realization of the causee as  $DP_{\text{THEME}}$ . This proposal captures important properties of causativized predicates that already display unaccusative behavior or lack inherent agentivity. In particular, predicates such as *uyu-* ‘sleep’, combined with non-volitional arguments like *bebek* ‘baby’, naturally favor a direct causative interpretation and plausibly license an internal realization of the embedded participant, suggesting that causativized unergatives may pattern with lexical causatives in such contexts.

- (174) a. *Bebek uyu-du.*  
           baby sleep-PST  
           ‘The baby slept.’
- b. *Ben bebeğ-i uyu-t-tu-m.*  
           1SG baby-ACC sleep-CAUS-PST-1SG  
           ‘I put the baby to sleep.’

However, extending this analysis uniformly to causatives of unergatives with stronger agentive involvement proves problematic. This becomes evident with causatives of unergatives such as *koş-* ‘run’, which allow path arguments and exhibit systematic case alternations on the causee, as illustrated in (175).

- (175) a. Antrenör sporcu-yu koş-tur-du.  
 trainer athlete-ACC run-CAUS-PST  
 ‘The trainer made the athlete run.’ (Akkuş 2021: 215)
- b. Antrenör sporcu-ya/\*sporcu-yu maraton-u koş-tur-du.  
 trainer athlete-DAT/\*athlete-ACC marathon-ACC run-CAUS-PST  
 ‘The trainer made the athlete run the marathon.’
- c. Antrenör sporcu-ya/sporcu-yu maraton koş-tur-du.  
 trainer athlete-DAT/athlete-ACC marathon run-CAUS-PST  
 ‘The trainer made the athlete run marathon.’

With predicates such as *koş-* ‘run’ and *yürü-* ‘walk’, the embedded participant displays properties that are difficult to reconcile with a purely ResP-based analysis. As Neu (2023) herself observes, causatives of unergatives exhibit systematic alternations in case marking on the causee, correlating with differences in control and causal interpretation. Specifically, dative-marked causees favor indirect causative readings, whereas accusative-marked causees allow direct causative readings, as illustrated in (176a) and (176b).

- (176) a. Çocuğ-a 10m-yi yürü-t-tü-m.  
 child-DAT 10m-ACC walk-CAUS-PST-1SG  
 \*‘I walked the child 10m.’  
 ‘I made the child walk the 10m.’
- b. Çocuğ-u 10m yürü-t-tü-m.  
 child-ACC 10m walk-CAUS-PST-1SG  
 ‘I walked the child 10m.’  
 ‘I made the child walk 10m.’ (Neu 2023: 10)

Notice that the English translations show alternation between the intransitive use and the transitive use of the verb. This is similar to the case seen in unaccusatives, but the core difference is the agentivity of the embedded subject. Dative-marked causees favor indirect causative readings in which the embedded participant retains control over the action, whereas accusative-marked causees allow direct causative readings associated with reduced control. These alternations interact with the realization of path arguments and cannot be straightforwardly derived if the causee is uniformly treated as an internal theme. The contrast between (175c) and (176b) is particularly difficult to capture under a uniform ResP-based analysis.

Neu (2023) therefore argues that causatives of unergatives are ambiguous between direct and indirect causation, in contrast to causatives of unaccusatives, which allow only direct causation, and causatives of transitives, which allow only indirect causation (see also Lyutikova & Tatevosov 2014 for a similar observation for Karachay-Balkar). This ambiguity is reflected in the behavior of manner modification, as in (177a) and (177b): with a direct causative reading, manner adverbials are interpreted with respect to the causing event, whereas with an indirect causative reading they may target the caused event. In particular, (177a) favors a direct causative interpretation and pattern closely with lexical causatives, while the addition of manner adverbials in (177b) makes available readings attributed either to the causing event or to the caused event.

- (177) a. (Ben) *çocuğ-u koltuğ-a otur-t-tu-m.*  
 (I) child-ACC couch-DAT sit-CAUS-PST-1SG  
 ‘I sat the child on the couch.’  
 ‘I made the child sit on the couch.’
- b. (Ben) *sakince bebeğ-i koltuğ-a yavaşça otur-t-tu-m.*  
 (I) calmly baby-ACC couch-DAT slowly sit-CAUS-PST-1SG  
 ‘Calmly and slowly, I sat the baby on the couch.’  
 ‘Calmly, I made the baby sit on the couch slowly.’ (Neu 2023: 6)

From the perspective developed here, these observations do not motivate a uniform ResP-selecting analysis of causativized unergatives. Rather, the observed ambiguity follows naturally if productive causatives allow VoiceP-sized complements and introduce causation independently of the internal structure of the embedded predicate. On this view, causatives of unergatives may pattern like lexical causatives in contexts that favor direct causation and reduced agentivity, while still permitting an embedded active Voice projection in contexts that support indirect causation and agent-oriented control. Neu (2023)’s observations therefore do not argue against a VoiceP-selecting analysis of productive causatives; instead, they highlight the gradience between unergativity and unaccusativity and the role of causal structure and agentivity in shaping the causative interpretation.

Given the diagnostics and the proposed analyses for transitive predicates presented in the previous section, the question remains: how do existing analyses distribute across the *v*P- vs VoiceP-selection, and where do they fall short? Existing analyses of Turkish productive causatives differ primarily along two dimensions: the size of the complement selected by the causative head and the syntactic status of the causee. In what follows, I group previous proposals according to these core assumptions, which makes it possible to evaluate their predictions directly against the diagnostics established in the previous section.

***v*P-selecting analyses with adjunct causees.** A first group of analyses argues that Turkish productive causatives select a *v*P-sized complement and do not embed a Voice projection introducing the causee as an argument (Key 2013; Harley 2017). On this view, productive causatives are headed by a dedicated causative projection (CausP) that selects an already verbalized structure. CausP is taken to introduce causative semantics without contributing verbalizing properties, in contrast to lexical causatives, which are assumed to bundle verbalization and causation.

Within this approach, the causee is not introduced as an external argument but is merged as a dative adjunct to CausP. As a consequence, the realization of the causee is optional in the syntactic structure. Key (2013) argues that this optionality is not a case of *pro*-drop, since it does not require discourse licensing or contextual support, but rather follows from the adjunct status of the causee. The absence of an overt causee is therefore taken to reflect its absence from the syntax altogether. To account for the interpretive properties of the causee, Key (2013) appeals to pragmatic and semantic factors. In cases where the causee is unexpressed, its presence may be inferred pragmatically from the nature of the caused event, for instance when the event conventionally involves a professional agent. At the same time, the analysis maintains that the causee is necessarily animate and agentive, a restriction attributed to the semantic features of the causative head rather than to any syntactic Voice projection. In line with Reinhart (2016), Key (2013) proposes that the causative head bears a feature encoding mental involvement, which derives the animacy requirement even in the absence of an overt causee.

A further motivation for treating Turkish productive causatives as *v*P-selecting comes from cross-linguistic comparison with Japanese. Harley (2017) argues that the optionality of the causee in Turkish underlies two systematic differences between Turkish and Japanese causatives. First, while Japanese causees cannot be omitted, Turkish allows causative constructions without an overt causee while still implying an agentive participant in the caused event, as illustrated in (178a). Second, in Turkish passivization targets the embedded object rather than the causee, such that the causee is not promoted to subject position, as shown in (178b). In Japanese, by contrast, passivization promotes the causee, and promotion of the embedded object is unavailable.

- (178) a. Kadın et-i kes-tir-di.  
 woman meat-ACC cut-CAUS-PST  
 ‘The woman had the meat cut (by Ekrem).’ (Özkaragöz 1986)
- b. Et Ekrem’e kes-tir-il-di.  
 meat Ekrem-DAT cut-CAUS-PASS-PST  
 ‘The meat was made (by the woman) to be cut by Ekrem.’

Both Key (2013) and Harley (2017) classify Japanese productive causatives as VoiceP-selecting, but analyze Turkish productive causatives as *v*P-selecting, with the causee merged as an adjunct to the causative head. On this view, the availability of null causees and the behavior of passivization in Turkish are taken to argue against an embedded active Voice projection. This analysis yields a monoagentive causative structure in which the dedicated causative head introduces causative semantics, the embedded *v*P introduces the caused event, and the causee, when present, is syntactically an adjunct. As already established in the previous section, this combination of assumptions has direct consequences for the availability of agent-oriented modification, the interpretation of null causees, and the structural representation of embedded events.

**Embedded non-active Voice analysis.** A second line of analysis refines the *v*P-selecting approach by positing the presence of an embedded Voice projection, while maintaining that productive causatives are monoagentive. This view is developed by Nie (2020b) and Nie (2020a), who argue that Turkish productive causatives involve two event-introducing heads but only a single agent-introducing Voice head. In this system, the causative configuration embeds a non-active Voice projection that combines with the lower *v*P and does not introduce an external argument. In contrast to Japanese productive causatives, Nie (2020a) argues that Turkish productive causatives are bicausal but monoagentive, with the causee merged as an adjunct to a non-active VoiceP, whereas Japanese productive causatives are bicausal and biagentive, embedding an active VoiceP that introduces the causee as an external argument (cf. Key 2013; Harley 2017).

Under this analysis, the causee is merged as a dative adjunct to the embedded non-active VoiceP rather than as an argument introduced in Spec,VoiceP. As a result, productive causatives are treated as bicausal but monoagentive: the causative structure introduces two event layers, but only one agentive participant. The higher *v* head is responsible for introducing the causing event, while the embedded Voice head is non-active and does not license an agentive causee. The causative semantics is thus tied to the higher event-introducing *v* rather than to a dedicated causative head. Although this proposal differs from Key (2013) and Harley (2017) in allowing an embedded Voice layer, it converges with their analysis in treating the causee as syntactically an adjunct to the non-active Voice. The primary difference lies in the labeling and distribution of functional heads: where Key (2013) posits a dedicated CausP, Nie (2020a) analyzes the causative morpheme as the realization of a secondary *v* head associated with causative semantics. In both cases, however, the causee is not introduced as an external argument by an active Voice projection.

As a consequence, this approach inherits several of the limitations of adjunct-based analyses. In particular, the semantic contribution of the causative morpheme is not independently characterized, and the availability of agent-oriented modification targeting the caused event remains unexplained. Moreover, the internal structure of the embedded transitive predicate is not differentiated along the manner–result distinction developed in the previous section, leaving the source of variation among transitivized causatives unaddressed.

**VoiceP-selecting analyses.** A third approach argues that Turkish productive causatives select a VoiceP-sized complement and introduce the causee as an external argument. This view is developed most explicitly by Akkuş (2021) (see also Mitchley 2023). On this analysis, productive causatives involve two dedicated Voice projections, each capable of introducing an external argument with distinct thematic roles. The higher Voice head introduces the causer, while an embedded Voice<sub>CAUSEE</sub> introduces the causee as an argument rather than as an adjunct.

A central motivation for this proposal is the observation that the causee in Turkish productive causatives behaves like an argument introduced by an active Voice head. Akkuş (2021) argues that the causee is necessarily animate and agentive, a restriction that follows naturally if it is introduced by a thematic active Voice projection. This analysis accounts for the unavailability of *by*-phrases, as in (179), and for the incompatibility of inanimate causees without appealing to pragmatic inference or adjunct licensing.

- (179) \*Kadın et-i kasap tarafından kes-tir-di.  
 woman meat-ACC butcher by cut-CAUS-PST  
 ‘The woman had the meat be cut by the butcher.’

To capture the alternation between overt and covert causees, Akkuş (2021) proposes that productive causatives may embed either an active or a non-active Voice<sub>CAUSEE</sub> head. When Voice<sub>CAUSEE</sub> is active, the causee is overtly realized; when it is non-active, the causee is existentially bound and remains syntactically implicit. Under this view, the apparent optionality of the causee reflects Voice alternations rather than the adjunct status of the causee. Despite these advantages, VoiceP-selecting analyses leave several questions open. In particular, the semantic contribution of the productive causative morpheme is not independently characterized, as causation is effectively bundled with dedicated Voice-related heads, e.g. Voice<sub>CAUSEE</sub>. Moreover, although this approach correctly identifies the argument status of the causee, it does not address the internal structure of the embedded transitive predicate. As a result, variation among productive causatives is attributed to Voice alternations alone, without an account of how the properties of the embedded

event interact with causative semantics. Under the assumption that transitive result verbs encode a causative configuration in which  $v_{\text{CAUS}}$  relates a causing event to a caused state, the absence of an overt causee means that the agent of the causing event is not syntactically realized, though the event itself remains present in the semantics. When such a structure is further embedded under a higher instance of  $v_{\text{CAUS}}$  through productive causativization, the higher  $v_{\text{CAUS}}$  relates its own causing event to a caused event whose agentive component is underspecified. In this way, productive causativization targets an event structure that is causally well-formed but argumentally incomplete with respect to agent realization.

### 3.5 Summary

This chapter has provided a detailed account of the morphosyntax of Turkish causatives and has established the empirical and analytical foundation for the investigation of recursive causativization pursued in subsequent chapters. I have shown that Turkish causative morphology interacts systematically with argument structure and event composition, and that this interaction is subject to principled morphosyntactic and semantic constraints. The chapter has first clarified the core morphosyntactic properties of Turkish that are crucial for the analysis of causatives. By examining case marking, flexible word order, and information-structural effects, I have shown that apparent variability in constituent order and object marking is restricted rather than free, and that DOM and discourse-related factors play a central role in shaping argument realization.

Building on this background, the chapter has presented a comprehensive overview of Turkish causative morphology. I have distinguished between regular and irregular allomorphy of the causative morpheme and surveyed causatives derived from unaccusative, unergative, transitive, and ditransitive bases. The discussion has shown that causatives can be used with other voice morphology such as passives and that causative suffixes can be iteratively used. Turkish causatives were further situated within broader alternation patterns between lexical causatives and anticausatives. By examining unaccusative–causative and transitive–anticausative alternations, I have shown that differences in event structure and argument configuration determine both the locus of causativization and the realization of arguments. I have argued that causative semantics is uniformly introduced by  $v_{\text{CAUS}}$  and invariant across lexical causatives and anticausatives and that the realization of Voice is the core aspect of the alternations.

The chapter has then turned to productive causativization in Turkish in detail, tracing how unergative and transitive predicates respond to causative

morphology. Throughout the discussion, I employed a range of diagnostics to motivate the proposed structures, including agent-oriented adverbial modification and eventhood diagnostics. On the basis of these theoretical findings, the chapter has advanced a specific structural analysis of productive causatives. I have argued that productive causatives embed VoiceP-sized complements and therefore involve a causative configuration in which the causing and caused events are separate and not structurally conflated. Productive causatives uniformly encode indirect causation (I-CAUSE), introduced by the causative head  $v_{\text{CAUS}}$ , which relates a causing event to a caused event without structurally conflating them. Causatives of unergatives and transitive manner verbs were analyzed as involving a double  $v$ P configuration: a thematic active Voice head above the causative  $v$ P introduces the causer, while  $v_{\text{CAUS}}$  selects an embedded thematic active VoiceP that introduces the causee as an external argument and embeds the lower  $v$ P hosting the event introduced by the base predicate. Causatives of transitive result verbs instantiate the same overall configuration, but differ in the internal composition of the embedded predicate. In these cases, the lower  $v$ P decomposes into a dynamic event and a stative result component, corresponding to  $v_{\text{CAUS}}$  and ResP, as also motivated for unaccusative structures. Variation across base verb classes thus follows from the internal structure of the embedded  $v$ P rather than from differences in the causative configuration itself.

Overall, the chapter has established both the descriptive generalizations and the analytical machinery required for the analysis of recursive causatives. By grounding the analysis in a detailed examination of morphosyntactic patterns and event-structural diagnostics, it provides the necessary basis for the structural and empirical investigation of causative recursion developed in the following chapters.





## Chapter 4

# Recursive embedding in productive causatives

### 4.1 Overview

The phenomenon of recursive causativization raises fundamental questions about the morphosyntax of causative constructions in Turkish. At the center of the debate lies the status and the function of the second productive causative suffix in recursive causatives (i.e. double causatives of unergatives and transitives): whether it merely reflects a form of morphological reduplication without independent syntactic contribution (e.g. Key 2013; Harley 2017), or whether it instantiates genuine syntactic recursion, introducing an additional causative event and an associated participant (e.g. Nie 2022). Resolving this issue requires a systematic examination of how recursive causatives affect both event structure and argument realization.

One line of research treats recursive causatives as semantically weak or vacuous, attributing the second causative suffix to effects such as intensification, indirectness, or discourse-related emphasis, often conditioned by the overtness and the position of the causee (e.g. Sebüktekin 1971; Key 2013; Göksel & Kerslake 2005) relative to other event participants available in the surface structure. Under this view, recursive causatives are not expected to introduce an additional causing event associated with a new syntactically represented agent, but to encode an additional indirect causation (Key 2013). However, these claims are largely based on descriptive observations and lack explicit structural diagnostics or systematic empirical testing.

An opposing line of research argues that recursive causatives in Turkish can involve syntactic recursion, whereby a causative head embeds another causative structure, yielding multiple causative events and multiple agentive participants (e.g. Zimmer 1976; Kural 1996; Nie 2022). This approach raises a set of interrelated

questions concerning the status of the intermediary causer: whether it is introduced as an external argument of an intermediate causative event, or instead realized as an adjunct-like participant modifying the higher causative event. Closely related is the question of how recursive causativization interacts with argument realization, particularly in configurations where multiple agentive arguments compete for dative case (Akkuş 2021; Hopperdietzel & Yıldız 2025).

This chapter investigates the potential for syntactic recursion in productive causatives in Turkish by systematically examining the structural constraints that govern recursive embedding and argument realization. Special attention is paid to the contrast between unergative and transitive bases. While unergative predicates provide a comparatively transparent domain for diagnosing recursive event structure (Nie 2022), transitive predicates introduce additional complexity due to the obligatory dative realization of the embedded agent under causativization. As will be shown, this interaction gives rise to strict restrictions on the realization of intermediary causers and plays a central role in shaping the surface patterns observed in recursive causatives of transitives. Beyond resolving the theoretical debate on the nature of causative recursion, this chapter also aims to derive empirically testable predictions. Building on a unified structural analysis, I identify parameters such as argument realization and degrees of indirectness determined by manner/result complementarity that are expected to correlate with recursive causativization. These predictions motivate the empirical investigations pursued in subsequent chapters, where corpus-based evidence is used to evaluate the theoretical claims developed here.

The remainder of this chapter is structured as follows. Section 4.2 establishes the structural constraints on recursive causativization in Turkish. Section 4.2.1 focuses on causatives of ditransitives and the realization of the causee that is restricted by case theory, and argues that adjacent linearization of multiple dative-marked arguments are dispreferred due to Richards (2010)'s distinctness condition, thereby resulting in alternative strategies and variation in argument order through topicalization or scrambling. Section 4.2.2 turns to unergative bases and demonstrates that productive causatives of unergatives provide clear evidence for *v*P- and VoiceP-recursion (cf. Nie 2022), supported by event-structural and agent-oriented diagnostics. Section 4.2.3 extends the analysis of causative recursion in unergative bases to recursive causatives of transitive predicates, where recursive embedding interacts with restrictions of argument realization as evidenced by causatives of ditransitives, and proposes that the intermediary causer cannot be realized as a dative object due to the distinctness condition (Richards 2010); thus, it must either be realized by a postpositional *tarafından* 'by'-phrase or left implicit. Section 4.3 discusses alternative analyses proposed in the literature and

addresses interspeaker variation in the realization of intermediary arguments. Section 4.4 develops a unified proposal that integrates the structural findings of Section 4.4 with broader empirical predictions involving the split analysis of transitive predicates as defined in terms of manner/result complementarity. Under this section, I discuss implications of root sensitivity in argument realization, patterns of argument omission and event dependence determined by the lexical-semantic constraints of manner and result roots, and how recursive causativization of transitive manner and result verbs correlates with degrees of indirectness determined by the interaction of manner/result complementarity and argument realization.

## 4.2 Causative recursion and intermediary arguments

Turkish productively allows the recursive application of causative morphology, yielding structures in which more than one causative suffix appears on a single verbal stem. As illustrated in (180), such configurations give rise to a monoclausal case alignment in which the initiator is realized in the nominative, the embedded agent (the causee) in the dative, and the theme in the accusative. Crucially, however, recursive causativization does not permit the free realization of multiple dative-marked agentive arguments. Building on the distinctness condition (Richards 2001; Richards 2010), I argue that configurations in which both the intermediary causer and the causee would be realized as dative-marked DPs, as in (180a), within the same spell-out domain are systematically excluded (Hopperdietzel & Yıldız 2025). As a result, the intermediary causer must either be realized by a postpositional *tarafından* ‘by’-phrase, as in (180b), or remain implicit, as in (180c).

- (180) a. \*Müdür<sub>INIT</sub> öğretmen-e<sub>CAUSER</sub> öğrenci-ye<sub>CAUSEE</sub> kitab-ı<sub>THEME</sub>  
 principal teacher-DAT student-DAT book-ACC  
 oku-t-tur-du.  
 read-CAUS-CAUS-PST  
 ‘The principal had the teacher make the student read the book.’
- b. Müdür<sub>INIT</sub> öğretmen tarafından<sub>CAUSER</sub> öğrenci-ye<sub>CAUSEE</sub> kitab-ı<sub>THEME</sub>  
 principal teacher by student-DAT book-ACC  
 oku-t-tur-du.  
 read-CAUS-CAUS-PST  
 ‘The principal had the teacher make the student read the book.’
- c. Müdür<sub>INIT</sub> öğrenci-ye<sub>CAUSEE</sub> kitab-ı<sub>THEME</sub> oku-t-tur-du.  
 principal student-DAT book-ACC read-CAUS-CAUS-PST  
 ‘The principal had (the teacher make) the student read the book.’

More generally, productive causatives in Turkish may combine with another productive causative suffix to derive recursive causatives. In such cases, the second causative suffix does not merely reiterate causative morphology, but encodes an additional layer of indirect causation. This layer allows for the introduction of an intermediary causer that simultaneously functions as the causee of the higher causing event and as the causer of the intermediate/lower causing event. Importantly, the realization of this intermediary causer is constrained by the same structural considerations that govern recursive causativization more broadly: while it may be overtly expressed via a *tarafından* 'by'-phrase, it cannot surface as a second dative-marked DP (e.g. Kural 1996; Akkuş 2021). The remainder of this section shows how these constraints follow from principles of argument realization.

#### 4.2.1 Ditransitives and the distinctness condition

When intransitive predicates are causativized, the causee is realized as an accusative-marked object, whereas in the causativization of transitive predicates, the causee surfaces with dative case. This contrast in case alignment has been shown to correlate with the argument-structural properties of the base predicate and with the availability of structural positions for argument realization (see Chapter 3). Importantly, this generalization has so far been restricted to intransitive and transitive bases. Causativization of ditransitive predicates, and the question of how the agent of embedded ditransitive predicates may be integrated into an already saturated argument structure, has not yet been addressed. That is to say, the argument structure of ditransitives is already maximally articulated, showing a monoclausal NOM/DAT/ACC case alignment, as in (181a).

Since causativization affects the case realization of the embedded agent, causatives of ditransitives are not allowed when two adjacent dative arguments are articulated in their base-generated positions (e.g. Kural 1996; Öztürk 2005; Akkuş 2021; but see Göksel 1993), as in (181b). The restriction against adjacent dative arguments becomes particularly visible in causatives of ditransitive predicates, where the base verb independently selects a dative recipient. When such predicates are causativized, the embedded agent is likewise realized with dative case, yielding configurations in which two dative arguments would have to be realized side by side, as in (181b). As shown in (181c) and (181d), the restrictions against two adjacent dative arguments are resolved, either by realizing the causee as a postpositional phrase or by leaving it implicit. This pattern suggests that the unavailability of causativized ditransitives does not follow from properties of individual arguments, but from structural constraints on how dative-marked arguments may be accommodated in the base-generated argument structure. The

dispreference for double dative arguments reflects a more general constraint against multiple assignment of the same structural case within a single clause (cf. Comrie 1974; Zimmer 1976).

(181) *Causatives of ditransitives*

- a. Ece<sub>AGENT</sub> Oya'ya<sub>REC</sub> bisiklet-i<sub>THEME</sub> ver-di.  
 Ece Oya-DAT bike-ACC give-PST  
 'Ece gave Oya the bike.'
- b. \*Ece<sub>CAUSER</sub> Ada-ya<sub>CAUSEE</sub> Oya'ya<sub>REC</sub> bisiklet-i<sub>THEME</sub> ver-dir-di.  
 Ece Ada-DAT Oya-DAT bike-ACC give-CAUS-PST  
 'Ece made Ada give Oya the bike.'
- c. Ece<sub>CAUSER</sub> Ada tarafından<sub>CAUSEE</sub> Oya'ya<sub>REC</sub> bisiklet-i<sub>THEME</sub> ver-dir-di.  
 Ece Ada by Oya-DAT bike-ACC give-CAUS-PST  
 'Ece made Ada give Oya the bike.'
- d. Ece<sub>CAUSER</sub> Oya'ya<sub>REC</sub> bisiklet-i<sub>THEME</sub> ver-dir-di.  
 Ece Oya-DAT bike-ACC give-CAUS-PST  
 'Ece made (someone) give Oya the bike.'

The realization of the causee within a *tarafından* 'by'-phrase in causatives of ditransitives is consistent with what Comrie (1974) identifies as "a paradigm case". According to Comrie (1974: 7), when ditransitives are causativized, the causee is expressed a by-phrase precisely in cases where the embedded predicate selects both a direct and an indirect object, as illustrated in (182b), taken from Comrie (1974: 7). This strategy avoids configurations in which two dative-marked arguments would otherwise be realized within the same clause.

- (182) a. Müdür Hasan'a mektub-u göster-di.  
 director Hasan-DAT letter-ACC show-PST  
 'The director showed the letter to Hasan.'
- b. Dişçi Hasan'a mektub-u müdür tarafından göster-t-ti.  
 dentist Hasan-DAT letter-ACC director by show-CAUS-PST  
 'The dentist made the director show the letter to Hasan.'

At the same time, Comrie (1974: 12) notes that constructions involving two dative-marked arguments may be marginally acceptable under specific conditions. In particular, he observes that such configurations require the sentence to be rephrased so that the two dative-marked arguments are not realized adjacent to each other. As shown in (183a) and (183b), taken from Comrie (1974: 7), acceptability improves when the theme argument intervenes linearly between the two dative-marked arguments. Importantly, these cases do not involve a simple doubling of dative arguments in their base-generated positions, but instead rely on rearrangements of arguments in terms of linear order.

- (183) a. \*Dişçi müdür'e Hasan'a mektub-u göster-t-ti.  
dentist director-DAT Hasan-DAT letter-ACC show-CAUS-PST  
'The dentist made the director show the letter to Hasan.'
- b. ?Dişçi müdür'e mektub-u Hasan'a göster-t-ti.  
dentist director-DAT letter-ACC Hasan-DAT show-CAUS-PST  
'The dentist made the director show the letter to Hasan.'

These observations indicate that the availability of multiple dative-marked arguments in a single clause is constrained by the interaction of linear displacement and the structural source of the datives involved. Subsequent work establishes linear order as a decisive factor: Zimmer (1976:411, fn. 12) attributes variability in acceptability judgments to configurations in which several noun phrases are realized consecutively, noting that degradation arises when multiple DPs occur in a row, while alternative orderings, such as (184), are judged acceptable. This finding converges with Sebüktekin (1971: 82), who shows for causatives of ditransitives that sentences containing two dative-marked arguments are acceptable only when the causee precedes the indirect object of the base predicate, as in (185), with deviations leading to degraded judgments or interpretive ambiguity.

- (184) Bize mektub-u Hasan'a göster-t-ti-ler.  
1PL.DAT letter-ACC Hasan-DAT show-CAUS-PST-3PL  
'They made us show the letter to Hasan.'
- (185) Bana para-yı Mehmet'e ver-dir-di.  
1SG.DAT money-ACC Mehmet-DAT give-CAUS-PST  
'He had me give the money to Mehmet.'

At the same time, the data suggest that not all double-dative configurations are equally ill-formed: as observed by Zimmer (1976:411, fn. 12) and Knecht (1986: 110) (cf. Çetinoğlu 2009: 84; see also Dede 1984), sentences degrade most strongly when both datives are structurally derived, whereas acceptability improves when one dative corresponds to an argument selected by the embedded predicate, such as a recipient or beneficiary, as illustrated in (186).

- (186) a. Ali kız-a et-i kes-ti.  
Ali girl-DAT meat-ACC cut-PST  
'Ali cut the meat for the girl.'
- b. Kız-a et-i Ali'ye kes-tir-di-m.  
girl-DAT meat-ACC Ali-DAT cut-CAUS-PST-1SG  
'I made Ali cut the meat for the girl.' (Knecht 1986: 110)

Related observations are reported by Göksel (1993: 216), who argues that word order plays a crucial role in determining the interpretation of sentences with

multiple dative-marked arguments. In particular, reordering the arguments may give rise to ambiguity regarding which dative argument corresponds to the causee and which corresponds to the recipient, as illustrated in (187a) and (187b). Such effects become more problematic by the relatively free word order of Turkish.

- (187) a. Baba-m-a                      çocuklar-a    masal anlat-tır-dı-m.  
           father-1SG.POSS-DAT children-DAT story tell-CAUS-PAST-1SG  
           (i) 'I had my father tell stories to the children.'  
           (ii) \*'I had the children tell stories to my father.'
- b. Çocuklar-a    masal anlat-tır-dı-m    baba-m-a.  
           children-DAT story tell-CAUS-PAST-1SG father-1SG.POSS-DAT  
           (i) 'I had my father tell stories to the children.'  
           (ii) 'I had the children tell stories to my father.'

In (186b), both the beneficiary and the causee are realized with dative case. A comparison of this example with (187b) shows that the frequently cited word order preference whereby the causee precedes the indirect object cannot be maintained as a categorical rule. If that preference were enforced uniformly, (186b) would be interpreted as *I made the girl cut the meat for Ali*, contrary to fact. Rather than indicating free variation, this contrast points to a deeper asymmetry between the two dative arguments. In cases such as (186b), one of the datives corresponds to an argument selected by the embedded transitive predicate, while the other is introduced above causativization.

A further issue concerns verb-sensitive variation in the availability of multiple dative-marked arguments. While some predicates allow two dative objects within a single clause under strict linear ordering conditions, such that the interpretation of event participants depends on their relative position, other predicates categorically exclude such configurations altogether. Independent support for this kind of lexical sensitivity comes from the distribution of dative-marked beneficiaries, which are allowed in some classes of predicates, for instance, in verbs of creation, but disallowed in others (see Knecht 1986; see Chapter 5).

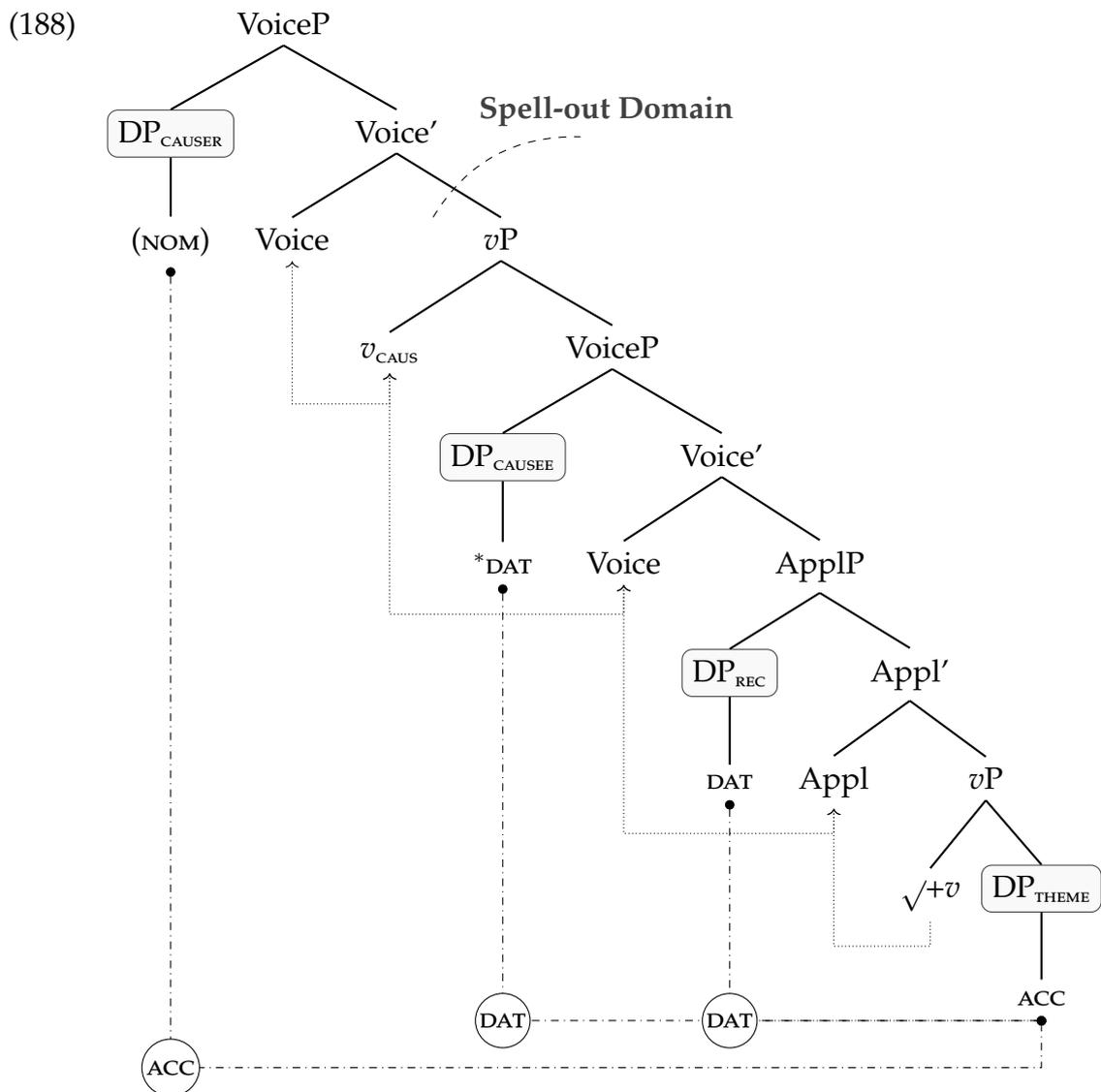
Crucially, these observations contrast with stronger claims in the literature that Turkish categorically disallows multiple objects bearing the same case within a single clause. Öztürk (2005:41, fn. 14) explicitly argues that Turkish does not permit doubling of case-marked objects, including both accusative and dative case (see also Kural 1996). Overall, the apparent counterexamples to a ban on multiple datives systematically involve displacement, reordering, or non-canonical realization of arguments, rather than the coexistence of two dative arguments in their base-generated positions, including cases such as (187a), which involve omission of the causer. Many of the examples cited in support of the co-existence of

two dative-marked arguments rely on *pro*-drop of the causer and the topicalization or the dislocation of other arguments, yielding surface orders that do not reflect base-generated argument positions. Under these conditions, the placement of the theme argument plays a decisive role in grammaticality judgments, since most such examples are constructed with the direct object intervening linearly between the two dative-marked arguments. In this respect, the apparent availability of multiple dative-marked arguments reflects discourse-driven reordering strategies such as topicalization and argument omission, rather than independent licensing of multiple dative arguments by the underlying argument structure. For instance, as apparent from the examples so far, judgments improve if one of the datives is extracted from its base position, e.g. via left dislocation, right dislocation, or scrambling (e.g. Knecht 1986).

Overall, the observations reviewed so far suggest that configurations with two dative-marked arguments are acceptable precisely when only one of them is structurally derived, whereas sentences degrade when both datives arise from the same derivational source. More generally, the patterns discussed in this section indicate that the acceptability of multiple-dative configurations is tightly constrained once base-generated argument positions are taken into account. Apparent counterexamples systematically rely on displacement, reordering, argument omission, or other non-canonical realizations, rather than on the coexistence of two dative arguments in their underlying structural positions. At the same time, the literature offers divergent descriptive claims concerning the status and licensing of such dative arguments, ranging from analyses that appeal to word order and discourse effects to those that posit lexical or construction-specific exceptions. These discrepancies point to an empirical gap in our understanding of how multiple dative arguments are integrated into the argument structure of causative constructions. Addressing this gap requires a structural analysis that distinguishes between base-generated and dislocated dative arguments and that systematically controls for the interaction between argument realization and syntactic configuration, a task taken up in the following sections.

Adopting a phase-based dependent case approach (Harley 1995; Baker 2015), Hopperdietzel & Yıldız (2025) argue that the dispreference for configurations involving two dependent dative arguments within a single clause follows from Richards (2010)'s distinctness condition, which constrains linearization at PF. On this view, linearization applies at the spell-out of each phase, and elements contained within a single spell-out domain must be sufficiently distinguishable for a linear order to be computed. Richards (2010) formalizes this requirement as a ban on linearization statements of the form  $\langle \alpha, \alpha \rangle$ , which are uninterpretable at PF (Richards 2010: 5). When a causative *v*P selects a Voice projection that introduces

a dependent dative-marked argument (the causee) into a structure that already contains a dependent dative argument (the recipient) within the same phase, the resulting representation contains two morphosyntactically identical DPs within a single spell-out domain given the monoclausal case alignment. Because both arguments bear the same dependent case feature, they are indistinguishable for the purposes of linearization, as in (189a). The structure presented in (188) therefore fails to be linearized at PF (Hopperdietzel & Yıldız 2025). This account derives the unacceptability of such configurations without recourse to surface word order or discourse-related factors: the violation arises at spell-out, prior to linear ordering.



Under this analysis, the restriction against two dative arguments in their base-generated positions reflects a structural limitation on argument realization within a single (root) phase, in which two dependent datives are introduced within the same spell-out domain and the resulting structure with double datives violates the distinctness condition in causatives of ditransitives. The unacceptability follows

from the interaction of dependent case assignment and phase-based spell-out, rather than from independent constraints on scrambling or information structure. To rescue the derivation and satisfy the distinctness condition, speakers may resort to a range of alternative strategies that alter the surface realization of arguments while preserving the intended interpretation. Several such strategies have already been concisely discussed above. One option consists in realizing the causee within a postpositional *tarafından* ‘by’-phrase (Comrie 1974; Kural 1996), as in (189b), or drop the causee argument from the surface structure. Another option involves reordering the internal arguments of the embedded verb such that the theme intervenes linearly between the causee and the indirect object (Knecht 1986; Sebüktekin 1971), effectively avoiding configurations in which two dative-marked arguments are adjacently realized, as in (189a). Importantly, these strategies are not restricted to causative constructions, but reflect more general mechanisms for resolving conflicts in argument realization, as in (190), taken from Knecht (1986: 104) and as in (191), adopted from Akkuş (2021: 263). A detailed discussion of these alternative strategies and interspeaker variation in the context of recursive causatives of transitives is provided in Section 4.3.

- (189) a. \*Ece Ada-ya Oya’ya bisiklet-i ver-dir-di.  
 Ece Ada-DAT Oya-DAT bike-ACC give-CAUS-PST  
 ‘Ece made Ada give Oya the bike.’  
 b. Ece Ada tarafından Oya’ya bisiklet-i ver-dir-di.  
 Ece Ada by Oya-DAT bike-ACC give-CAUS-PST  
 ‘Ece made Ada give Oya the bike.’
- (190) a. \*Hediye-yi Tokay-a hoca-ya ver-di-m.  
 present-ACC Tokay-DAT teacher-DAT give-PST-1SG  
 ‘I gave the present to the teacher for Tokay.’  
 b. Hediye-yi Tokay için hoca-ya ver-di-m.  
 present-ACC Tokay for teacher-DAT give-PST-1SG  
 ‘I gave the present to the teacher for Tokay.’
- (191) a. \*Ben arkadaş-ım-a fotokopici-ye fotokopi çek-tir-di-m.  
 I friend-1SG.POSS-DAT copy.shop-DAT photocopy pull-CAUS-PST-1SG  
 ‘I made the copy shopper xerox papers for my friend.’  
 b. Ben arkadaş-ım için fotokopici-ye fotokopi çek-tir-di-m.  
 I friend-1SG.POSS for copy.shop-DAT photocopy pull-CAUS-PST-1SG  
 ‘I made the copy shopper xerox papers for my friend.’

The availability of such repair strategies underscores that the unacceptability of configurations with two dependent datives does not reflect a general ban on causativization or argument multiplication, but rather a constraint on how

arguments may be realized within a single spell-out domain. Crucially, these restrictions become visible only in configurations where causativization interacts with already saturated argument structures, as in ditransitives. In the following subsection, I turn to unergative bases, which lack the kind of internal argument competition for case. As will be shown, recursive causativization in unergatives provides independent evidence for *v*P- and VoiceP-recursion, allowing the structural availability of causative embedding to be examined in the absence of the argument-realization constraints discussed here.

#### 4.2.2 *v*P-recursion and evidence from unergatives

Turkish allows recursive embedding in productive causatives, in which a causative layer embeds already causativized unergative and transitive verbs (cf. Nie 2022). Since causativization of unergatives marks the causee in the accusative, as in (192a), double causativization of unergatives shows the expected ditransitive NOM/DAT/ACC alignment with the dative-marked causer, as in (192b).

- (192) a. Öğretmen<sub>CAUSER</sub> Ece-yi<sub>CAUSEE</sub> koş-tur-du.  
 teacher Ece-ACC run-CAUS-PST  
 ‘The teacher made Ece run.’
- b. Müdür<sub>INIT</sub> öğretmen-e<sub>CAUSER</sub> Ece-yi<sub>CAUSEE</sub> koş-tur-t-tu.  
 principal teacher-DAT Ece-ACC run-CAUS-CAUS-PST  
 ‘The principal had the teacher make Ece run.’

Focusing on unergative predicates, Nie (2022) provides support for this conclusion. She argues that productive affixal causatives of unergatives in Turkish are genuinely recursive and permit the embedding of multiple causing events. Adopting the flavors-of-little-*v* approach (e.g. Folli & Harley 2005; Cuervo 2003; Legate 2014), which allows one *v*P to embed another *v*P of potentially different type, Nie maintains that a causative *v*P should in principle be able to embed a second causative *v*P. On this view, recursive causatives of unergatives involve two causing events in addition to the caused event, yielding a tri-eventive structure with three distinct agents (Nie 2022: 5). The analysis proposed by Nie (2022: 10) assumes a layered verbal architecture in which a causative *v*P introduces causative semantics and embeds a Voice projection responsible for the introduction of the causee. Crucially, this causative *v*P itself may be selected by a higher causative *v*P, yielding a recursive configuration in which multiple causative events are structurally represented. Under this view, recursive causativization is derived through successive embedding of causative *v*Ps, with each layer contributing an additional causative semantics and its associated participant, while preserving a monoclausal structure.

Nie (2022) supports her proposal with independent diagnostics for eventhood, thereby establishing that recursive causatives of unergatives are structurally and semantically well-formed (*pace* Key 2013). I present below two of Nie (2022: 5–9)’s diagnostics, namely *again*-modification and manner modification, to support the availability of recursive embedding in double causatives of unergative predicates. Adopting her approach, I further extend the empirical basis by introducing additional evidence from agent-oriented modification using my own data, which serves to diagnose the presence of three distinct Voice layers introducing the initiator, the intermediary causer, and the causee.

The adverb *again* has been extensively used in the event decomposition literature as a diagnostic for event structure (e.g. Dowty 1979; von Stechow 1996; Martin & Schäfer 2014), on the assumption that *again* introduces a presupposition that a relevant event has occurred at least once before (Nie 2022: 5). Building on this diagnostic, Nie (2022: 5) shows, on the basis of carefully controlled contexts, that double causatives of unergatives in Turkish embed two distinct causative *v* layers, each associated with an independently introduced event participant. Under this analysis, double causativization of unergatives is predicted to give rise to three possible scope readings of *again*, corresponding to its attachment to the higher *v*P, the intermediate *v*P, or the lower *v*P, as in (193): CAUS<sub>2</sub> represents the higher *v* layer, CAUS<sub>1</sub> the intermediate *v* layer, and V the lower *v* layer.

(193) Baba-sı öğretmen-e Mary-yi yine koş-tur-t-tu.  
 father-3SG.POSS teacher-DAT Mary-ACC again run-CAUS-CAUS-PST  
 ‘Her father made the teacher make Mary run again.’ (Nie 2022: 5)

a. *again* CAUS<sub>2</sub> > CAUS<sub>1</sub> > V

*It is sports day at school. Mary wanted to play volleyball in the morning, but her father asked the teacher to make her run instead. In the afternoon her father made the teacher make Mary run again.*

b. CAUS<sub>2</sub> > *again* CAUS<sub>1</sub> > V

*Mary wanted to play volleyball in the morning, but the teacher made her run instead. However, her father wasn’t watching. So in the afternoon her father made the teacher make Mary run again.*

c. CAUS<sub>2</sub> > CAUS<sub>1</sub> > *again* V

*Mary ran around the field in the morning, but her father wasn’t watching. So in the afternoon her father made the teacher make Mary run again.*

Nie (2022) argues that the availability of these readings in sentences with the adverbial *yine* ‘again’ constitutes direct evidence for the presence of three syntactically represented events in recursive causatives in Turkish. Note that, in principle, *yine* may also scope over the higher Voice, yielding a reading that targets the

initiator’s activity. This potential reading is not discussed or exemplified in Nie (2022), but see Chapter 3 for various readings of *yine*, yielding three readings for lexical causatives and four readings for productive causatives.

Nie (2022: 6) employs manner adverb modification using *sessizce* ‘quietly’ as a diagnostic for event decomposition by systematically alternating the surface position of the adverb and observing the resulting scope interpretations, as illustrated in (194) and (195). The examples are inspired by Nie (2022: 6)’s examples. The distribution of the adverb yields a restricted set of scope interpretations, which directly reflect the availability of distinct attachment sites corresponding to the embedded *v* layers. Rather unexpectedly, the adverb does not freely associate with all events in the structure as it would have otherwise been expected when it is used preverbally, as in (195). In (194), where the adverb precedes the embedded causee and follows the intermediary causer, *sessizce* may scope over either the higher *v* layer or the intermediate one. A reading in which the adverb modifies the lower *v* layer is unavailable. By contrast, in (195), where the adverb follows the causee, it may scope over the higher *v* layer or the lower one, but not over the intermediate one. These contrasts are listed below each example.

(194) Anne-si                    Ayşe-ye sessizce Ece-yi konuş-tur-t-tu.  
 mother-3SG.POSS Ayşe-DAT quietly Ece-ACC talk-CAUS-CAUS-PST  
 ‘Her mother had Ayşe make Ece talk quietly.’

- a. quietly CAUS<sub>2</sub> > CAUS<sub>1</sub> > V
- b. CAUS<sub>2</sub> > quietly CAUS<sub>1</sub> > V
- c. \*CAUS<sub>2</sub> > CAUS<sub>1</sub> > quietly V

(195) Anne-si                    Ayşe-ye Ece-yi sessizce konuş-tur-t-tu.  
 mother-3SG.POSS Ayşe-DAT Ece-ACC quietly talk-CAUS-CAUS-PST  
 ‘Her mother had Ayşe make Ece talk quietly.’

- a. quietly CAUS<sub>2</sub> > CAUS<sub>1</sub> > V
- b. \*CAUS<sub>2</sub> > quietly CAUS<sub>1</sub> > V
- c. CAUS<sub>2</sub> > CAUS<sub>1</sub> > quietly V

The relevant observation is that certain readings are systematically unavailable depending on the placement of the adverb, despite the theoretical expectation that each causative *vP* should in principle constitute an independent attachment site for manner modification (Pylkkänen 2008; Alexiadou et al. 2015). Under a compositional view of causative recursion, this expectation follows straightforwardly from the assumption that each *v* layer introduces a distinct event variable.

This creates a tension in Nie (2022)’s conclusion that manner modification diagnoses the presence of three structurally represented events. On the one

hand, the theory predicts that manner adverbs should be able to modify each eventive layer independently. On the other hand, the empirical pattern she reports shows that manner adverbs appear to access only a subset of these events, with their interpretations modulated by surface word order. Nie (2022: 6) herself acknowledges this mismatch, noting that it is unclear why manner adverbs seem to attach at only two sites and suggesting that information-structural factors may be involved. However, this move leaves the core issue unresolved: if information structure restricts adverbial attachment, then manner modification no longer provides a transparent diagnostic for the number of syntactically represented events. Consequently, the evidential force of manner adverb diagnostics must be evaluated with caution. While the observed interpretive contrasts are compatible with a tri-eventive analysis of double causatives, they do not straightforwardly follow from the structural predictions of recursive *v*P embedding alone. The conclusion that double causatives of unergatives involve three events therefore cannot rest on manner adverb modification in isolation, but requires corroboration from diagnostics whose interpretive possibilities are more directly constrained by syntactic structure rather than by surface order or discourse-related factors.

For this reason, a more reliable diagnostic is needed, one that directly targets the introduction of event participants rather than relying on the scope behavior of manner modification. I now turn to agent-oriented modification, which offers a direct test that supports the presence of three Voice layers in double causatives of unergatives. Agent-oriented modification serves as a diagnostic for the presence of a thematic Voice layer, a notion discussed extensively in Chapter 3. In causative structures that select VoiceP, agent-oriented adverbs are therefore expected to give rise to scope ambiguities corresponding to the number of agentive events introduced in the syntax. I test this prediction for double causatives of unergatives using *isteksizce* ‘reluctantly’, as in (196). The prediction is that the adverb should license three distinct interpretations, each targeting a different agentive participant. The presentation of contextualized readings follows the methodology adopted by Nie (2022), demonstrating a three-way ambiguity that reflects the adverb’s control over each agentive argument.

- (196) Müdür memur-a görevli-yi isteksizce çalış-tır-t-tı.  
 supervisor officer-DAT attendant-ACC reluctantly work-CAUS-CAUS-PST  
 ‘The supervisor had the officer make the attendant work reluctantly.’

a. reluctantly CAUS<sub>2</sub> > CAUS<sub>1</sub> > V

*The supervisor reluctantly instructed the officer to make the attendant work, showing little desire to be involved. Despite this, the officer efficiently carried out the order without any signs of reluctance.*

b. CAUS<sub>2</sub> > reluctantly CAUS<sub>1</sub> > V

*The supervisor ordered the officer to make the attendant work, but the officer hesitated and carried out the supervisor's orders reluctantly. The attendant worked without any issues, but the officer's reluctance affected the lower causative process.*

c. CAUS<sub>2</sub> > CAUS<sub>1</sub> > reluctantly V

*The supervisor ordered the officer to instruct the attendant to start working. However, the attendant seemed unwilling and worked reluctantly. The attendant worked reluctantly, following the orders from the officer and the supervisor.*

The first interpretation in (a) indicates that *isteksize* scopes over the higher Voice layer, thereby modifying the initiator. The second interpretation in (b) shows that it scopes over the intermediate Voice layer, modifying the intermediary causer. Finally, the interpretation in (c) demonstrates that the adverb scopes over the lower Voice layer, targeting the caused event and controlling the causee. Overall, these readings provide direct evidence for the presence of three syntactically distinct *v* layers and their associated agents in double causativization of unergatives in Turkish, contrary to the conclusions reached by Key (2013).

Building on Nie (2022), I argue that the structural evidence for recursive embedding in productive causatives of unergatives provides a necessary stepping stone for extending the analysis to productive causatives of transitives. The crucial point is not merely that recursive embedding is available, but that it comes with systematic consequences for the realization of agentive arguments. In particular, once a transitive predicate is causativized, its embedded agent is realized with dative case. This immediately creates a structural bottleneck: the intermediary causer introduced under recursive causativization cannot also surface as a dative-marked argument (Zimmer 1976; Kural 1996; Akkuş 2021). In the following, I propose an analysis of recursive causatives of transitives and the realization of intermediary arguments.

### 4.2.3 Recursive causativization of transitives

Any extension of Nie (2022)'s recursive *vP* analysis to transitives must confront the interaction between recursive embedding and case assignment head-on. In this respect, it is important to note that the core empirical basis for Nie (2022)'s argumentation comes from unergative predicates, where no competing internal arguments are present. As the discussion below will show, recursive causatives of transitive predicates introduce additional complexity precisely because the causee, that is, the embedded agent of the transitive base verb, is obligatorily realized with

dative case when overtly realized. Recursive causatives of transitive predicates are constructed such that three agentive roles are implicated: the initiator realized in the nominative, the embedded agent (the causee) realized in the dative, and the intermediary causer expressed by the postposition *tarafından* ‘by’-phrase. (197) illustrates stepwise causativization of the transitive manner verb *oku-* ‘read’.

- (197) a. Ece<sub>AGENT</sub> bir kitap<sub>THEME</sub> oku-du.  
 Ece a book read-PST  
 ‘Ece read a book.’
- b. Oya<sub>CAUSER</sub> Ece’ye<sub>CAUSEE</sub> bir kitap<sub>THEME</sub> oku-t-tu.  
 Oya Ece-DAT a book read-CAUS-PST  
 ‘Oya made Ece read a book.’
- c. \*Emre<sub>INIT</sub> Oya’ya<sub>CAUSER</sub> Ece’ye<sub>CAUSEE</sub> bir kitap<sub>THEME</sub> oku-t-tur-du.  
 Emre Oya’ya Ece-DAT a book read-CAUS-CAUS-PST  
 ‘Emre had Oya make Ece read a book.’
- d. Emre<sub>INIT</sub> [Oya tarafından]<sub>CAUSER</sub> Ece’ye<sub>CAUSEE</sub> bir kitap<sub>THEME</sub> oku-t-tur-du.  
 Emre Oya by Ece-DAT a book  
 read-CAUS-CAUS-PST  
 ‘Emre had Oya make Ece read a book.’
- e. Emre<sub>INIT</sub> Ece’ye<sub>CAUSEE</sub> bir kitap<sub>THEME</sub> oku-t-tur-du.  
 Emre Ece-DAT a book read-CAUS-CAUS-PST  
 ‘Emre had (someone/Oya make) Ece read a book.’

The data show that the intermediary causer cannot be realized as a second dative argument, as in (197c): it must either be expressed in a postpositional *tarafından* ‘by’-phrase, as in (197d), or remain implicit, as in (197e). These patterns indicate that while recursive embedding is structurally available for productive causatives of transitives, it is tightly constrained by the requirements of argument realization and case assignment, a point that will be central to the analysis developed in the remainder of this section. As a side note, given that the embedded transitive predicate independently allows dative-marked beneficiary arguments, the interpretations illustrated in the data do not exhaust the full range of logically available readings. For instance, (197e) may also receive a reading along the lines of ‘Emre had (someone make) someone else read a book to Ece’. However, since the focus here is on stepwise causativization and the structural realization of agentive arguments, such additional recipient- or beneficiary-based interpretations will not be pursued at this stage.

The availability of a *tarafından* phrase for the intermediary causer has been repeatedly noted in the literature on Turkish causatives (Comrie 1974; Zimmer

1976; Kural 1996). Importantly, the frequent absence of an overt *tarafından*-phrase does not reflect a special semantic property of the intermediary causer, but follows from the structural options made available by recursive causativization. Once the intermediary causer cannot be realized as a dative-marked DP due to case-related constraints, its overt realization becomes optional, with the postpositional strategy serving as a repair when explicit reference to that participant is required.

Zimmer (1976: 406) argues that the interpretation of the *tarafından*-phrase, as in (198), would never be the causee; instead, it is the intermediary causer, where “a double causative was simplified by dropping one of the causative morphemes”; thus, a dative-marked argument is interpreted as the agent of the embedded transitive (see Zimmer 1976: 411–412), which frames the analysis of recursive causatives with the null causee, as in (199a), and the overt causee, as in (199b).

- (198) \*Kapı-yı Hasan tarafından aç-tır-dı-m.  
 door-ACC Hasan by open-CAUS-PST-1SG  
 ‘I had Hasan have the door opened.’  
 \*‘I made Hasan open the door.’ (Zimmer 1976: 406)

- (199) a. Kapı-yı Hasan tarafından aç-tır-t-tı-m.  
 door-ACC Hasan by open-CAUS-CAUS-PST-1SG  
 ‘I had Hasan have the door opened.’  
 b. Kapı-yı Hasan tarafından Ece’ye aç-tır-t-tı-m.  
 door-ACC Hasan by Ece-DAT open-CAUS-CAUS-PST-1SG  
 ‘I had Hasan make Ece open the door.’

These data support the assumption that the dative-marked object in recursive causatives of transitives corresponds invariably to the causee (i.e. the agent of the embedded transitive predicate), which begs an empirical question that requires experimental justification. Consequently, the additional intermediary agent introduced through causative recursion is forced into a *tarafından*-phrase, since the causee is present in the structure, occupying the unique dative case assignment syntactically, even when it is not overtly realized. For more support on this, Kural (1996: 60) formalizes this restriction: “[w]hen a transitive verb is causativized the second time in Turkish, the fourth argument must appear as a *by*-phrase, because there can only be a single dative argument in a clause”, as in (200b).

- (200) a. \**pro* Ayşe’ye Ali-ye soğanlar-ı doğra-t-tır-dı-m.  
 1SG Ayşe-DAT Ali-DAT onions-ACC chop-CAUS-CAUS-PST-1SG  
 ‘I made Ayşe make Ali chop the onions.’  
 b. *pro* [Ayşe tarafından] Ali-ye soğanlar-ı doğra-t-tır-dı-m.  
 1SG Ayşe by Ali-DAT onions-ACC chop-CAUS-CAUS-PST-1SG  
 ‘I made Ayşe make Ali chop the onions.’ (Kural 1996: 60)

The data in (201) demonstrate that the recursive application of the causative morpheme does not permit an unlimited proliferation of overt intermediate agents. Specifically, while a single agentive *tarafından*-phrase is licensed in (201a), the introduction of a second *tarafından*-phrase in (201b) results in ungrammaticality. This restriction indicates that the syntactic constraints on causative recursion extend beyond the well-documented prohibition against multiple dative-marked arguments in their base-generated positions. The ill-formedness of (201b) suggests a structural economy principle or a strict limit on the available specifier positions for PP agents within the causative complex. Just as the Turkish causative configuration forbids the doubling of the dative DPs, it likewise fails to provide the requisite structural anchors for multiple *tarafından* oblique agents. Consequently, the capacity for morphological recursion in Turkish exceeds its capacity for argument realization, rendering triple causatives of unergatives and transitives with fully realized agents empirically unattested.

- (201) a. *pro* [Ayşe tarafından] Ali-ye soğan-lar-ı  
 1SG Ayşe by Ali-DAT onion-PL-ACC  
 doğra-t-tır-dı-m.  
 chop-CAUS-CAUS-PST-1SG  
 ‘I made Ayşe make Ali chop the onions.’
- b. \**pro* [Ahmet tarafından] [Ayşe tarafından] Ali-ye soğan-lar-ı  
 1SG Ahmet by Ayşe by Ali-DAT onion-PL-ACC  
 doğra-t-tır-t-tı-m.  
 chop-CAUS-CAUS-CAUS-PST-1SG  
 I made Ahmet make Ayşe make Ali chop the onions. (Kural 1996: 60)

The fact that the PP causer argument is shown in square brackets is meant to reflect its implicitness in cases when it is not overtly realized, which I analyze below similarly to the agent in passive constructions. Knecht (1986: 115) argues for a unified analysis of agent phrases, rejecting the theoretical redundancy of positing distinct sources for *tarafından*-phrases in causatives and passives. In both configurations, the external argument is structurally suppressed and may only be realized as a postpositional phrase via *tarafından* (Comrie 1974, Zimmer 1976; Knecht 1986; Kural 1996), as in (202).

- (202) Yemek aşçı tarafından piş-ir-il-di.  
 food chef by COOK-CAUS-PASS-PST  
 ‘The food was cooked by the chef.’

I argue that due to the distinctness condition (Richards 2001; Richards 2010), double causatives of transitive predicates systematically disallow the intermediary causer to be realized as a dative-marked DP when the embedded agent is overtly expressed

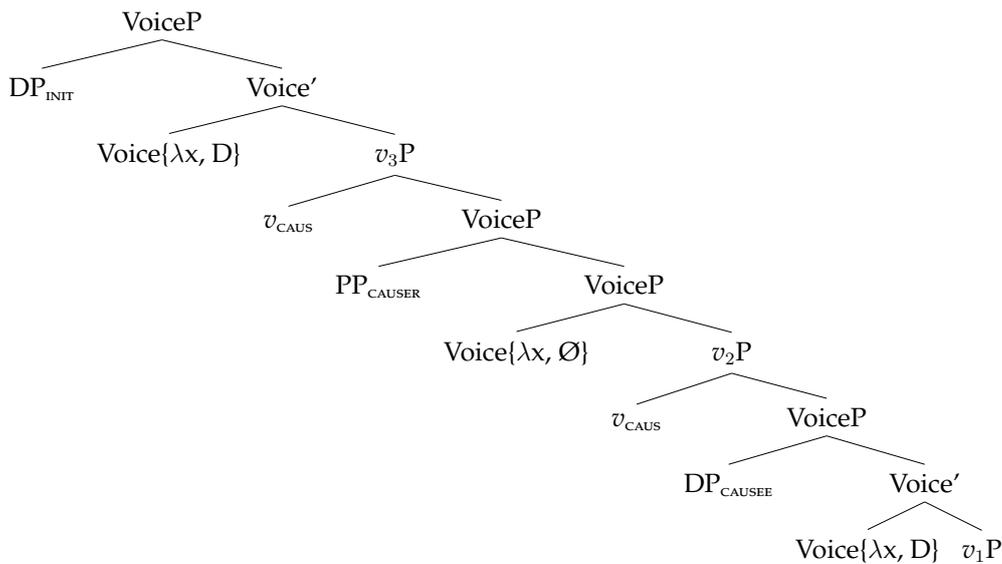
(Kural 1996). Under recursive causativization, both the causer introduced below the higher causative layer and the causee introduced below the lower causative layer, corresponding to the embedded agent of the transitive predicate, are contained within the same spell-out domain, predicting a monoclausal case alignment as supported by the case alignment of causatives of ditransitives. As a result, realizing both arguments with dependent dative case yields two morphosyntactically identical DPs at spell-out, giving rise to a distinctness violation at PF, following Hopperdietzel & Yıldız (2025). This configuration is therefore predicted to be unlinearizable.

Importantly, this restriction follows directly from the same considerations that were shown to block multiple dative realizations in causatives of ditransitives. The unavailability of a dative-marked causer in double causatives of transitives does not reflect an independent constraint on causativization, but rather the interaction of recursive *v*P embedding with dependent case assignment within a single phase. Consequently, the intermediary causer must be realized by alternative means, most prominently through a postpositional *tarafından* 'by'-phrase, or remain implicit. In other words, the multiple assignment of the dative case for intermediary arguments are disallowed in Turkish double causatives of transitives (Comrie 1974; Zimmer 1976; Kural 1996; Akkuş 2021).

Using the insights of Nie (2022)'s *v*P-recursion analysis of double causatives of unergatives, I analyze recursive causatives of transitives as instances of *v*P-recursion, where each causative *v* layer independently introduces causative semantics and selects for Voice to introduce/license external arguments. The thematic active vs. non-active Voice distinction (Alexiadou et al. 2015) captures the structural difference between the causee and the intermediary causer, respectively. (203) shows the proposed cartographic structure of recursive causatives of transitives.

A further analysis of  $v_1$ P will be maintained in Section 4.4. A robust theory of recursive causatives of transitives must accommodate the structural variation introduced by the lexical-semantic distinction between manner and result verbs. Because result verbs exhibit distinct syntactic behavior in recursive environments, the model must differentiate between these classes to remain empirically adequate. In Section 4.4, I introduce the structural background of the increasing indirectness hypothesis determined by manner/result complementarity as a twofold analysis of recursive causatives of transitives, providing a unified proposal and empirical predictions to account for the relationship between event structure and argument realization across these verb classes.

(203)



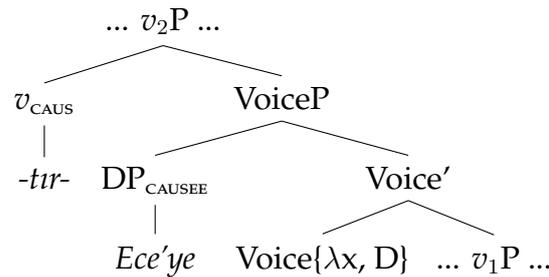
Looking now at the intermediary arguments in detail, the structures below make explicit how recursive causativization in transitives can be derived while preserving a monoclausal case alignment and avoiding a second dative-marked DP. Two points are central. First, each causative suffix realizes a distinct causative head:  $v_2P$  embeds an active VoiceP that introduces the embedded agent as a dative DP ( $DP_{\text{CAUSEE}}$ ), as in (204b), and  $v_3P$  in turn embeds a thematic non-active VoiceP, licensing a PP causer, as in (204c). Indirect causation follows from this selectional profile: the two  $v$  layers take VoiceP complements. As a result, the derivation necessarily yields multiple event layers, each associated with its own causative relation. Second, the intermediary causer is not introduced by an additional active Voice head. In the configuration in (204c), an intermediate Voice layer is projected whose head is specified as thematic non-active ( $\text{Voice}\{\lambda x, \emptyset\}$ ), and it does not introduce a DP specifier. Instead, the intermediary participant is realized as a PP ( $PP_{\text{CAUSER}}$ ) associated with this non-active Voice domain. This choice is not a notational variant but a structural necessity: since the embedded agent of the transitive predicate is already realized as a dependent dative DP, introducing the intermediary causer as an additional dative-marked DP in the same spell-out domain would recreate the illicit multiple-dative configuration discussed above for causatives of ditransitives.

The PP strategy, implemented via *tarafından*, therefore provides a way of encoding an additional causer without adding a second dependent dative DP. In this way, the structure derives the characteristic nominative-dative-accusative alignment (initiator-causee-theme) while still licensing an intermediary causer as a PP, saturating this agentive role. The PP causer is analyzed on a par with the PP agent in passive constructions (Kratzer 1996; Alexiadou et al. 2015; cf. Solstad 2009). In both cases, the relevant participant is introduced by a thematic but non-active

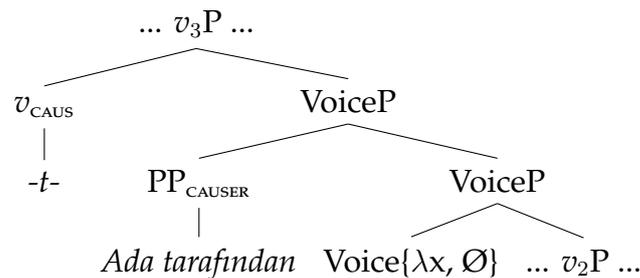
Voice configuration, in which no DP specifier is syntactically projected. Instead, the agentive argument is existentially bound and may be optionally realized as a PP (Alexiadou et al. 2015: 101; see also Embick 1997).

- (204) a. Oya<sub>INIT</sub> [Ada tarafından]<sub>CAUSER</sub> Ece'ye<sub>CAUSEE</sub> kapı-yı<sub>THEME</sub>  
 Oya Ada by Ece-DAT door-ACC  
 aç-tır-t-ti.  
 open-CAUS-CAUS-PST  
 'Oya had Ada make Ece open the door.'

- b. *The realization of the causee*



- c. *The realization of the intermediary causer*



A potential challenge to the present analysis comes from Harley (2017), who argues that unrestricted *v*P-recursion would predict arbitrarily long chains of causatives, comparable to periphrastic causatives in English (e.g. *John made Bill make Joe make Sam do his homework*), yielding verbal structures of the form V-CAUS-CAUS-CAUS. On this view, allowing multiple causative heads that select VoiceP-sized complements would in principle license several non-vacuous instances of causative iteration. Harley (2017) therefore suggests that if a language permitted such configurations, one would expect clear evidence for three or more iterated causatives, and she concludes that Turkish lacks an additional causative projection of this kind, noting that such cases have not been documented and that further work is required.

Importantly, this conclusion targets a stronger hypothesis than the one advanced here. The present analysis does not assume free or symmetric iteration of causative heads, nor does it predict arbitrarily long causative chains. Rather, it argues for a highly constrained form of recursion, in which causative *v* selects a VoiceP-sized complement and recursive embedding is mediated by distinct

Voice configurations with different argument-realization properties. In Turkish, recursive causativization is limited by independent constraints on case assignment and spell-out, which restrict the overt realization of agentive arguments and force asymmetries between lower and higher causative layers. As a result, the absence of unbounded causative stacking does not argue against *vP*-recursion per se, but reflects the interaction of recursive structure with language-specific constraints on Voice and argument realization.

In summary, I analyze that the derivation of recursive causatives from transitive bases is constrained by the distinctness condition (Richards 2010), which prohibits the realization of multiple distinct arguments with identical morphological case in the same local domain. In Turkish, this manifests as a strict ban on double dative assignment. As shown in (205), the co-occurrence of an intermediary causer and a causee, both realized in the dative, results in ungrammaticality (205a). To resolve this case-theoretic conflict, the grammar employs two repair strategies: demotion of the intermediary agent to a postpositional *tarafından*-phrase (Comrie 1974; Zimmer 1976; Knecht 1986; Kural 1996), as in (205b), or total suppression of one dative argument (Çetinoğlu 2009, Akkuş 2021), as in (205c).

- (205) a. \*Ali Hasan-a Ece'ye kapı-yı aç-tır-t-ti.  
 Ali Hasan-DAT Ece-DAT door-ACC open-CAUS-CAUS-PST  
 'Ali made Hasan make Ece open the door.'
- b. Ali Hasan tarafından Ece'ye kapı-yı aç-tır-t-ti.  
 Ali Hasan by Ece-DAT door-ACC open-CAUS-CAUS-PST  
 'Ali had Hasan make Ece open the door.'
- c. Ali Ece'ye kapı-yı aç-tır-t-ti.  
 Ali Ece-DAT door-ACC open-CAUS-CAUS-PST  
 'Ali had (someone/Hasan make) Ece open the door.'

Akkuş (2021) provides further support for this case competition analysis and for the null causer repair strategy. In (206a), adopted from Akkuş (2021: 262–263), the explicit double dative is ruled out. When the potential second agent is introduced as a beneficiary (*arkadaş-ım için* 'for my friend'), as in (206b), the structure remains grammatical. As the admissible readings in (i) and (ii) demonstrate, the intermediary causer must be interpreted as implicit 'someone', confirming that the structural slot for the agent remains available even when it is not overtly realized.

- (206) a. \*Ben arkadaş-ım-a fotokopici-ye fotokopi  
 I friend-1SG.POSS-DAT copy.shop-DAT photocopy  
 çek-tir-t-ti-m.  
 pull-CAUS-CAUS-PST-1SG  
 'I had my friend make the copy shopper xerox papers.'

- b. Ben arkadaş-ım için fotokopici-ye fotokopi  
 I friend-1SG.POSS for copy.shop-DAT photocopy  
 çek-tir-t-ti-m.  
 pull-CAUS-CAUS-PST-1SG  
 (i) 'I had the copy shopper make someone xerox papers for my friend.'  
 (ii) 'I had someone make the copy shopper xerox papers for my friend.'

Crucially, my analysis predicts that interpretation (ii) must hold. In this reading, *I had (someone make) the copy shopper xerox papers for my friend*, the overt dative argument *fotokopici* ('the copy shop') is interpreted strictly as the causee (the agent of the base verb *xerox*). Because the causee consumes the unique dative case assignment available in the clause, the intermediary causer is structurally blocked from dative realization. Consequently, this intermediary causer must be realized as a null argument (or a *tarafından*-phrase in other contexts). The availability of interpretation (ii) confirms that the causee occupies the dative slot syntactically, enforcing the distinctness violation that filters out the double-dative surface string.

The analysis developed thus far relies on a structural bottleneck to explain the obligatory demotion or suppression of agentive arguments in recursive contexts. However, the specific resolution of this conflict, that is, whether the grammar targets the causee or the intermediary causer for demotion, is subject to both theoretical debate and empirical examination. The following section addresses this complexity by examining alternative analyses of the Turkish recursive causatives and accounting for the observed interspeaker variation in argument realization.

### 4.3 Alternative analyses and variation

Göksel & Kerslake (2005: 133) argue that the additional causative suffix in transitives may imply the involvement of an intermediary agent. In similar vein, Çetinoğlu (2009: 85–86) shows that all recursive causatives imply the interpretation that an (implicit) intermediary causer is involved with the second productive causative suffix. She analyzes the intermediary causer with the NULL feature for the implicit agent, indicating "the absence of a grammatical function", which she illustrates using the following example in (207), taken from Çetinoğlu (2009: 84).

- (207) Çocuk köpeğ-e kedi-yi kovala-t-tır-dı.  
 child dog-DAT cat-ACC chase-CAUS-CAUS-PAST  
 (i) 'The child made someone make the dog chase the cat.'  
 (ii) 'The child made the dog make someone chase the cat.'

However, a problem arises with this analysis because, as I argue in this monograph, the intermediary causer cannot be ambiguous with the causee; consequently, the

second interpretation is simply left out from consideration. The realization of the intermediary causer with the postposition *tarafından* is restricted to the properties of the base verb (e.g. in the dative if the base verb is unergative). This restriction begs the question whether it has to do with the constraint against two derived dative-marked objects (from original subjects) in general (Zimmer 1976; Knecht 1986) or with the requirement that intermediary causers are always realized within a postpositional phrase when a transitive verb is double-causativized (Kural 1996).

Nie (2022:4, fn. 3) shows that transitives can recursively embed two additional causing events which can then license the intermediary causer and the causee, both are marked by the dative case, as in (208). Note that possible interpretations for this example include: (i) *Her mother had (someone make) Hakan read the book to Ayşe* and (ii) *Her mother had (someone make) Ayşe read the book to Hakan*, which are not discussed in the original example. Nie (2022) notes that her examples are fairly acceptable with two datives, and adds that some verbs might behave differently in terms of the status of their external arguments (Ramchand 2008).

- (208) Anne-si                    Ayşe-ye kitab-ı    Hakan-a    oku-t-tur-du.  
 mother-3SG.POSS Ayşe-DAT book-ACC Hakan-DAT read-CAUS-CAUS-PST  
 'Her mother made Ayşe make Hakan read the book.' (Nie 2022:4, fn. 3)

I argue that in such constructions, the interpretation cannot be that two of the datives are derived from original subjects; rather, the interpretation for the second dative object can potentially be of semantic roles such as beneficiary as a non-derived and non-core dative object linked to the embedded transitive construction (see Knecht 1986 for her analysis of two dative objects). Thus, the interpretation with two derived dative objects seems to be questionable given the strong possibility that one of the dative objects may be interpreted as a non-core argument of the embedded transitive construction, e.g. *Hakan* being the beneficiary of the event *reading the book*. The reading towards the second dative object being the beneficiary is motivated by Knecht (1986)'s analysis, where she defines it as the thematic role which profits from the action an agent performs.

Considering the analysis I proposed in the previous section, I argue, following Zimmer (1976) and Kural (1996), that the intermediary causer can only be realized through a postpositional *tarafından* 'by'-phrase and that the causee can only be realized by the dative case with recursive causatives of transitives, as in (209).

- (209) Anne-si                    Ayşe tarafından kitab-ı    Hakan-a  
 mother-3SG.POSS Ayşe by                    book-ACC Hakan-DAT  
 oku-t-tur-du.  
 read-CAUS-CAUS-PST  
 'Her mother had Ayşe make Hakan read the book.'

Göksel & Kerslake (2005: 133) argue that the occurrence of recursive causatives of transitives depends on the syntactic realization of the causee, which is “even more clearly preferred” when both the beneficiary and the causee are overt, as in (210) taken from (Göksel & Kerslake 2005: 133). In other words, if the verb has a non-core dative argument, such as beneficiary, it is argued that two dative objects may occur in a single sentence, where the double causativization is more preferred over the single counterpart (Göksel & Kerslake 2005: 133; see Knecht 1986).

- (210) Karı-sın-a bir ev yap-tır-t-mış bir İngiliz mimar-ın-a.  
 wife-3SG-DAT a house make-CAUS-CAUS-EVID a British architect-3SG-DAT  
 ‘He got a British architect to build a house for his wife.’

A recurring point of contention in the literature concerns whether productive causatives in Turkish can undergo recursion at all. Studies on the distinction between unaccusativity and unergativity in Turkish propose diagnostics to distinguish these types of verbs from one another (see Acartürk 2005; Acartürk & Zeyrek 2010 for an overview). Özkaragöz (1986) argue that whereas unaccusatives can be double-causativized, unergatives cannot, as in (211).

- (211) \*Ben Turhan-a Sema-yı koş-tur-t-tu-m.  
 1SG Turhan-DAT Sema-ACC run-CAUS-CAUS-PST-1SG  
 ‘I made Turhan make Sema run.’ (Özkaragöz 1986: 220)

Key (2013: 221) argues that, “when the base verb is transitive or unergative, a second suffix may be added with no change in meaning”, which he calls ‘extended causative’. Thus, he argues that there is “no one-to-one correlation between the number of suffixes and the number of events” (Key 2013: 224). He concludes that causative iteration of unergative and transitive bases is a form of morphological reduplication rather than syntactic recursion (Göksel & Kerslake 2005; Harley 2017; but see Svenonius 2005).

As shown previously that causatives of unaccusatives are different in that the causative *v*P selects a non-categorical ResP; in contrast, productive causatives are VoiceP-selecting, thus, the causative *v*P embeds an already categorized complement with an agent-introducing Voice projection. Key (2013: 230–231) suggests that “only unaccusative bases should unambiguously yield a double causative reading with double suffixes” and that only double causativization of unaccusatives is a case of ‘true’ double causative, given that the outer (productive) causative is stacked on an inner (lexical) causative, as in (212b) and (213b).

- (212) a. Can’ı öl-dür-dü-m.  
 Can-ACC die-CAUS-PST-1SG  
 ‘I killed Can.’

- b. Can'ı öl-dür-t-tü-m.  
 Can-ACC die-CAUS-CAUS-PST-1SG  
 'I had Can killed.'  
 Impossible: 'I killed Can.' (Key 2013: 231)
- (213) a. Su-yu don-dur-du-m.  
 water-ACC freeze-CAUS-PST-1SG  
 'I froze the water.'
- b. Su-yu don-dur-t-tu-m.  
 water-ACC freeze-CAUS-CAUS-PST-1SG  
 'I had the water frozen.'  
 Impossible: 'I froze the water.' (Key 2013: 231)

Key (2013) further argues that the additional causing event only applies when unaccusative roots are double-causativized, where the interpretation is unambiguous between the single and double use of the causative morpheme. For this reason, double causativization of unaccusatives are not recursive causatives since the morphosyntactic status of the first and the second causative suffixes below is different than those illustrated above with unergatives and transitives. More specifically, the first causative suffix attached to unaccusative roots is used to derive a lexical causative *öl-dür-* 'kill', where the core argument of the predicate is the theme, but not the causee, and, more importantly, the causative morpheme has the function of transitivizing the unaccusative verb (cf. Mitchley 2023). As a consequence, the causee is existentially interpreted only in (212b) and (213b) through the second causative suffix; the 'impossible' interpretations above are impossible due to the presence of productive causativization.

Harley (2017: 18) argues that Key's hypothesis for the prohibition on recursion of productive causatives in Turkish is against the generalization of Svenonius (2005) that "Turkish appears to *allow* causative recursion" (cf. Tat & Kornfilt 2018). Harley (2017: 20) argues that the optionality of the causee in Turkish explains two important differences between the status of the embedded subject in Turkish and Japanese. First, Japanese causees cannot be omitted, whereas in Turkish it is possible to omit the causee and still get the reading that the caused event embeds an agent of the activity described by the transitive verb. Second, in Turkish "the [c]ausee is immune to passivization, which instead targets the embedded object"; however, in Japanese the situation is the opposite. Similarly, Key (2013: 225) shows that languages that allow the iteration of two productive causative suffixes as listed in Svenonius (2005) have a different pattern than Japanese, as "it is impossible to stack two outer causative morphemes on the same verb stem", as shown in (214a), taken from Miyagawa (1999: 257). The data from Japanese show that it is

possible to have two dative arguments side by side, which is not allowed in Turkish; see Section 4.3, but it is impossible to iterate causative suffixes. Key (2013: 226) mentions that the only difference between Japanese and other languages that allow causative iteration is that “Japanese does not allow the vacuous repetition of suffixes, while the others do”.

- (214) a. \*Taroo-ga Hanako-ni Ziroo-ni tabako-o suw-ase-sase-ru.  
 Taroo-NOM Hanako-DAT Jiro-DAT cigarette-ACC smoke-CAUS-CAUS-PRS  
 Intended: ‘Taro will cause Hanako to cause Jiro to smoke.’
- b. Taroo-ga Hanako-ni Ziroo-ni tabako-o suw-ase-ru.  
 Taroo-NOM Hanako-DAT Jiro-DAT cigarette-ACC smoke-CAUS-PRS  
 ‘Taro made Hanako make Jiro smoke the cigarette.’

Key (2013: 231) argues that although an inner causative can combine with an outer causative in both Japanese and Turkish, this is not the case for outer causatives. According to him, the causative recursion of productive + productive in Turkish is illusory and unattested. Therefore, he argues that “when the base verb is unergative or transitive, the repetition of causative suffixes does not unambiguously yield a multiple causative interpretation”. Consider now examples below for unergatives, as in (215) and for transitives, as in (216), taken from Key (2013: 231).

- (215) a. Can’ı koş-tur-t-tu-m.  
 Can-ACC run-CAUS-CAUS-PST-1SG  
 ‘I made Can run.’ / ‘I had Can made to run.’
- b. Can-ı çalış-tır-t-tı-m.  
 Can-ACC work-CAUS-CAUS-PST-1SG  
 ‘I made Can work.’ / ‘I had Can made to work.’
- (216) a. Yemeğ-i yap-tır-t-tı-m.  
 food-ACC make-CAUS-CAUS-PST-1SG  
 ‘I had the food made (by one or more intermediaries).’
- b. Bina-yı yık-tır-t-tı-m.  
 building-ACC demolish-CAUS-CAUS-PST-1SG  
 ‘I had the building demolished (by one or more intermediaries).’

Key (2013: 232) argues that “the reason these can still be interpreted as single causatives is that there is no syntactic recursion of outer causatives” and that “[t]he possibility of a multiple causation reading simply falls out from the semantics of indirect causation”. He goes on suggesting that the reason to morphological reduplication might be due to a tendency to increase “the phonological salience of a constituent” (Key 2013: 233). Thus, the causative recursion of outer + outer is according to Key (2013) is illusory and unattested. Key (2013) claims that lexical

causatives are formed by the verbalizer *v*, whereas productive causatives are introduced above *vP*, which he calls CausP. Note that this is the dedicated CausP, according to him, which is not a *vP*; instead, it has a special function (cf. Harley 2017). Nevertheless, his conclusion regarding the recursive potential of causatives in Turkish is that (i) productive causatives do not verbalize (since they take already a verbal category in their complements); thus, *vP* and CausP are distinct heads; (ii) there is no recursion in productive causatives.

The notion of morphological reduplication proposed in Key (2013) is based on Morphological Doubling Theory (MDT) (Inkelas & Zoll 2005). Key (2013) argues that the additional causative suffix relates to the expression of FOCUS, where the second suffix simply realizes [+focus] feature. In light of this theory, he argues that morphological reduplication has the effect of focusing on either causation or on the base verb itself, and suggests that the reason for morphological reduplication might be a tendency to emphasize “the phonological salience of a constituent” (Key 2013: 233), which could in turn enhance “the salience of indirect causation, facilitating an interpretation with multiple causal links” (Key 2013: 246–247). Göksel & Kerslake (2005: 133) argue that an additional causative suffix in recursive causatives of transitives is “often used simply as a means of emphasizing causation”, but it may also “imply the addition of another intermediary”. In most cases, however, a recursive causative of a transitive stem is “identical in meaning” to its productive causative counterpart, as in (217). Key (2013: 242) argues that the causative iteration in (217b) is simply a case of vacuous iteration, where “no intensive, high-involvement reading is contributed by the doubled causative marking”.

- (217) a. Saç-ım-ı                 berber-e                 kes-tir-di-m.  
           hair-1SG.POSS-ACC hairdresser-DAT cut-CAUS-PST-1SG  
           ‘I got the hairdresser cut my hair.’
- b. Saç-ım-ı                 berber-e                 kes-tir-t-ti-m.  
           hair-1SG.POSS-ACC hairdresser-DAT cut-CAUS-CAUS-PST-1SG  
           ‘I got the hairdresser cut my hair.’ (Göksel & Kerslake 2005: 133)

Key (2013) challenges the notion that extended causatives in Turkish result from syntactic recursion. Instead, he posits that the semantics of indirect causation inherently allow for multiple causal links, which are not syntactically represented. The presence of the multiple use of the causative morpheme creates the appearance of syntactic iteration, but in reality, this is a vacuous use of suffixes rather than an actual syntactic recursion of causative structures. Key (2013: 225) argues that the possibility of interpreting multiple causations arises naturally from the semantics of indirect causation rather than any structural repetition in the syntax.

Moreover, Key (2013) introduces the concept of morphological reduplication, a process triggered by the feature [+focus], in which the doubling of terminal nodes (such as the causative morpheme) enhances the prominence of either the causing event or the base verb. This morphological reduplication can facilitate an interpretation of multiple causal links by making indirect causation more salient, although it does not reflect actual syntactic duplication (Key 2013: 246–247). This process is formalized within the realizational framework of DM, where terminal nodes are copied due to the presence of a feature like FOCUS, and two separate Vocabulary Items (VIs) are inserted to realize the causative morpheme (Key 2013: 243). Ultimately, Key (2013: 232) concludes that the repetition of productive causative suffixes does not generate a multiple causative interpretation when the base verb is unergative or transitive, supporting his claim that the recursion of productive causatives in Turkish is illusory and unattested. Instead, the occurrence of multiple causative suffixes is more accurately attributed to the semantics of indirect causation and the morphological realization of focus, rather than any syntactic recursion of causative morphemes.

Key (2013) argues that only unaccusative bases yield unambiguous interpretations between the single and the double use of the causative morpheme, however, the interpretational differences potentially observed on unergative and transitive bases are simply cases of morphological reduplication, which can be understood by the semantics of indirect causation, or more systematically put, by the syntactic realization of FOCUS feature bundled with CAUSE feature. He argues that the implied causal links represented by agentive/animate nouns used within adjunct phrases such as *aracılığıyla* ‘by means of’, simply shows vacuous iteration of the causative morpheme, hence not recursion but reduplication, emphasizing either causation or the entire verb phrase. Key (2013: 247) argues that the realization of the intermediary causers as adjunct phrases “effectively creates the illusion of syntactic recursion”, as in (218), adopted from Key (2013: 223).

- (218) Müdür, yardımcısı aracılığıyla işçiler temsilcisine yeni bir  
 director assistant-3SG by.means.of worker-PL rep.-3SG-DAT new a  
 yönetmelik yaz-dır-dı/yaz-dır-t-tı.  
 by-laws write-CAUS-PST/write-CAUS-CAUS-PST  
 ‘The director, via his assistant, had the workers’ representative write new  
 by-laws.’

He adds that the example can still be acceptable without the second causative suffix; thus, it does not contribute anything to the argument structure, and concludes that “the lack of a precise correlation between the number of suffixes and the number of causees has either been ignored or attributed to sloppiness” although

this phenomenon has significant implications for the morphosyntax of Turkish causatives. Key (2013) mentions the possibility of intermediary arguments between the higher-causing event and the lower-causing event; however, he argues that this argument (introduced by adjuncts such as *by means of*) is morphosyntactically not linked to the second productive causative suffix; thus, the use of recursive causatives of transitives is vacuous.

Note, however, that I do not consider the types of causal links introduced by adjunct phrases like the one above as candidates for causative recursion, either. Rather, I look into the intermediary causer as realized by the postposition *tarafından*, which I will argue below as a case of causative recursion observed in productive causatives of transitives. Although Özkaragöz (1986:127, fn. 11) notes that her consultants preferred the postposition *vasıtasıyla* ‘by means of’ over *tarafından* for their judgments of causatives of ditransitives and recursive causatives of transitives, I follow Zimmer (1976), Knecht (1986), and Kural (1996) for the use of *tarafından*.

As previously mentioned, passivization of transitives allows for the promotion of the theme argument to the subject position, and the embedded subject is headed by the *by*-phrase if it is overtly used. Mitchley (2023: 87) notes that a dative object in double-object constructions cannot promote to the subject position after passivization, and this also applies to the causee, as illustrated below in (219a). Mitchley (2023:87, fn. 16) points the issue with the English translation in (219a) that two *by*-phrases are required to convey the intended meaning, and leaves a note saying that (219a) sounds better with the second causative suffix, however, “its absence does not affect the meaning or the grammaticality of the example”.

- (219) a. Bulaşıklar Hakan tarafından Tarkan’a yıka-t-tır-ıl-dı.  
dish-PL Hakan by Tarkan-DAT wash-CAUS-CAUS-PASS-PST  
‘The dishes were caused, by Hakan, to be washed by Tarkan.’
- b. \*Tarkan Hakan tarafından bulaşık-lar-ı yıka-t-tır-ıl-dı.  
Tarkan Hakan by dish-PL-ACC wash-CAUS-CAUS-PASS-PST  
‘Tarkan was made to wash the dishes by Hakan.’
- c. Tarkan Hakan tarafından bulaşık yıka-t-tır-ıl-dı.  
Tarkan Hakan by dish wash-CAUS-CAUS-PASS-PST  
‘Tarkan was made by Hakan to do some dish-washing.’

I argue against it that although (219b) is unacceptable, (219c), adopted from Mitchley (2023), is acceptable and the second causative suffix is necessary to express the intended meaning of intermediary events occurring between higher and lower events. For this reason, (219c) shows a clear instance of the promotion of the causee to the subject position on the condition that the theme is a pseudo-incorporated noun placed in the immediate preverbal position. This creates a

problem in terms of the previous claims; thus, the causee is not always immune to passivization (similar to Japanese; see Harley 2017: 20). Additionally, another problem is the fact that the second causative suffix allows for the introduction of the intermediary causer with the postposition *tarafından* (Zimmer 1976; Kural 1996), which would then result in ambiguities between the agent represented by the passive suffix and the agent represented by the second causative suffix. To break it down, consider (220a) and (220b) as examples of a productive causative and a recursive causative, respectively.

- (220) a. Hakan Tarkan'a bulaşık-ları yıka-t-tı.  
 Hakan Tarkan-DAT dish-PL-ACC wash-CAUS-PST  
 'Hakan made Tarkan wash the dishes.'
- b. Ali Hakan tarafından Tarkan'a bulaşık-ları yıka-t-tır-dı.  
 Ali Hakan by Tarkan-DAT dish-PL-ACC wash-CAUS-CAUS-PST  
 'Ali had Hakan make Tarkan wash the dishes.'

If (220b) is passivized, we get (221a), which would not be accepted given the restriction on the use of two *by*-phrases in a single sentence (see Kural 1996). This means that one of the *by*-phrases should be left out, which would give us either the sentence in (219a) presented by Mitchley (2023: 87) or the one in (221b) with the assumption that the agent of the passive is resolved from (220b).

- (221) a. \*Bulaşık-lar Hakan tarafından Tarkan'a Ali tarafından  
 dish-PL Hakan by Tarkan-DAT Ali by  
 yıka-t-tır-ıl-dı.  
 wash-CAUS-CAUS-PASS-PST  
 'By Ali, the dishes were made by Hakan to be washed by Tarkan.'
- b. Bulaşık-lar Tarkan'a Ali tarafından yıka-t-tır-ıl-dı.  
 dish-PL Tarkan-DAT Ali by wash-CAUS-CAUS-PASS-PST  
 'By Ali, the dishes were made (by Hakan) to be washed by Tarkan.'

Moving forward to accounts that analyse the function of recursive causatives as intensification, Sebüktekin (1971: 82) argues that most of the time recursive causatives “serve to intensify the causative meaning”, where the emphasis on causation means that only the first causative suffix implies causation, and the second causative suffix can only increase the salience of the relationship between the initiator and the causee (cf. Key 2013). Consider the examples below in (222) and (223) involving unaccusative roots *doğ-* ‘be born’ and *sol-* ‘fade’, which are adopted from (Özkaragöz 1986: 220). Note that although the English translation in (222a) is somewhat misleading in terms of the status of the internal argument, I kept it as in the original, which would otherwise be translated as *The doctor made the mother give birth to the child*.

(222) *Productive causatives (unintensive)*

- a. Doktor anne-ye      çocuğ-u    doğ-ur-t-tu.  
doctor mother-DAT    kid-ACC    born-CAUS-CAUS-PST  
'The doctor caused the mother to cause the child to be born.'
- b. Sema Turhan-a      çiçeğ-i      sol-dur-t-tu.  
Sema Turhan-DAT    flower-ACC    fade-CAUS-CAUS-PST  
'Sema made Turhan cause the flower to fade.'

(223) *Recursive causatives (intensive)*

- a. Doktor anne-ye      çocuğ-u    doğ-ur-t-tur-du.  
doctor mother-DAT    kid-ACC    born-CAUS-CAUS-CAUS-PST  
'The doctor caused the mother to cause the child to be born.'
- b. Sema Turhan-a      çiçeğ-i      sol-dur-t-tur-du.  
Sema Turhan-DAT    flower-ACC    fade-CAUS-CAUS-CAUS-PST  
'Sema made Turhan cause the flower to fade.'

Sebüktekin (1971) himself does not mention what determines the intensification of the causative meaning. However, Kittilä (2009: 85–87) defines intensification as the action performed “more intensively by the agent and/or the patient may be more thoroughly affected”. Using data from several languages such as Tariana (Arawakan), he argues that the first causative suffix is responsible for the introduction of a new agent as the initiator and the second causative suffix implies “a higher degree of patient affectedness [...] that the agent is acting in a more forceful manner making a real effort to modify the state of the patient” (cf. Hopper & Thompson 1980; Kulikov 1993). If we take this definition of intensification into consideration, it boils down into two parameters that are co-dependent: agentivity and affectedness. However, given that two agents are at play in productive causatives, the question remains which one of the agents are served this function, that is to say, one might wonder whether it is the higher causing event that is intensified or the intermediate causing event. Kulikov (1999: 52) notes, using an example cited in Zimmer (1976: 411), that the second causative suffix in recursive causatives can either signal intensification of causation through ‘the intensive/iterative function’ or simply manifest as a form of iconicity, as in (224). She argues that “the more times a causative morpheme applies, the more intensive causation it renders”; thus, they are in this regard ‘perfectly iconic’.

- (224) Müdür-e      mektub-u    aç-tır-t-tı-m.  
director-DAT    letter-ACC    open-CAUS-CAUS-PST-1SG  
(i) ‘I had someone make the director open the letter.’ ([recursive] causative)  
(ii) ‘I made the director open the letter [forcefully] (perhaps against his wish)’ (intensive causative) (Kulikov 1999: 52))

Intensification is also largely studied cross-linguistically for other agglutinative languages, where causative suffixes “easily combine with each other and iterate” (Kulikov 2001: 893; see Zúñiga & Kittilä 2019: 21 for Finnish; see Kulikov 1993 and Kulikov 1999 for works on recursive causatives in Turkic languages). Kural (1996: 76) argues that there is “no upper limit as to how many times the causative morpheme may be iterated”, as in (225). Similarly, Zúñiga & Kittilä (2019: 20) mention this possibility of multiple causativization for Finnish, arguing that “there is no formal limit to how many causative affixes a verb may take”, and that, in (226), “only the first causative is valency-increasing”, meaning that an agent is introduced, the other suffixes attached stepwise do not add an additional argument. Interestingly, they suggest that “in case more than one causer/causee needs to be added”, periphrastic causatives are preferred. This highlights the restriction between the two languages that whereas Turkish allows the addition of an intermediary causer via the postpositional *tarafından*, Finnish requires different forms for intended meanings.

(225) Ahmet soğan-lar-ı      Ali-ye      doğra-t-tır-t-tır-t-ti.  
 Ahmet onion-PL-ACC    Ali-DAT    chop-CAUS (x5)-PST-3SG  
 ‘Ahmet had the onions chopped by Ali.’ (Kural 1996: 77)

(226) Rakennu-tu-ta-t-i-n                      talo-n      Kalle-lla.  
 build-CAUS-CAUS-CAUS-PST-1SG house-ACC Kalle-ADESS  
 ‘I made Kalle build the house.’ (Zúñiga & Kittilä 2019: 21)

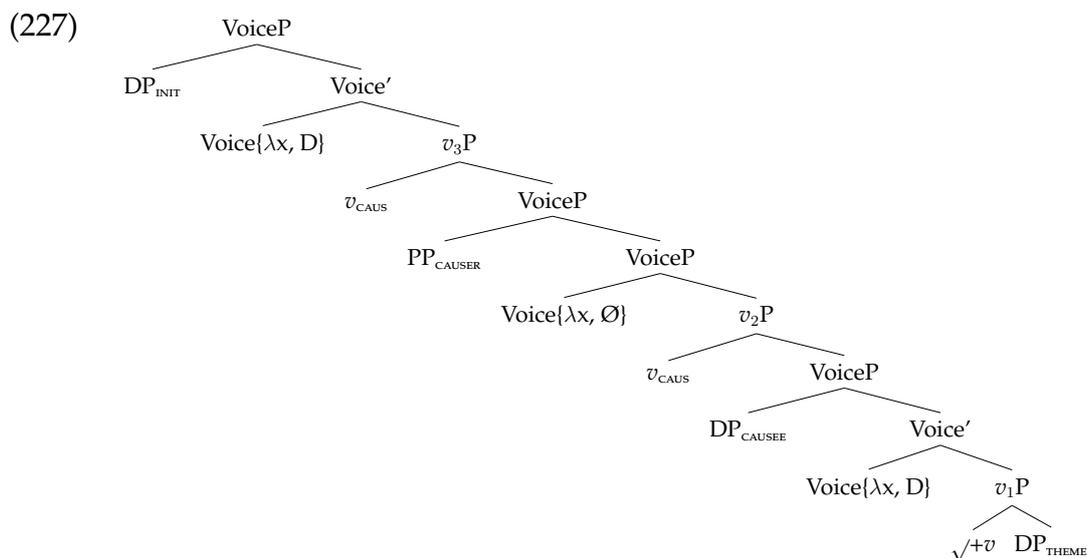
Overall, these studies provide data based on typological and language-descriptive aspects and argue that features that play a role in this phenomenon are intensification that interacts with agentivity and affectedness of event participants. However, almost no study has been put forth to analyze the effect of such constructions in empirical settings. In the following section, I provide a unified proposal and empirical predictions to account for the interaction of causative formation, root semantics, and argument realization in Turkish.

## 4.4 Unified proposal and empirical predictions

Recursive causativization raises a substantive challenge for theories of causation that goes beyond its typological availability. In agglutinative languages such as Turkish, causative morphology can in principle be iterated without an apparent upper bound. This property has often led recursive causatives to be treated as marginal, stylistic, or semantically weak, frequently reduced to intensification effects (e.g. Sebüktekin 1971). Such treatments obscure the central analytical problem, namely how recursive causatives are represented in the syntax and how

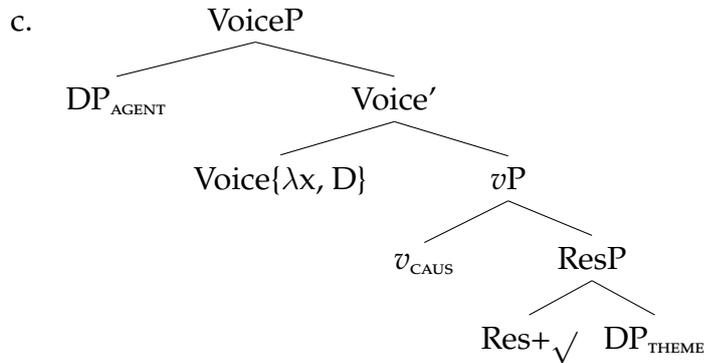
their interpretation is compositionally derived. The absence of a morphological ceiling has encouraged the assumption that recursion is structurally unconstrained, while theoretical discussions of recursive causatives, particularly with transitive bases, often rely on data with scrambled or dislocated arguments that mask constraints operative in base-generated configurations. Moreover, although recursive causatives are routinely associated with indirectness, this notion is rarely defined in a principled way or systematically tied to structural properties of the construction. These typological, syntactic, and semantic issues cannot be addressed in isolation. Any adequate account of recursive causativization must therefore integrate recursion, root-sensitive event structure, constraints on argument realization, and the interpretation of indirect causation.

In this section, I develop a unified analysis of recursive causatives of transitives, arguing that recursive causativization is not structurally uniform across transitive predicates and that manner and result verbs impose distinct event-structural requirements. As argued in Chapter 2, manner verbs are mono-eventive, and result verbs, by contrast, are inherently bi-eventive and introduce an additional result state. Under recursive causativization, this yields a three-layer causative structure. This asymmetry follows directly from manner/result complementarity and constrains both the maximal depth and the interpretation of recursive causatives. The proposal for recursive causatives of transitive manner verbs is given in (227). This structure reflects the mono-eventive nature of manner roots, limiting the derivation to two causative layers.



In contrast, transitive result verbs are structurally distinct. Consider the examples in (228a) and (228b), which serve as the baseline: (228a) illustrates an unmarked lexical causative *kır-* 'break', and (228b) illustrates a marked lexical causative *düş-ür-* 'drop'. (228c) represents the structural analysis of both constructions.

- (228) a. Sigorta şirketi masraf-lar-ı öde-di.  
 insurance company cost-PL-ACC pay-PST  
 ‘The insurance company paid the costs.’
- b. İşçi yağ tank-ın-ı dol-dur-du.  
 worker oil tank-3SG.POSS-ACC fill-CAUS-PST  
 ‘The worker filled the oil tank.’



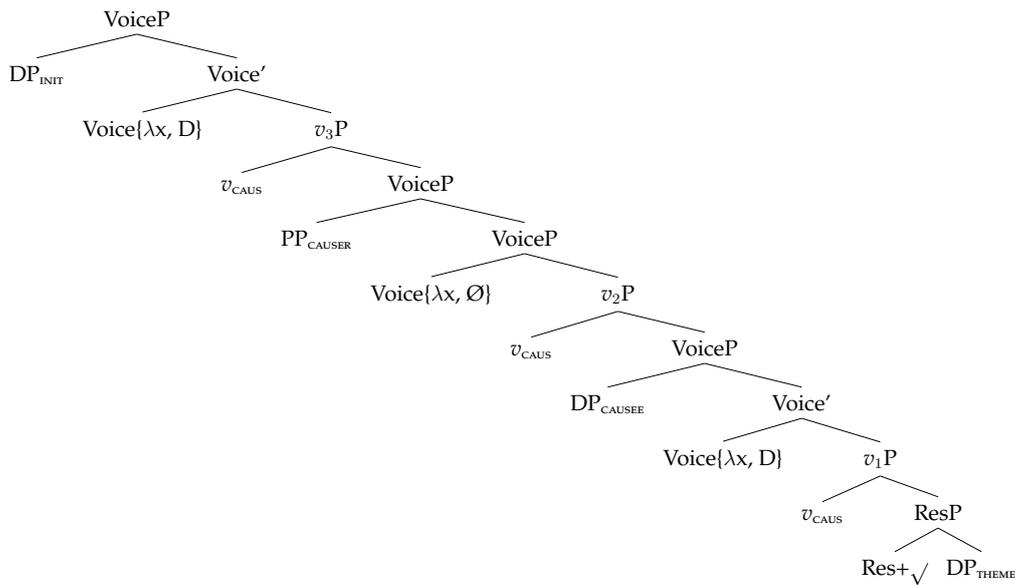
Examples (229) and (230) correspond to the recursive forms of (228a) and (228b), respectively, showing the realization of the three agentive arguments: the initiator (nominative), the causee (dative), and the causer (licensed by *tarafından*).

- (229) Alex<sub>INIT</sub> [avukat-ı tarafından]<sub>CAUSER</sub> sigorta şirket-in-e<sub>CAUSEE</sub>  
 Alex lawyer-3SG.POSS by insurance company-3SG-DAT  
 kaza yap-an arac-ın-in masraf-lar-ın-ı<sub>THEME</sub> öde-t-tir-di.  
 accident make-RELZ vehicle-3SG-GEN COST-PL-3SG-ACC pay-CAUS-CAUS-PST  
 ‘Alex had her lawyer make the insurance company pay for the cost of her crashed car.’

- (230) Patron<sub>INIT</sub> [depo görevli-si tarafından]<sub>CAUSER</sub> işçi-ye<sub>CAUSEE</sub>  
 boss warehouse attendant-3SG.POSS by worker-DAT  
 yağ tank-ın-ı<sub>THEME</sub> dol-dur-t-tur-du.  
 oil tank-3SG.POSS-ACC fill-CAUS-CAUS-CAUS-PST  
 ‘The boss had the warehouse attendant make the worker fill the oil tank.’

The proposed structure for recursive causatives of transitive result verbs, corresponding to (229) and (230), is given in (231). This cartographic structure explicates three distinct *v* layers: *v*<sub>1</sub>P represents the direct CAUSE component, embedding a ResP that introduces the theme internally; *v*<sub>2</sub>P represents the indirect CAUSE component, embedding a thematic active VoiceP that introduces the causee; and *v*<sub>3</sub>P represents the secondary-indirect CAUSE component, embedding a thematic non-active VoiceP that licenses the causer via the *tarafından* ‘by’-phrase.

(231)



This analysis of recursive causatives of transitive result verbs proposed here assumes the overt realization of all event participants. While Turkish allows for null arguments (*pro*-drop) and flexible word order for case-marked objects, this analysis focuses on configurations where the syntactic positions of arguments are overtly identified. This restriction is necessary to establish the baseline mapping between thematic roles and syntactic positions. Consequently, the analysis does not account for null causees, null causers, or the behavior of inanimate arguments (see Akkuş 2021), which are, however, empirically addressed in Chapter 6.

The intermediary causer, licensed by the postpositional *tarafından*, appears infrequently in corpus data, likely due to processing costs associated with high valency and complexity (e.g. Zimmer 1976; see Section 4.2.3). Nevertheless, such constructions are attested, as shown in (232). Here, the initiator is derived from a causal link representing the existence of *the red dots in space*. The causer is licensed by *tarafından*, while the causee remains null.

(232) [Uzay-dan gör-ül-en kırmızı nokta-lar]<sub>INIT</sub>, [internet kullan-ıcı-lar-ı  
space-ABL see-PASS-RELZ red point-PL internet use-N.DER-PL-AGR  
tarafından]<sub>CAUSER</sub> mizahi bir şekil-de egemenlik hakk-ın-a  
by humorous a shape-LOC sovereignty right-3SG-DAT  
uzaylı-lar-ın da dahil ol-up ol-ma-dıĝ-ı soru-lar-ın-ı  
alien-PL-GEN too included be-CVB be-NEG-RELZ-AGR question-PL-3SG-ACC  
sor-dur-t-tu.  
ask-CAUS-CAUS-PST

'The red dots seen from space had the internet users humorously raise questions whether aliens are also involved in the right to sovereignty.'  
(*attyiz.biz.tr*; trTenTen12)

Evidence for distinct event layers also comes from examples like (233) with *temizle-* ‘clean’. The speaker refers to two distinct causing events, supporting the hypothesis that recursive morphology corresponds to structural recursion rather than vacuous morphological reduplication.

- (233) Enjektör-ler-i temizle-t-ti-m de-miş-[s]iniz ama nasıl  
 injector-PL-ACC clean-CAUS-PAST-1SG say-EVID-2PL but how  
 temizle-t-tir-di-niz bil-mi-yor-um.  
 clean-CAUS-CAUS-PST-2PL know-NEG-PROG-1SG  
 ‘You said you got the injectors cleaned, but I do not know how you had  
 them get cleaned.’  
 (*blogspot.com*; trTenTen12)

To illustrate the structural implications of this analysis, consider the transitive result verb *imzala-* ‘sign’ in its productive (234a) and recursive (234b) forms. Although the examples look identical in terms of the overt realization of arguments, except for *pro*-drop in (234a), they differ in the position of the causee: sentence-initial in (234a), but pre-verbal in (234b). In both cases, the manner adverb *zorla* ‘by force’ is used and the core argument of the transitive predicate is marked by the accusative case, with the exception in (234b) that it precedes the causee.

- (234) a. Bana böyle bir kağıd-ı zorla imzala-t-tı-lar.  
 1SG.DAT such a paper-ACC forcibly sign-CAUS-PST-3PL  
 ‘They forcibly made me sign such a paper.’  
 (*barismeclisi.com*; trTenTen12)
- b. Polis-ler, ara-ma tutanağ-ın-ı komşu  
 police.officer-PL search-NMLZ protocol-3SG-ACC neighbor  
 esnaf-lar-a zorla imzala-t-tır-dı-lar.  
 craft-PL-DAT forcibly sign-CAUS-CAUS-PST-3PL  
 ‘The police made the neighbor traders sign the search report forcibly.’  
 (*mazlumder.org*; trTenTen12)

As discussed in the preceding section, previous literature has argued that such recursive forms merely serve an intensifying function (Sebüktekin 1971) or act as a means of emphasizing causation without distinct syntactic representation (Göksel & Kerslake 2005). Under this view, recursive morphology is illusory—morphological reduplication without syntactic recursion (Key 2013). I reject this conclusion. Whether the intermediary causer is explicit or implicit has consequences for event structure and argument realization, motivating a focused investigation on the realization of initiators and causees. Recursive causatives introduce an additional causal layer, increasing the indirectness between the higher causing event and the embedded caused event, which is sensitive to root semantics. Building on the

diagnostics summarized in Table 2.3, I show that systematic patterns of argument realization and omission correlate with the underlying event structure. Focusing on result verbs, I argue that apparent argument drop is not a free syntactic option but reflects event dependence in the embedded structure. Given the availability of anticausative alternation and intermediate subevents, intermediary arguments may be structurally present but omitted when the interpretation centers on the caused state of an underspecified causing event. Argument omission thus follows from event embedding rather than from a purely syntactic deletion mechanism.

In what follows, I derive graded indirectness as an emergent property of the interaction between causal depth, root semantics, and argument realization. Indirectness is not treated as a primitive notion but as the measurable outcome of the overarching interaction of three factors: causative formation (either single or double), manner/result complementarity, specifically the mono-eventive versus bi-eventive nature of the embedded root, and the overt or null realization of event participants, with a focus on initiators and causees. Investigating the interaction between causative formation, manner/result complementarity, and argument overtiness to measure the degree of indirectness in recursive causatives, I argue that the degree of indirectness is influenced by whether the caused event embeds a manner or result root. Manner verbs, which specify the way an action is carried out by an agent, exhibit lower indirectness due to their mono-eventive nature and impose stricter constraints on the realization of arguments, particularly the initiator and causee. In contrast, result verbs, which indicate a resultant state, allow for more intermediate causes, creating a higher degree of indirectness and greater flexibility in argument structure. The degree of indirectness is evaluated through a three-way interaction between causative formation, verbal semantics (manner vs. result), and the overtiness of arguments. This approach provides a systematic way to measure how these factors interact to shape the structure of recursive causatives. The increasing indirectness hypothesis is presented in (235).

(235) **The increasing indirectness hypothesis**

- a. **Recursive causatives of manner verbs** show more restrictions in argument realization, making it less likely to omit key arguments, thus leading to a lower degree of indirectness.
- b. **Recursive causatives of result verbs** show more flexibility in argument realization, making it more likely to omit key arguments, thus leading to a higher degree of indirectness.

The increasing indirectness hypothesis holds that the degree of indirectness in recursive causatives is determined by root semantics, in particular by the distinction between manner and result roots. This distinction constrains argument realization

through its consequences for event structure. Manner verbs are mono-eventive and require an executing participant for the identification of the caused event, whereas result verbs are bi-eventive and introduce a resultant state that can be interpreted independently of its causal chain. As a consequence, recursive causatives of manner verbs impose stricter constraints on argument realization than recursive causatives of result verbs. Since Turkish is a *pro*-drop language, not all event participants need to be overtly realized, which makes argument omission a useful diagnostic rather than a confound. The contrast is already visible in productive causatives. With the transitive manner verb *oku-* ‘read’, both the causer and the causee are overt in (236a), yielding a fully specified causative event. With the transitive result verb *temizle-* ‘clean’, the same configuration in (236b) likewise allows overt realization of all arguments, but does not require it for the identification of the result state.

- (236) a. Oya Ece’ye kitab-ı oku-t-tu.  
 Oya Ece-DAT book-ACC read-CAUS-PST  
 ‘Oya made Ece read the book.’
- b. Oya Ece’ye saha-yı temizle-t-ti.  
 Oya Ece-DAT pitch-ACC clean-CAUS-PST  
 ‘Oya made Ece clean the pitch.’

Recursive causatives make this asymmetry explicit. For transitive manner verbs, the fully overt configuration in (237a) represents the only unmarked option. Dropping the initiator, as in (237b), is possible under discourse licensing, but does not affect the requirement that the causee should be overtly realized. By contrast, dropping the causee in (237c) yields a sharply degraded result, and dropping both initiator and causee in (237d) leads to near-unacceptability. These judgments show that recursive causatives of manner verbs resist argument omission whenever it obscures the identity of the executing participant. The unavailability of full argument drop follows from the mono-eventive structure of manner verbs: without an overt causee, the caused event cannot be identified.

- (237) a. Ada Ece’ye kitab-ı oku-t-tur-du.  
 Ada Ece-DAT book-ACC read-CAUS-CAUS-PST  
 ‘Ada had (someone make) Ece read the book.’
- b. Ece’ye kitab-ı oku-t-tur-du.  
 Ece-DAT book-ACC read-CAUS-CAUS-PST  
 ‘(Someone) had (someone make) Ece read the book.’
- c. Ada kitab-ı oku-t-tur-du.  
 Ada book-ACC read-CAUS-CAUS-PST  
 ‘Ada had (someone have) the book read [by someone else].’

- d. Kitab-ı oku-t-tur-du.  
 book-ACC read-CAUS-CAUS-PST  
 ‘(Someone) had (someone else have) the book read [by someone else].’

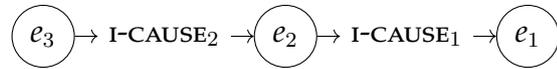
The pattern is different for transitive result verbs. In the fully overt recursive causative in (238a), initiator and causee are both realized. Omitting the initiator in (238b) does not affect acceptability, nor does omitting the causee in (238c). Crucially, even dropping both initiator and causee, as in (238d), yields a well-formed sentence with a clear interpretation. In these cases, the resultant state introduced by the result root remains identifiable independently of the causal chain that brings it about. Argument omission therefore does not compromise event identification.

- (238) a. Ada Ece’ye saha-yı temizle-t-tir-di.  
 Ada Ece-DAT pitch-ACC clean-CAUS-CAUS-PST  
 ‘Ada had (someone make) Ece clean the pitch.’
- b. Ece’ye saha-yı temizle-t-tir-di.  
 Ece-DAT pitch-ACC clean-CAUS-CAUS-PST  
 ‘Ada had (someone make) Ece clean the pitch.’
- c. Ada saha-yı temizle-t-tir-di.  
 Ada pitch-ACC clean-CAUS-CAUS-PST  
 ‘Ada had (someone have) the pitch cleaned [by someone else].’
- d. Saha-yı temizle-t-tir-di.  
 pitch-ACC clean-CAUS-CAUS-PST  
 ‘(Someone) had (someone have) the pitch cleaned [by someone else].’

Overall, these examples show that full argument drop is structurally licensed only for result verbs. Apparent argumental emptiness in recursive causatives reflects event dependence in the underlying structure rather than pragmatic underspecification. Recursive causativization increases indirectness only insofar as the event structure of the embedded predicate permits such an increase. This follows directly from manner/result complementarity. Recursive causatives built on manner verbs impose strict requirements on argument realization, in particular on the overt realization of the causee, because the executing participant is indispensable for identifying the caused event. Omitting such arguments would undermine the specification of the manner component and yield a semantically incomplete structure. By contrast, recursive causatives of result verbs allow substantially greater flexibility in argument realization. Since result verbs foreground a resultant state rather than the process by which that state is brought about, the causal chain may include intermediate causes whose participants need not be overtly realized. The resultant state remains identifiable even when initiator and causee arguments are omitted, thereby licensing full argument drop and yielding a higher degree of

indirectness between the highest causing event and the embedded caused event. Figure (239) and (240) below represent the event structure of the manner/result distinction in the context of recursive causative formation.

(239) *Recursive causal chain with manner verbs*



(240) *Recursive causal chain with result verbs*



The proposal advanced in this section resolves the theoretical ambiguity surrounding recursive causativization by deriving its properties from the interaction of functional heads and root semantics. I have demonstrated that the variation in recursive strategies is neither random nor purely stylistic (*pace* notions of “intensification”), but follows directly from the event-structural distinction between manner and result verbs. Manner roots, being mono-eventive, limit recursive depth and enforce tighter constraints on argument realization, yielding a lower degree of indirectness. Result roots, being bi-eventive, license an additional causal layer, thereby maximizing the structural distance between the initiator and the final state and permitting greater flexibility in argument realization. This analysis refutes the view that recursive morphology is vacuous; instead, it establishes *indirectness* as a structurally grounded, measurable property. The empirical chapters that follow will test these predictions, focusing on the specific syntactic realization of causees and initiators across these divergent root types.

## 4.5 Summary

This chapter has shown that productive causatives in Turkish constitute a restricted domain for diagnosing syntactic recursion. By examining the interaction between recursive embedding and argument realization, I have demonstrated that causative recursion is neither unconstrained nor reducible to morphological reduplication. A central result is that the contrast between unergative and transitive bases is structurally consequential. Transitive predicates impose additional restrictions due to the obligatory dative realization of embedded agents, which in turn limits the availability and form of intermediary causers in recursive configurations. As a result, overt realization of intermediary arguments in recursive causatives of transitives is systematically restricted rather than freely optional.

The chapter has further established that productive causatives of unergative predicates provide clear evidence for *v*P- and VoiceP-recursion (cf. Nie 2022), sup-

ported by event-structural diagnostics and agent-oriented modification. Extending the analysis to transitive predicates, I have shown that recursive causativization interacts in a principled way with independent constraints on argument realization, including case-theoretic requirements and linearization pressures (Richards 2001). In particular, the infelicity of realizing multiple dative arguments within a single domain accounts for the unavailability of dative-marked causees in causatives of ditransitives and dative-marked intermediary causers in double causatives of transitives. Speakers therefore employ repair strategies such as dislocation, *pro*-drop, or realizing arguments within postpositional phrases with considerable interspeaker variation (e.g. Kural 1996; Akkuş 2021).

Finally, the chapter has argued that productive causatives of both unergatives and transitives possess genuine recursive potential, formally characterized as the addition of a  $v_{\text{CAUS}}$  layer to an existing event structure. In recursive causatives of transitives, the dative-marked causee is introduced by an active Voice layer and an intermediary causer via *tarafından* 'by'-phrase is licensed by a higher non-active Voice head. Adopting a split analysis based on manner and result roots, I have proposed the increasing indirectness hypothesis, according to which recursive causativization increases indirectness only insofar as the event structure of the embedded predicate permits it. I have shown that recursive causatives of manner verbs are constrained by requirements of argument overtness, whereas recursive causatives of result verbs allow greater flexibility because the resultant state can be identified independently of its causal chain. These conclusions yield concrete empirical predictions concerning argument realization, omission, and degrees of indirectness, which motivate the corpus-based investigations pursued in the following chapters.





# Chapter 5

## Dataset and parameters of analysis

### 5.1 Overview

This chapter presents the corpus-based investigation that empirically evaluates the structural claims developed in the preceding chapters concerning recursive causativization in Turkish. Building on the theoretical result that productive causatives are syntactically recursive and that recursive causatives of transitive result verbs instantiate a deeper causal structure than those of transitive manner verbs, this chapter examines how these differences are reflected in naturally occurring data. The empirical focus lies on productive causatives of transitive manner verbs (e.g. *read, ask, call*) and transitive result verbs (e.g. *cut, clean, assemble*) and on their recursive counterparts, with the aim of testing whether recursive causativization correlates with increased indirectness in systematic and measurable ways, while challenging previous assumptions that double causatives of transitives are not different in meaning than their single counterparts (e.g. Key 2013).

Section 5.2 introduces the empirical basis of the study. I first describe the corpora used and the circumscribing parameters that define the search space, including decisions about base verbs and token selection. I then motivate a set of elimination criteria for base verbs to ensure that the dataset targets productive causative formations rather than lexicalized or idiosyncratic forms. These steps are designed to isolate structures that directly reflect the productive causative system of Turkish. Section 5.3 details the annotation scheme employed in the analysis. I introduce verbal semantic parameters that operationalize the distinction between manner and result roots as well as aspectual classes of events, followed by argument-structural parameters that capture the realization and omission of initiator, causee, and theme arguments. Additional parameters such as person, case, and animacy are also introduced regarding the initiator and the theme. Together, these annotation categories translate the theoretical dimensions developed in

Chapters 2–4 into empirically testable variables. Section 5.4 describes the data wrangling procedures applied prior to statistical analysis. I outline how the annotated data were cleaned, structured, and prepared for quantitative modeling, ensuring consistency across verb classes and causative types. This step is crucial for evaluating interaction effects between causative formation, verbal semantics, and argument realization.

Overall, this chapter presents the empirical setup and clarifies how the dataset supports the central goal of the chapter: to test the increasing indirectness hypothesis. By examining the interaction between causative depth, manner versus result semantics, and argument realization patterns, this chapter provides the quantitative foundation for assessing whether recursive causatives of transitives encode systematically higher degrees of indirectness than their non-recursive counterparts. In doing so, it addresses a gap in the literature, as no previous study has offered a large-scale quantitative evaluation of recursive causativization in Turkish grounded in explicit structural and semantic predictions.

## 5.2 Data and sampling

In this section, I present the ways by which the dataset for investigation is created. As the hypotheses deal with the interplay of causative formation, verbal semantics, and argument realization, a large amount of authentic data is required, which would preferably allow me to have control over certain morphosyntactic parameters such as tense, number, and voice morphology (in our case: CAUS). In the following two sections, I first inform about the corpus utilized to extract suitable data and introduce certain adjustments that were necessary to circumscribe morphosyntactic boundaries to achieve comparability between the levels of parameters. Second, I move on to the elimination and selection criteria that were considered to decide on which verbs to include in the dataset and which verbs to leave out.

### 5.2.1 Corpus and circumscribing parameters

In line with the scope of the research questions of this monograph, I opted for a morphologically annotated corpus via institutional login in Sketch Engine (Kilgarriff et al. 2014): Turkish Web 2020 (trTenTen20). This corpus involves web texts, providing metadata such as the source of each attestation and the document number in the entire corpus as well as the token number. Table 5.1 below illustrates information with regard to counts of tokens, words, sentences (<s>), paragraphs (<p>), documents (<doc>) in the whole corpus.

| Turkish Web 2020 (trTenTen20) |               |
|-------------------------------|---------------|
| Tag                           | Frequency     |
| Tokens                        | 6,145,927,191 |
| Words                         | 4,980,168,485 |
| Sentences (<s>)               | 368,345,301   |
| Paragraphs (<p>)              | 131,381,721   |
| Documents (<doc>)             | 20,795,994    |

**Table 5.1:** Counts of tokens, words, sentences, paragraphs, and documents

As I investigate causative suffixes and their selectional behaviour at the morphosyntax-semantics interface, the following morphological annotation is relevant to mention, which is specified using the tag function: first, <V> is used, which stands for verbs; second, <caus> is used, which stands for causative morpheme regardless of form (e.g. *-Dir, -t*, including both regular and irregular suffixes). I have minimized the attestations by adding another layer considering the tense of verbs, which I have attained using the <past> tag at the end. For queries dealing with double causatives, the <caus> tag is repeated as <caus><caus> on top of <V>; see Çöltekin (2013) for more useful tags. Table 5.2 below shows a comparison of single causatives and double causatives in both corpora making use of tag function as follows: <V><caus><past>.\* and <V><caus><caus><past>.\*, respectively. The “.\*” sign stands for, simply put, ‘whatever comes before or after’ depending on its placement.

| Turkish Web 2020 (trTenTen20) |           |                   |            |
|-------------------------------|-----------|-------------------|------------|
| Tag                           | FREQ      | % of whole corpus | % of total |
| <V><caus><past>.*             | 3,494,762 | 0.05686%          | 96,46%     |
| <V><caus><caus><past>.*       | 128,219   | 0.002086%         | 3,54%      |

**Table 5.2:** Frequencies of single and double causative suffixes

As given in Table 5.2 above, the number of attestations of search queries is highly extensive. Although the absolute frequency of double-causativized tokens (128,219 hits, approx. 3.5%) is much lower than that of single-causativized tokens (3,494,762 hits, approx. 96,5%), the distribution still represents a non-negligible number considering the complexity of double causativization. Note, also, that these verbs constituting the distributions above include unaccusative roots, therefore, do not entirely cover recursive causatives (i.e. double causativization of unergatives and

transitives). Nevertheless, a frequency of over 100,000 occurrences in a large corpus like trTenTen20 suggests that the double use of the causative morpheme is largely productive in language use. For more minimization and more control over the annotation based on PERSON, and for the sake of comparability (e.g. 1st person singular, 3rd person plural, etc.), I have added the following tags right after the <past> tag: <1s> for 1st person singular; <2s> for 2nd person singular; <3s> for 3rd person singular; <1p> for 1st person plural; <2p> for 2nd person plural; <3p> for 3rd person plural. This information on PERSON is effectively used for automatic annotation for INIT\_PERSON (see below Section 5.3 for more). Table 5.3 demonstrates the number of hits filtered by person in the single construction type along with their relative frequencies per million tokens in the respective corpus; Table 5.4 demonstrates the number of hits filtered by person in the double construction type along with their relative frequencies per million tokens in the respective corpus.

| Turkish Web 2020<br>trTenTen20 |                  |                   |            |
|--------------------------------|------------------|-------------------|------------|
| Tag                            | FREQ             | FREQ per M tokens | % of total |
| <V><caus><past><1s>            | 442,265          | 71.96             | 12.74%     |
| <V><caus><past><2s>            | 62,340           | 10.14             | 1.80%      |
| <V><caus><past><3s>            | 2,319,871        | 377.46            | 66.81%     |
| <V><caus><past><1p>            | 366,766          | 59.68             | 10.56%     |
| <V><caus><past><2p>            | 55,061           | 8.96              | 1.59%      |
| <V><caus><past><3p>            | 226,198          | 36.80             | 6.51%      |
|                                | $\sum$ 3,472,501 | $\sum$ 565.01     | 100%       |

**Table 5.3:** The number of hits of each tag involving the single causative with the past tense and the person suffixes and the distribution of their relative frequencies per million tokens per corpus

The fact that the predicates marked by the third person singular (3s) are the majority in both causative types is not a surprise, given that plural inanimate subjects are mostly not marked by person (see Bamyacı et al. 2014). Also, in both tables, person agreement markers with the second person singular (2s) and plural (2p) are the least frequent as opposed to those with the first person singular (1s) and plural (1p), which is also evident by the last column representing the percentages of total rows. Notice, also, that although the third person plural (3p) is almost the same in both distributions, the third person singular (3s) shows a marginal contrast, i.e. 3s in Table 5.4 is higher than that of in Table 5.3.

| Turkish Web 2020<br>trTenTen20 |                  |                   |            |
|--------------------------------|------------------|-------------------|------------|
| Tag                            | FREQ             | FREQ per M tokens | % of total |
| <V><caus><caus><past><1s>      | 15,562           | 2.53              | 12.19%     |
| <V><caus><caus><past><2s>      | 2,445            | 0.40              | 1.91%      |
| <V><caus><caus><past><3s>      | 90,124           | 14.66             | 70.59%     |
| <V><caus><caus><past><1p>      | 9,108            | 1.48              | 7.13%      |
| <V><caus><caus><past><2p>      | 2,362            | 0.38              | 1.85%      |
| <V><caus><caus><past><3p>      | 8,078            | 1.31              | 6.32%      |
|                                | $\Sigma$ 127,679 | $\Sigma$ 20.77    | 100%       |

**Table 5.4:** The number of hits of each tag involving the double causative with the past tense and the person suffixes and the distribution of their relative frequencies per million tokens per corpus

The contrast in distributions of the third person singular (3s) in both tables might rely on the fact that inanimate matrix causers (either inanimate objects or events) in the form of DP and functioning as the subject of the sentence do not agree with the verb for person and considered as 3s. This situation begs the question whether, for those cases where the person is marked by 3s ( $\emptyset$ ), there is a relationship between the overt realization of the initiator and animacy of the initiator, affecting causative formation influenced by the degree of indirectness; see Section 6.5.

## 5.2.2 Elimination criteria for base verbs

Further minimization was necessary to have control over base verbs, to which causative suffixes attach. Using the advanced frequency feature via Sketch Engine and selecting stem attribute, I have attained a list of 50 most frequent stems that are used in double causative configuration. Note that stem attribute, as given in the corpus, refers to the smallest meaningful part of a word (see below for more), as I have <V> in the search queries, these correspond to verbs. Regardless of verb semantics (e.g. manner verbs or result verbs), I have begun to eliminate those that do not meet the elimination criteria as given below in (241).

- (241) a. pure intransitives that have been repeatedly analyzed in the literature:  
e.g. *öl-* ‘die’, *dur-* ‘stop’, *boşal-* ‘empty’, etc.;
- b. stems that take idiosyncratic causative morphology—as these are theoretically defined as involving in the unaccusative-causative alternation (see Section 3.2.3 for an overview);

- c. stems that fall into the so-called ‘free variation’: *kop-* ‘break off’, *çık-* ‘exit’, *kapa-* ‘close’, *şaş-* ‘be surprised’ (see below);
- d. stems that are light verbs: *et-* ‘do’ and *ol-* ‘be’;
- e. stems whose causatives are in no semantic relation to their non-causatives as a result of lexicalisation independently of one another: e.g. *üre-* ‘reproduce’ vs. *üret-* ‘produce’, *işle-* ‘handle’ vs. *işlet-* ‘manage’, *sal-* ‘release’ vs. *saldır-* ‘attack’, *anla-* ‘understand’ vs. *anlat-* ‘tell’, *aş-* ‘exceed’ vs. *aşırt-* ‘steal’ vs. *aşırt-* ‘make pass over’;
- f. stems that refer to more than one verb: e.g. *an-* for both *anla-* ‘understand’ and *an-* ‘remember’, or *kal-* for both *kalk-* ‘stand up’ and *kal-* ‘stay’;
- g. stems that display automatic annotation failure in the corpus leading to mismatches or caveats for comparability of the single form with the double form: e.g. *aldır-* instead of *al-* for the single; *al-* for the double.

Before I present the final search query, I want to now make reference to the so-called ‘free variation’ between *-Ar* and *-Art*, e.g. *çık-ar-* vs. *çık-art-* ‘extract’ (see Sebüktekin 1971: 81) as mentioned above in (241c); see (242).

- (242) a. “Jacko” son albüm-ün-ü de 2001 yıl-ın-da çık-ar-dı.  
 PN last album-3SG.POSS-ACC DE 2001 year-GEN-LOC exit-CAUS-PST  
 ‘He released his last album “Jacko” in 2021.’  
 (trTenTen20: doc\_number: #242; token\_number: #102840)
- b. Kronik 12 yıl ara-dan sonra 2. albüm-ün-ü çık-art-tı.  
 PN 12 year gap-ABL after 2nd album-3SG-ACC exit-CAUS-PST  
 ‘Kronik released *their* 2nd album after a 12-year gap.’  
 (trTenTen12: doc\_number: #4049; token\_number: #2066227)

It is noteworthy to indicate that the suffix *-Ar* is mostly annotated as the aorist suffix but almost never the causative suffix (e.g. trTenTen20); thus, the simple query of *çıkardı* has given the following morphological annotation: <V><aor><cpl:past><3s>, which is wrong if the example above in (242a) is taken into account. On the other hand, the simple query of *çıkarttı* has given only the following morphological annotation: <V><caus><caus><past><3s>, which is equally problematic compared to the one above as there is essentially only one causative suffix, as illustrated in (242b).

Moving forward, there is a similar variation that, this time, has to do with the verb stem. The transitive verb stem *kapa-* ‘close’ and the causative verb *kapa-t-* ‘close’ refer to the same syntactic and semantic content (see Key 2013: 120), both embodying two arguments, as shown in (243a) and (243b). Similarly, the relationship between the root *şaş-* ‘be surprised’ and the verb stem *şaş-ır-* ‘be

surprised’ is yet another example to this type of variation sketched here, i.e. both are not distinct from one another in terms of syntax and take only one argument, as in (244a) and (244b). Therefore, the causing event is introduced only after the second causative suffix is attached, i.e. *kapa-t-tır-* ‘make sb. close/get sth. closed/force sth. to close’, as in (243c) and *şaş-ır-t-* ‘make sb. surprised’, as in (244c). Note that, similar morphological annotation as outlined above is seen with these examples, too: whereas *kapadı* and *kapattı* are annotated as <V><past><3s>, *kapattırdı* is annotated as <V><caus><caus><past><3s>, and the same goes for *şaşırttı*. Also, *kapa-t-tır-* seems to have tendency that the predicate almost never takes an overt dative-marked causee, leading to interpretations such as *force something to close* rather than *make somebody close something*, as in (243c).

- (243) a. Eylem-ci-ler yol-lar-ı kapa-dı.  
 act-N.DER-PL road-PL-ACC close-PST  
 ‘Activists blocked the roads.’  
 (trTenTen20: doc\_number: #2062; token\_number: #920425)
- b. FIFA dosya-lar-ı kapa-t-tı.  
 PN file-PL-ACC close-CAUS-PST  
 ‘FIFA closed the files.’  
 (trTenTen20: doc\_number: #2305; token\_number: #1026070)
- c. Fransa’da sel Louvre’u kapa-t-tır-dı.  
 France-LOC flood Louvre-ACC close-CAUS-CAUS-PST  
 ‘The flood in France forced the Louvre to close.’  
 (trTenTen20: doc\_number: #1657654; token\_number: #551598854)

The variation between *şaş-* and *şaş-ır-*, as in (244a) and (244b), seems to be never mentioned in the literature, to the best of my knowledge; thus, it certainly requires further investigation. My personal observation via skimming through some data is that animacy of the subject argument might play a role on the choice, i.e. animate subjects are mostly used with the predicate *şaş-ır-* ‘be surprised’. However, I leave this for future work as it falls outside the scope of research in this monograph.

- (244) a. Diyetisyen bile şaş-tı.  
 dietician even be.surprised-PST  
 ‘Even the dietician was surprised.’  
 (trTenTen12: doc\_number: #38552; token\_number: #17992682)
- b. ø İyice şaş-ır-dı, [...].  
 ø completely be.surprised-CAUS-PST  
 ‘She was completely surprised, [...].’  
 (trTenTen12: doc\_number: #24461; token\_number: #11718490)

- c. Bu ben-i çok şaş-ır-t-tı.  
 this 1SG-ACC a.lot be.surprised-CAUS-CAUS-PST  
 ‘This surprised me a lot.’  
 (trTenTen12: doc\_number: #40789; token\_number: #18933433)

Out of 50 most frequent verbs, I have eliminated 25 verbs based on the criteria as listed above in (241). This step of determining the base verbs of investigation was the most important in the sense that it enabled me to create a dataset that varies across verbs, potentially correlating with the predictors that determine the interaction between the causative type and verbal semantics. At this part of selection, no consideration to syntactic and semantic information about the stems was given; the selection was held based on the frequency of occurrences after the elimination of the above-listed verbs. Based on these elimination criteria, out of 50 most frequent verbs, only 25 were used in the final search query. These verbs include the following: *ara-* ‘call/look for’; *getir-* ‘bring’; *imzala-* ‘sign’; *izle-* ‘watch’; *koy-* ‘put/place’; *kullan-* ‘use’; *kur-* ‘set/establish’; *oku-* ‘read’; *sor-* ‘ask’; *söyle-* ‘tell’; *temizle-* ‘clean’; *topla-* ‘collect’; *ver-* ‘give’; *vur-* ‘shoot/hit’; *yol-* ‘tear out’; *çek-* ‘pull’; *öde-* ‘pay’, *boğ-* ‘choke’, *yaz-* ‘write’, and *dene-* ‘try’, *düşün-* ‘think’, *yap-* ‘do/make’, *ye-* ‘eat’, *dene-* ‘try’, *dinle-* ‘listen’. After having determined which stems to investigate the behaviour of recursive causatives (double) as opposed to that of productive causatives (single), I have reached the final search query. The search queries for both types are given in Appendix A. Notice, however, that some stems were not in their original forms since verbalizing suffixes *-la-n*, as in *kurulan-* ‘dry oneself’ and *güneşlen-* ‘sunbathe’, and *-la*, as in *zayıfla-* ‘lose weight’ and *çabala-* ‘try hard’, were not considered as part of the verbal element in the corpus. These stems are *imza*, *top*, *ek*, *kul*, *iz*, *temiz*, *din*, which are essentially *imzala-* ‘sign’, *topla-* ‘collect’, *ekle* ‘add’, *kullan-* ‘use’, *izle-* ‘watch’, *temizle* ‘clean’, *dinle-* ‘listen’, respectively. Table 5.5 below gives an overview of the number of tokens before and after elimination of base verbs.

|        | Before removal | % of total | After removal | % of total |
|--------|----------------|------------|---------------|------------|
| single | 3,472,501      | 96.46%     | 227,063       | 96.88%     |
| double | 127,679        | 3.54%      | 7,318         | 3.12%      |

**Table 5.5:** Token counts and percentages before and after removal of verbs

The search query for double had given a total of 7,318 attestations, and for single a total of 227,063. As evident from the percentages regarding the distribution before and after the elimination of verbs, single constitutes the majority for each scenario. Using the randomizer provided in Sketch Engine, I sampled a list of

10,000 attestations for the single causative. Sketch Engine provides two options on the way attestations are listed. I opted for sentence instead of Key Word In Context (KWIC) since this study conducted in this thesis considers sentence-level variation. This option further allows one to have more control over the number of words and sentence boundaries represented as <s> </s>. Both lists including double and single forms are downloaded as separate .csv files. I loaded both dataframes into R using RStudio (RStudio Team 2020). Via `strex` package (Nolan & Padilla-Parra 2017), `source`, `doc_number`, `token_number`, `item`, `tag`, `base_verb`, and `person` variables are created separately for both single and double; see Appendix B. Note that the respective files are available at OSF, which are for the sake of reproducibility, ultimately necessary to follow steps taken in Rmd files.

After creating two dataframes with double and single construction types, I created a dataframe binding the two together ( $N = 16,612$ ). There were three verbs that did not occur in the single form: *boğ-* 'choke', *yaz-* 'write', and *dene-* 'try'. This may be mainly because of the random sampling of 10,000 attestations out of 227,063 and not because these verbs are not used in the single form. Also, and more importantly, some suffixes were annotated in the corpus incorrectly, as a result, it was impossible to retrieve those cases with the search string I utilized. For instance, *yaz-dir-* 'make write' was annotated as <V><cpl:past>, but not as <V><caus> as it would have been expected. Therefore, I removed these verbs from the overall dataframe for the sake of comparability between base verbs.

Additionally, three more verbs had to be removed after having a look at attestations. Due to automatic annotation failure in the corpus, I removed the verbs *dinle-* 'listen', *ekle-* 'add', and *ye-* 'eat', which were used in constructions such as *dinlen-dir-* 'make rest', *ek-tir-* 'make plant', *yerleş-tir-* 'make settle'. The final dataset included the following 17 verbs: *ara-* call/look for'; *getir-* bring'; *imzala-* sign'; *izle-* watch'; *koy-* put/place'; *kullan-* use'; *kur-* set/establish'; *oku-* read'; *sor-* ask'; *söyle-* tell'; *temizle-* clean'; *topla-* collect'; *ver-* give'; *vur-* shoot/hit'; *yol-* tear out'; *çek-* pull'; *öde-* 'pay'. Another obstacle was the length of each individual attestation. Some attestations were relatively too long (e.g. more than 100 words) than most of the other attestations. As a result, I removed those items that were longer than 20 words from the dataframe. After having reached a filtered dataframe, the total number of attestations were 8486. I then randomly sampled a dataset of 25 percent based on the number of base verbs across construction type ( $N = 2119$ ). Table 5.6 below shows the distribution of person by type in the final dataset prior to the annotation. All of the steps taken to create the dataset prior to annotation is available at OSF. Note, however, that the randomizer will randomly sample a new dataset each time, for this reason, I have also uploaded the dataset I have worked on and annotated.

|          | 1s  | 2s | 3s   | 1p  | 2p | 3p  | $\Sigma$ |
|----------|-----|----|------|-----|----|-----|----------|
| double   | 183 | 20 | 607  | 60  | 31 | 81  | 982      |
| single   | 310 | 25 | 569  | 122 | 36 | 75  | 1137     |
| $\Sigma$ | 493 | 45 | 1176 | 182 | 67 | 156 | 2119     |

**Table 5.6:** Distribution of person by type in the final dataset

In what follows, I move on to the annotation of the final dataset, where I give sufficient information on the dataset and distributions of each variable that are under consideration. This section will be followed by two distinct sections, each involving two broader classes of variables in question.

### 5.3 Annotation categories

All variables, except for `CAUSATIVE_TYPE` and `INIT_PERSON`, were annotated manually using an Excel spreadsheet. Certain measures were taken to prevent annotation errors, such as drop-down menus. The overall annotation took about 7 months to complete and was designed and conducted by me. The annotated dataset as a .csv file is available online at OSF with a limited access due to the copyrights policy of Sketch Engine. See Section 5.4 for further information on the dataset, especially with regard to what was initially annotated but left out after. As I investigate the effect of increasing indirectness on the interaction of the verbal semantics and argument structure, I took the following main parameters into consideration. As for verbal-semantic parameters, I annotated the base verbs for `BASE_ROOT` with the levels `manner` vs. `result`; see Section 5.3.1 below. Extending research from manner/result complementarity, I also annotated items for `BASE_DURATION` with the levels `durative` vs. `punctual` and for `BASE_TELICITY` with the levels `atelic` vs. `telic`, which would in turn determine `BASE_ASPECT` with the levels `achievement` vs. `accomplishment` vs. `activity`. As for morphosyntactic parameters, I annotated items for syntactic realization of arguments: (i) `INIT_OVERTNESS`, `CAUSEE_OVERTNESS`, and `THEME_OVERTNESS` as part of the parameter `OVERTNESS` that determines the degree of indirectness in interaction with `BASE_ROOT`, each with the levels `null` vs. `overt`.

Recall that the main hypothesis is that recursive causatives of manner verbs impose stricter constraints on argument structure, leading to a lower degree of indirectness, and that those of result verbs allow for more variation in argument structure configurations, leading to a higher degree of indirectness. I predict significant interactions between verbal semantics and argument overtiness in recursive causatives, with manner verbs restricting argument omission and result

verbs allowing for greater flexibility. Other variables that will be used as part of post-hoc analyses include `INIT_PERSON`, with the levels 1p, 1s, 2p, 2s, 3p, and 3s; `INIT_ANIMACY` with the levels `human`, `collective`, `inanimate`, `event`, which was then minimized with levels including only `human` and `non-human`, where every other level except for `human` was coded as `non-human` as part of the variable `INIT_HUMAN`; `THEME_CASE`, with the levels `acc` and `zero`; `ARG_POSITION`, representing the word order of all arguments relative to the causative predicate and to one another; see Section 5.3.3 below for more detailed information.

### 5.3.1 Verbal-semantic parameters

Since this study investigates the increasing indirectness hypothesis, according to which recursive causatives increase the indirectness between the higher-causing event and the embedded caused event, and since this increase is expected to be sensitive to whether a base verb lexicalizes a manner or a result root (Levin & Rappaport Hovav 2005; Alexiadou et al. 2015), all verbs included in the analysis were first classified according to the manner–result distinction; see Section 4.4 for why I consider this distinction to be relevant for the effect of increasing indirectness observed in recursive causatives.

Based on the diagnostics discussed extensively in Chapter 2 and presented in Table 2.3, the 17 transitive dynamic/eventive verbs remaining in the dataset were annotated as `manner`, when referring to atelic events, such as *oku-* ‘read’ and *izle-* ‘watch’, which inherently encode information on the manner of an action and how an action is carried out by an agent; as `result`, when referring to telic events, such as *getir-* ‘bring’ and *temizle-* ‘clean’, which inherently consist of information on the resultant state of an otherwise underspecified causing event. At this stage, the durative aspect of the verbs were not considered, but see below for more on this regard. Examples below show a selection of verbs based on their manner/result properties together with a respective item from the dataset, including manner verbs such as *izle-* ‘watch’, *kullan-* ‘use’, and *oku-* ‘read’, as in (245); result verbs such as *getir-* ‘bring’, *imzala-* ‘sign’, and *temizle-* ‘clean’, as in (246); see Appendix C for the whole list of verbs.

(245) a. *izle-* ‘watch’ — MANNER

Tenisçi-ler            final-e        yakış-an bir mücadele  
 tennis.player-PL    final-DAT    fit-RELZ a    battle  
 izle-t-tir-di-ler.  
 watch-CAUS-CAUS-PST-3PL

‘Tennis players had a game watched, which was worthy of the final.’  
 (*blogspot.com*; `doc_number`: #20292376; `token_number`: #5986665654)

- b. **kullan-** ‘use’ — MANNER  
 Banka-lar 3 yıl-da 561 milyar YTL kredi kullan-dır-dı.  
 bank-PL 3 year-LOC 561 billion YTL credit use-CAUS-PST  
 ‘In 3 years, the banks had 561 billion YTL in loans used.’  
 (*yeniasya.com.tr*; doc\_number: #12162011; token\_number: #3618295142)
- c. **oku-** ‘read’ — MANNER  
 Geçen gün öğretmen, Türkçe ders-in-de bir gazete-den bir  
 past day teacher Turkish class-3SG-LOC a newspaper-ABL a  
 yazı oku-t-tu.  
 article read-CAUS-PST  
 ‘The other day, the teacher had a newspaper article read in the Turkish class.’  
 (*kigem.com*; doc\_number: #230683; token\_number: #80802658)
- (246) a. **getir-** ‘bring’ — RESULT  
 Bira şişe-ler-i boşal-dıkça yeni-sin-i getir-t-ti.  
 beer bottle-PL-AGR empty-CVB new-3SG-ACC bring-CAUS-PST  
 ‘As the beer bottles emptied, Ø had new ones brought in.’  
 (*edebiyatdefteri.com*; doc\_number: #16937206;  
 token\_number: #4946133471)
- b. **imzala-** ‘sign’ — RESULT  
 Taraftar-lar mağaza-dan al-dık-lar-ı forma ve atkı-lar-ı  
 fan-PL shop-ABL take-RELZ-3PL-AGR jersey and scarf-PL-ACC  
 futbolcu-lar-a imzala-t-tır-dı.  
 football.player-PL-DAT sign-CAUS-CAUS-PST  
 ‘Fans had the football players sign the jerseys and scarves they bought from the store.’  
 (*memurlar.net*; doc\_number: #4986390; token\_number: #1565758409)
- c. **temizle-** ‘clean’ — RESULT  
 Ev-imiz-i temizle-t-tir-di-k.  
 house-1PL-ACC clean-CAUS-CAUS-PST-1PL  
 ‘We had our house cleaned.’  
 (*aydinlar.net*; doc\_number: #3529323; token\_number: #1126062994)

Building on the manner/result distinction and extending the investigation into other directions pertaining to verbal semantics, I annotated verbs using the aspectual classification of events as proposed by Vendler (1967: 106): states, achievements, activities, and accomplishments; see Section 2.2.2. Coming back to the verbs of investigation in the dataset, I implemented *in* and *for* adverbials to determine aspectual classes along with their telicity and duration properties. For *in* adverbials, I used the postposition *içinde*: *1 dakika içinde* ‘in 1 minute’ or *saniyeler*

*çinde* ‘in seconds’ to diagnose telic and punctual events; 2 *saat içinde* ‘in 2 hours’ or *yıllar içinde* ‘in years’ to diagnose telic and durative events. For *for* adverbials, I used the postposition *boyunca*: 1 *dakika boyunca* ‘for 1 minute’ or *saniyeler boyunca* ‘for seconds’ to diagnose atelic and punctual events; 2 *saat boyunca* ‘for 2 hours’ or *yıllar boyunca* ‘for years’ to diagnose atelic and durative events.

Having said that, below I illustrate three verbs per verbal type (manner or result) represented in three transitive constructions, as in (247) and (248), and show which of the four diagnostics fail or pass for which verb. The diagnostics for every verb is to be found in Appendix D. Note, however, that, for each construction, non-iterative uses are taken into consideration, as, for instance, *vur-* ‘shoot/hit’ can have iterative meaning with the *boyunca* modification, but *çinde* is most appropriate with a non-iterative use. As a consequence, I only considered the respective transitive constructions as occurring once at a specific time.

- (247) a. **izle- ‘watch’** — MANNER  
*bir gösteri izlemek* ‘to watch a show’  
 ??*saniyeler içinde* / ??*2 saat içinde*  
 ??*saniyeler boyunca* / <sup>ok</sup>*2 saat boyunca*  
 → atelic + durative = activity
- b. **kullan- ‘use’** — MANNER  
*bir klavye kullanmak* ‘to use a keyboard’  
 ??*1 dakika içinde* / ??*2 saat içinde*  
 ??*saniyeler boyunca* / <sup>ok</sup>*yıllar boyunca*  
 → atelic + durative = activity
- c. **oku- ‘read’** — MANNER  
*bir roman okumak* ‘to read a novel’  
 ??*saniyeler içinde* / ??*2 saat içinde*  
 ??*saniyeler boyunca* / <sup>ok</sup>*2 saat boyunca*  
 → atelic + durative = activity
- (248) a. **getir- ‘bring’** — RESULT  
*arabayı getirmek* ‘to bring the car’  
 ??*1 dakika içinde* / <sup>ok</sup>*2 saat içinde*  
 ??*saniyeler boyunca* / ??*2 saat boyunca*  
 → telic + durative = accomplishment
- b. **imzala- ‘sign’** — RESULT  
*raporu imzalamak* ‘to sign the protocol’  
<sup>ok</sup>*saniyeler içinde* / ??*2 saat içinde*  
 ??*saniyeler boyunca* / ??*2 saat boyunca*  
 → telic + punctual = achievement

c. *temizle-* ‘clean’ — RESULT

*odayı temizlemek* ‘to clean the room’

*??saniyeler içinde / <sup>ok</sup>2 saat içinde*

*??saniyeler boyunca / ??2 saat boyunca*

→ telic + durative = accomplishment

An important note should be made here with regard to alternative readings of certain verbs: *ara-* ‘call/look for’, *söyle-* ‘tell/say’, *topla-* ‘pick up/add’, *vur-* ‘shoot/hit’, and *çek-* ‘pull’. These verbs can have different interpretations depending on the context, hence, make it hard to decide on the aspectual classification. For instance, *söyle-* ‘tell/say’ is also used in a context such as *şarkı söylemek* ‘to sing a song’, which requires a durative and atelic reading, as in (249). This shows that verbs per se cannot entirely define aspectual classes of events, rather together with their theme arguments; see Section 6.4.3 and Section 6.5 for possible ways to tackle this variation across individual verbs.

- (249) Beyaz Show’un dün gece yayınla-n-an bölüm-ün-de  
 Beyaz Show-GEN yesterday night broadcast-PASS-RELZ episode-3SG-LOC  
 Beyaz ünlü-ler-e montaj yap-arak türkü söyle-t-ti.  
 Beyaz celebrity-PL-DAT montage make-CVB folk.song tell-CAUS-PST  
 ‘In the episode of Beyaz Show broadcast last night, Beyaz made celebrities sing folk songs by making a montage’.  
 (*millihakimiyet.com*; doc\_number: #15607705; token\_number: #4588847245)

Another example is *çek-* ‘pull’, which can be atelic and durative in a context such as *şnav çekmek* ‘to push up’, but telic and punctual in a context such as *fotoğraf çekmek* ‘to take a photo’. As a consequence, I had to stick with the first dictionary meaning of such verbs with multiple other meanings in various contexts (Türk Dil Kurumu Sözlükleri ‘Dictionaries of Turkish Language Institution’ accessed via TDK). For instance, *çek-* in TDK means “to grab something and move it towards oneself or in another direction”, i.e. ‘pull’. As a result, it was annotated as telic and durative, hence accomplishment for the aspectual class; see Section 6.5 for a discussion on *çek-* ‘pull’, since it constitutes the highest number of tokens in the dataset; therefore, a close look at the individual effect of *çek-* ‘pull’ is necessary.

Table 5.7 shows the distribution of base verbs across verbal semantic parameters of base root, referring to the manner/result distinction, base telicity, referring to the telic/atelic distinction, base duration, referring to the durative/punctual distinction, base aspect, referring to the aspectual classification of dynamic events, i.e. activity, accomplishment, and achievement. *N* on the right-hand side of the table shows the number of data points for each verb, making a total of 1174 sentences; see Section 5.4 for more detail.

|    | BASE_VERB | BASE_ROOT | BASE_TEL | BASE_DUR | BASE_ASPECT    | N   |
|----|-----------|-----------|----------|----------|----------------|-----|
| 1  | ara       | manner    | atelic   | durative | activity       | 97  |
| 2  | izle      | manner    | atelic   | durative | activity       | 148 |
| 3  | kullan    | manner    | atelic   | durative | activity       | 37  |
| 4  | oku       | manner    | atelic   | durative | activity       | 116 |
| 5  | topla     | manner    | atelic   | durative | activity       | 25  |
| 6  | getir     | result    | telic    | durative | accomplishment | 65  |
| 7  | temizle   | result    | telic    | durative | accomplishment | 21  |
| 8  | çek       | result    | telic    | durative | accomplishment | 254 |
| 9  | imzala    | result    | telic    | punctual | achievement    | 41  |
| 10 | koy       | result    | telic    | punctual | achievement    | 81  |
| 11 | kur       | result    | telic    | punctual | achievement    | 68  |
| 12 | sor       | result    | telic    | punctual | achievement    | 27  |
| 13 | söyle     | result    | telic    | punctual | achievement    | 33  |
| 14 | ver       | result    | telic    | punctual | achievement    | 67  |
| 15 | vur       | result    | telic    | punctual | achievement    | 30  |
| 16 | yol       | result    | telic    | punctual | achievement    | 36  |
| 17 | öde       | result    | telic    | punctual | achievement    | 28  |

**Table 5.7:** Distribution of `BASE_VERB` across the verbal semantic parameters of `BASE_ROOT`, `BASE_TELICITY`, `BASE_DURATION`, `BASE_ASPECT`;  $\sum$  1174

### 5.3.2 Argument-structural parameters

Morphosyntactic parameters including syntactic realization of arguments, that is, `OVERTNESS` and `POSITION`, play a determining role in this study, which are considered as measures of degrees of indirectness. `OVERTNESS` represents the annotation category for the overtness of the initiator (i.e. the matrix subjects of both single and double forms), the causee, and the theme arguments, i.e. `INIT_`, `CAUSEE_`, and `THEME_OVERTNESS`. If arguments were syntactically overt—regardless of their form of realization (e.g. full DPs, demonstratives, proper names)—they were separately annotated as overt, if not, then as null.

`ARG_POSITION` represents the annotation category for the syntactic position of the initiator, the causee, and the theme arguments, with three levels that were annotated relative to the position of the causative predicate as well as to one another. This variable include levels such as 1, 2, 3, V and 1, 2, V, 3, where (1) is the initiator, (2) is the theme, (3) is the causee, and (V) is the causative predicate.

(250) Bakan Akdağ, basın mensub-un-un şikayet-i üzerine  
 minister Akdağ press member-3SG-GEN complaint-AGR upon  
 kamere-lar karşısında Alo 182'yi ara-t-tır-dı.  
 camera-PL in.front.of Alo 182-ACC call-CAUS-CAUS-PST  
 'Upon the complaint of the press member, Minister Akdağ had Alo 182  
 called in front of the cameras.'  
 (erzurumhabergazetesi.com; doc\_number: #19789357;  
 token\_number: #5767046978)

(251) Avukat Sultansu, borc-un-u öde-ye-me-yen Didim  
 lawyer Sultansu debt-3SG.POSS-ACC pay-ABIL-NEG-RELZ Didim  
 Belediyesi'nin 49 banka hesap-in-a haciz  
 municipality-GEN 49 bank account-3SG.POSS-DAT confiscation  
 koy-dur-t-tu.  
 put-CAUS-CAUS-PST  
 'Lawyer Sultansu had 49 bank accounts of Didim Municipality seized,  
 which could not pay their debts.'  
 (internethaber.com; doc\_number: #14604323; token\_number: #4329828707)

(250) and (251) above represent the annotation of OVERTNESS and ARG\_POSITION, where the initiator is overt, the causee is null, and the theme is overt, with the following argument position: 1, 2, V. (252) depicts that the initiator is null, the causee is overt, and the theme is overt, with the following level of argument position: 3, 2, V. (253) demonstrates that the initiator is overt, the causee is null, and the theme is overt, representing the 1, 2, 3, V argument position.

(252) Her iki ameliyat-ta da bana A RH pozitif kan  
 every two operation-LOC too me.DAT A Rh positive blood  
 ara-t-tır-dı-lar.  
 look.for-CAUS-CAUS-PST-3PL  
 'They had me look for A Rh+ blood in both surgeries.'  
 (memurlar.net; doc\_number: #5010589; token\_number: #1572426400)

(253) Taraftar-lar mağaza-dan al-dık-lar-ı forma ve atkı-lar-ı  
 fan-PL shop-ABL take-RELZ-3PL-AGR jersey and scarf-PL-ACC  
 futbolcu-lar-a imzala-t-tır-dı.  
 football.player-PL-DAT sign-CAUS-CAUS-PST  
 'Fans had the football players sign the jerseys and scarves they bought from  
 the store.'  
 (memurlar.net; doc\_number: #4986390; token\_number: #1565758409)

The important note should be made in relation to discourse pragmatics of argument omission. As already stated in the previous chapters, although the person (except for 3s) is marked on the verb, the overtness of the initiator is only considered as

overt when there is an overt argument. Also, in contexts where the information is inferred - for instance, in (251) above, where the causee might be a sequestrator, whose job is to seize bank accounts - the causee can be omitted due to its inferrability from the context. In addition, note that I do not take the theme arguments and their semantic properties into account, even though, as also mentioned in the previous chapters, the semantic aspects of individual verbs are largely dependent on their themes; see Section 6.5 for a discussion.

### 5.3.3 Additional parameters

As mentioned above, I considered some additional parameters as follows: `INIT_PERSON`, with the levels 1p, 1s, 2p, 2s, 3p, and 3s; `INIT_ANIMACY` with the levels human, collective, inanimate, event, which was then minimized with levels including only human and non-human, where every other level except for human was coded as non-human as part of the variable `INIT_HUMAN`; `THEME_CASE`, with the levels acc and zero. The relevance of nominal parameters such as `CASE`, `PERSON`, and `ANIMACY` will be discussed thoroughly in Section 6.5. For instance, the potential effect of animacy relies heavily on the fact that non-human initiators are simply inanimate matrix causers, which have a different morphosyntactic status than animate matrix initiators, therefore, their use further contributes to the degree of indirectness (Alexiadou et al. 2015; Akkuş 2021). Also, there is an asymmetry for the person agreement markers with third person plural subjects. Although not directly related, this variable will be effectively used to account for the variation in argument realization in interaction with the person agreement markers (`INIT_PERSON`) and the case of the theme `THEME_CASE`), determining the distribution of the manner/result distinction across the type of causative formation.

## 5.4 Data wrangling

After having annotated the dataset, I loaded the annotated spreadsheet into RStudio to begin the analysis. The R version utilized to run the analysis is 4.4.1 (2024-06-14). For data visualization, I implemented `ggplot` via the `ggplot2` package (Version 3.5.1; e.g. Wickham 2009). In what follows, I give an overview of the process of data wrangling which informs about what was maintained to run statistical analyses, such as elimination of certain items.

Recall that the initial dataset prior to the annotation consisted of 2119 tokens, some of which had to be disregarded due to certain reasons as outlined above. As a result, prior to the statistical data analysis, some data wrangling was required in

order to work with a useful data (Boehmke 2016). Creating a dataframe, (i) the base verbs *yap-* ‘do/make’ and *düşün-* ‘think of’ were subsetted out ( $N = 862$ ); (ii) NA values that refer to ungrammatical and/or irrelevant cases ( $N = 59$ ); the case of the causee was restricted to only DAT, by subsetting out LOC, ACC, and  $\emptyset$  ( $N = 28$ ).

With regard to the first point, the verbs *yap-* ‘make/do’ and *düşün-* ‘think of/about’ had to be removed from the dataset due to the following reasons. The former was almost always used as a light verb construction. Although I initially disregarded light verbs such as *et-* ‘do’ and *ol-* ‘be’ prior to the sampling (see above 241), I kept *yap-* in my data since it constituted the majority ( $N = 693$  after randomization by 25%). The latter was most of the time used as an intransitive verb or as a transitive verb without an overt theme argument; thus, it affected the case of the causee in cases where the theme was covert. Also, in most cases, the theme argument was used as a clausal complement such as *as if* and *whether* constructions, which do not fall into neither levels of THEME\_CASE. Interestingly, however, in such cases, the causee was marked by the accusative case, as in (254).

- (254) Özellekle Robin Wright’ın yaş-in-a rağmen hepimiz-den  
 especially Robin Wright-GEN age-3SG-DAT despite all.of.us-ABL  
 güzel vücut-lu ol-ma-sı beni spor yap-sa-m mı  
 beautiful body-INST be-N.DER-3SG 1SG.ACC sport make-COND-1SG Q  
 diye düşün-dür-t-tü.  
 SUB think-CAUS-CAUS-PST  
 ‘Especially Robin Wright’s beautiful body despite her age made me think  
 about whether I should do sports.’  
 (*bikotbitisort.com*; doc\_number: #15360136; token\_number: #4530430794)

NA values included tokens that are (i) duplicates; (ii) ungrammatical cases; (iii) intransitive uses of a specific verb; (iv) non-full sentences within the sentence boundary (within  $\langle /s \rangle$ ); (v) stemming issues due to the automatic annotation failure of the corpus, similar to those outlined above. For instance, for the base verb *yol-* ‘tear out’, an item consisted of the following predicate: *yolla-t-tı-k* ‘send.out-CAUS-PST-1PL’. Note also that, with regard to duplicates, although I checked them while building the dataset using the function *deduplicated* available in base R, there were still duplicates remaining that consisted of the same text from different sources. As for the last point, I disregarded those cases where the causee is marked by LOC or ACC, or  $\emptyset$ , in order to only restrict attention to the dative-marked causee as it is the usual scenario with causativization of transitives in Turkish that the embedded subject is marked by the dative case, as already shown in the previous chapters. However, in some cases, the causee takes LOC, as in (255a), or ACC or  $\emptyset$ , ultimately because of the intransitive use of the base verb, as in (255b), i.e. *oku-* ‘go to school/study (intr.)’.

(255) a. *Locative-marked causee*

Hele Marco'nun gol-e dön-üş-tür-e-me-diğ-i  
especially MARCO-GEN goal-DAT turn-RECIP-CAUS-ABIL-NEG-RELZ-AGR  
fırsat-lar, izle-yen-de saç baş yol-dur-t-tu.  
opportunity-PL watch-N.DER-LOC hair head tear.OUT-CAUS-CAUS-PST

'Especially the opportunities that Marco failed to convert into goals made the audience tear their hair out.'

(*milliyet.com.tr*; doc\_number: #10226552; token\_number: #3105839825)

b. *Zero-marked causee*

Tek maaş-la 6 çocuk oku-t-tu.  
only salary-INST 6 kid read-CAUS-CAUS-PST

'Ø educated 6 children on a single salary.'

(*deuforum.com*; doc\_number: #3276345; token\_number: #1047806353)

Overall 949 tokens were left out, leaving a total of 1174 tokens in the final dataset for the analysis. The wrangled dataset was written as a .csv file, which can be downloaded online at OSF.

## 5.5 Summary

The chapter has established a controlled empirical basis for this investigation by defining circumscribing parameters for data sampling and applying strict elimination criteria to ensure that the dataset captures genuinely productive causative formations. It has further introduced an annotation scheme that operationalizes key theoretical distinctions, in particular the manner–result contrast and patterns of argument realization and omission, alongside relevant additional morphosyntactic variables. After outlining the data wrangling procedures required for quantitative analysis, the chapter has shown how the resulting dataset supports a systematic test of the increasing indirectness hypothesis.

Overall, this chapter has provided the quantitative foundation for assessing whether recursive causatives of transitive result verbs encode higher degrees of indirectness than their recursive causatives of manner verbs. In doing so, it fills a gap in the literature by offering a large-scale corpus-based evaluation of recursive causativization in Turkish grounded in explicit structural and semantic predictions. In the next chapter, I present the statistical results and discuss the implications of the findings for the understanding of causative recursion in Turkish.



## Chapter 6

# Statistical analyses and interpretation of results

### 6.1 Overview

This chapter provides a detailed account of the statistical analyses and interpretation of the results obtained through the dataset, whose annotation and relevant information on different parameters and categories of analysis were extensively given in the previous chapter. The analysis is designed to guide the reader through the key hypotheses, statistical methods, and the observed variability within the data alongside the predictions for the type of verbs at the manner/result distinction, contributing to the effect of increasing indirectness in recursive causatives. Following this, Section 6.2 revisits the hypotheses and predictions tested, and Section 6.3 presents descriptive statistics that offer an initial exploration of the dataset, highlighting central tendencies and distributions. The core of the analysis lies in the statistical modeling in Section 6.4, which begins with a model summary and information, and provides justification for the conducted statistical analyses.

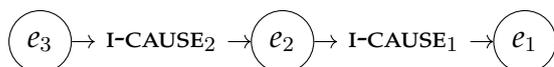
A more detailed examination follows in Section 6.4.2, focusing on three-way interaction effects between the type of verbal root (manner vs. result), causee overtness (null vs. overt), and initiator overtness (null vs. overt), and how these factors altogether influence the probability of recursive causatives, investigating the combinations of the individual levels of these factors as measures of the increasing indirectness. In Section 6.4.3, verb-specific variability is explored based on not only predicted probabilities across individual verbs but also their varying intercepts and slopes for main effects, shedding light on how by-verb variation displays distinct patterns in the data, which will be argued to potentially be due to their morphosyntactic and semantic properties as well as their inherent event-structural attributes. Section 6.5 concludes with a discussion of the key findings, offering

interpretations that relate the results back to the two-fold hypotheses on the basis of manner/result complementarity, leading to further theoretical implications on the complex domain of causative constructions. This section presents detailed post-hoc analyses considering the distributional patterns of initiator overtness and causee overtness as well as the distributional results of argument order across the entire dataset. Moreover, it extends the analysis to additional parameters such as the theme's case marking and the initiator's animacy based on the interaction of causative formation and root semantics, and includes a new analysis that covers both of these parameters based on this interaction, determining whether these parameters further modulate the degree of indirectness.

## 6.2 Main hypotheses and predictions

In Chapter 4, I have argued that recursive causatives introduce an implicit intermediary causer licensed by a thematic non-active Voice head. This Voice head makes available an external argument position that may be realized via the postposition *tarafından*. In Section 4.4, I introduced the notion of *increasing indirectness* in recursive causatives, focusing on how argument omission and argument realization interact with event structure. Crucially, these effects are determined by the manner/result distinction, which imposes independent constraints on event composition. On this basis, I have argued that the degree of indirectness depends on the interaction between verbal semantics and argument realization. Manner roots (e.g. *sweep, wipe, sew*) describe the way an action is performed by an agent and are mono-eventive, thereby encoding a relatively low degree of indirectness. Result verbs (e.g. *break, open, empty*), by contrast, specify a resultant state of an otherwise underspecified causing event and are inherently bi-eventive, which allows for intermediate causes and yields a higher degree of indirectness. The figures in (256) and (257) illustrate this contrast. As shown there, recursive causatives of manner verbs embed two indirect-causation introducing layers, whereas recursive causatives of result verbs embed an additional direct-causation layer and a resultant state. This structural asymmetry gives rise to the empirical predictions associated with the increasing indirectness hypothesis.

(256) *Recursive causal chain with manner verbs*



(257) *Recursive causal chain with result verbs*



Recall that previously I have shown that manner/result complementarity is diagnosed through a set of structural constraints, one of which concerns restrictions on external arguments. A further constraint distinguishing manner and result verbs concerns argument omission. Manner verbs systematically disallow agent deletion, whereas result verbs permit it. This contrast follows from differences in event focus: causatives of result verbs foreground the resultant state rather than the specific action that brings it about, which allows arguments associated with the causing event to remain underspecified. Causatives of manner verbs, by contrast, depend on the identification of an executing participant, rendering argument omission infelicitous. Based on the interaction between causative formation and verbal semantics, I formulate the following hypothesis in (258).

(258) **The increasing indirectness hypothesis**

- a. **Recursive causatives of manner verbs** show more restrictions in argument realization, making it less likely to omit key arguments, thus leading to a lower degree of indirectness.
- b. **Recursive causatives of result verbs** show more flexibility in argument realization, making it more likely to omit key arguments, thus leading to a higher degree of indirectness.

Recursive causatives of manner verbs tend to exhibit tighter constraints on the realization of arguments, particularly the causee. Since manner verbs focus on the specifics of the action, omitting these arguments, if not pragmatically inferable, would leave the causative structure semantically incomplete. A causative construction like *izle-t-* (to make somebody watch something) relies on the overt realization of both the initiator and the causee due to the descriptive properties of the watching action. (259) shows an example of productive causatives of manner verbs, where the causee is realized syntactically. An example for recursive causatives of manner verbs is given below in (260) with the *topla-t-tır-* (to have (somebody) make somebody pick somebody up). As can be seen, the semantic richness of the manner verb with descriptive properties of the action taking place makes it less tolerant for argument omission.

- (259) Hem salon-da izle-yen-ler-e      hem televizyon baş-in-da  
 both hall-LOC watch-RELZ-PL-DAT and television head-3SG-LOC  
 izle-yen-ler-e      güzel      bir maç      izle-t-ti-k.  
 watch-RELZ-PL-DAT beautiful a      match watch-CAUS-PST-1PL  
 ‘We made both the audience in the hall and the viewers at home watch a beautiful match.’  
 (*samanyoluhaber.com*; doc\_number: #16638763; token\_number: #4862281711)

- (260) Polis-ler-e her küpe-li, uzun saç-lı, siyah  
 police.officer-PL-DAT every earring-N.DER long hair-N.DER black  
 tişört-lü delikanlı-yı topla-t-tır-dı-k.  
 T-shirt-N.DER young.man-ACC add-CAUS-CAUS-PST-1PL  
 ‘We made the police arrest every young man with earrings, long hair and a  
 black T-shirt.’  
 (*gnoxis.com*; doc\_number: #608819; token\_number: #207671195)

Conversely, recursive causatives of result verbs tend to allow greater flexibility in argument realization. Because result verbs emphasize the resultant state rather than the process in which this resultant state is attained; they allow more intermediate causes and let omission of arguments, thereby increasing the indirectness between the higher causing event and the caused state. For instance, *kır-dır-* ‘make somebody break something’ or ‘have something broken’ allow more easily an intermediary causes since the focus is on the resultant state of *breaking* rather than the specific action that caused it. This flexibility leads to greater potential for indirect causation in recursive constructions involving result verbs. An example to productive causatives of result verbs is given below in (261), where the focus is rather on *the-bringing-of-the-beer-bottles* than on the agent doing the bringing. Recursive causatives of result verbs as given in (262) also reflect how common it is to omit arguments.

- (261) Bira şişe-ler-i boşal-dıkça yeni-sin-i getir-t-ti.  
 beer bottle-PL-AGR empty-CVB new-3SG-ACC bring-CAUS-PST  
 ‘As the beer bottles emptied, (he/she) had new ones brought in.’  
 (*edebiyatdefteri.com*; doc\_number: #16937206; token\_number: #4946133471)
- (262) Sonra-sın-da savcılığ-a etki ed-erek yayın yasağ-ı  
 after-POSS.3SG-LOC prosecutor-DAT influence do-CVB publication ban-ACC  
 getir-t-tir-di.  
 bring-CAUS-CAUS-PST  
 ‘Afterwards, by influencing the prosecutor, (he/she) made (them) impose a  
 publication ban.’  
 (*giresun28haber.com*; doc\_number: #15610641; token\_number: #4589585942)

In summary, recursive causatives introduce additional layers of causation, where the degree of indirectness depends on the interaction between verbal semantics and the overt realization of arguments. Manner verbs, with their strict constraints on argument realization, exhibit less indirectness, while result verbs, due to their inherent flexibility, allow for more intermediate causes, increasing indirectness. I predict significant interactions between verbal semantics and argument overtness in recursive causatives, with manner verbs restricting argument omission and result verbs allowing for greater flexibility.

### 6.3 Descriptive statistics

Table 6.1 shows the distributional results of the interaction effect of the causative type and the base root on the overtness of all arguments: (A) represents the distributional results of the interaction effect on the overtness of the initiator; (B) those on the overtness of the causee; (C) those on overtness of the theme. The last row shows the total of each column.

|           |        | A                             | B                               | C                              |
|-----------|--------|-------------------------------|---------------------------------|--------------------------------|
| BASE_ROOT | TYPE   | INIT_OVERTNESS<br>% (n/total) | CAUSEE_OVERTNESS<br>% (n/total) | THEME_OVERTNESS<br>% (n/total) |
| manner    | single | 26% (27/104)                  | 29,8% (31/104)                  | 84,6% (88/104)                 |
| manner    | double | 37,9% (121/319)               | 37,3% (119/319)                 | 79,3% (253/319)                |
| result    | single | 62% (237/382)                 | 14,9% (57/382)                  | 94% (359/382)                  |
| result    | double | 43,9% (162/369)               | 35,2% (130/369)                 | 87% (321/369)                  |
|           |        | 46,6% (547/1174)              | 28,7% (337/1174)                | 87% (1021/1174)                |

**Table 6.1:** The distributional results of the interaction effect of the base root and the causative type on the overtness of all arguments

The results suggest, first, the overtness of the initiator is more frequent with result verbs both in the single form (62%) and in the double form (43,9%), albeit the contrast with manner verbs being more pronounced with the single form than the double form; second, the overtness of the causee is more frequent with manner verbs both in the single form (29,8%) and in the double form (%37,3), albeit the contrast with result verbs being more pronounced with the single form than the double form; third, the overtness of the theme is more frequent with result verbs both in the single form (94%) and in the double form (87%). The overtness of the initiator in the single form shows a great contrast depending on the manner/result distinction. For the overall distributions of the overtness of all arguments, the theme is the most frequent, with manner verbs allowing the omission of the theme more than result roots, as expected (Rappaport Hovav & Levin 2010; Levin & Hovav 2013; Alexiadou et al. 2015).

Considering the increasing indirectness hypothesis, it seems that the overtness of all arguments have a determining role in the interaction of the causative type and verbal semantics. More specifically, `INIT_OVERTNESS` shows a remarkable contrast in both the type of causatives and in the verbal semantics. This contrast is more visible with the single form than the double form. The interaction of the causative

type and the verbal semantics based on `CAUSEE_OVERTNESS` is only remarkable with the single form. When considered in isolation, the results regarding the overtness of the causee seem to contrast the previous literature arguing that the occurrence of recursive causatives depends on the overtness of the causee (e.g. Göksel & Kerslake 2005). Finally, `THEME_OVERTNESS` is another important predictor that determines the interaction of the causative type and the verbal semantics. More specifically, the distributional results show that both manner and result verbs decrease the frequency of the theme when contrasted between the single and double forms, with result verbs showing more numerical difference than manner verbs.

To circumscribe variable contexts in order to include only overt themes to achieve comparability for the two-way interaction between causative formation and verbal semantics, a subsetting of items without overt theme arguments is necessary. The distribution of the theme overtness constitutes 87%. Looking at the contrast caused by the theme overtness suggests that the transitive construction (the direct object and the predicate) results in more clear distributions for the conditional effects of the initiator overtness and the causee overtness. It would therefore make sense to look in more detail at the cases with overt themes only. The final dataset included 1021 tokens after elimination of cases without overt themes. If we look at the distributional results of the interaction effect between the causative type and the base root on the overtness of the initiator and the causee, the situation of the conditional effects becomes even clearer.

Figure 6.1 shows the proportions of the causative type. Dark green bars represent the double form and light green bars represent the single form, both adding up to 100% for each condition. The figure is faceted by the base root and by the causee overtness to account for the distribution between each unique condition more clearly. The up-left side shows manner verbs and cases with null causee, the down-left side shows manner verbs and cases with overt causee. The up-right side shows result verbs and cases with null causee, and the down-right side shows result verbs and cases with overt causee.

The conditional effects presented in the form of filled barplots representing each unique condition (such as `manner:init_null:causee_overt`; see the corner at the down-left side) suggest the following. First, in the single causative form with manner verbs, there is a clear pattern where the initiator is null and the causee is null in 47.7% (42/88), which decreases when the causee becomes overt, with only 22.7% (20/88). When the initiator is overt and the causee is null, the percentage is 19.3% (17/88), which decreases, again, with the overtness of the causee to 10.2% (9/88). In the double causative form with manner verbs, the most common configuration is when the initiator and the causee are both null at 36% (91/253),

followed by overt initiators and null causees at 25.3% (64/253). Overt causees, whether the initiator is null or overt, are less frequent, representing around 20.2% (51/253) and 18.6% (47/253), respectively.



**Figure 6.1:** The distributional results of the interaction effect of the causative type and the base root on the overtness of the initiator and the causee

Second, in the single causative form with result verbs, there is a strong tendency towards overt initiators and null causees, with 57.9% (208/359) following this pattern. Null initiators and null causees occur 27.6% (99/359) of the time. When the initiator is overt and the causee is overt, this only happens in 7.8% (28/359) of the cases. In the double causative form with result verbs, there is a preference for null initiators and null causees in 37.4% (120/321) of cases. However, overt initiators and null causees follow closely at 27.1% (87/321). Overt causees remain less frequent overall, with a 19% (61/321) occurrence when the initiator is overt and a 16.5% (53/321) occurrence when it is null.

Notice that the contrast between `init.null` and `init.overt` for the distribution of the causative type seems to be similar when the causee is overt, whereas, when the causee is null, the contrast undergoes a drastic change in a decreasing trend in the double form. These distributional results suggest that, as expected, result verbs allow for more variation, thus yielding remarkable interactions between unique conditions, which is restricted only to the null realization of the causee

given that the overt realization of the causee does not depict any contrast. As for the overtness of the initiator, it is visible from the proportion, when the initiator is null and the causee is null, that the frequency of the double form is visibly more than that of the single form. However, the situation is the other way around if we look at the case when the initiator is overt and the causee is null. In comparison with manner verbs, overall, overt causees are less frequent in both manner and result roots, particularly in the double form. Overt initiators result in an increase in frequency for the double form in manner verbs but a decrease in frequency for the double form in result verbs. These results suggest that it is noteworthy to look into these distributional results in more reliable terms. In what follows, I move on to the more advanced techniques for statistical data analysis, introducing the models employed to test for statistical significance, and more.

## 6.4 Statistical modeling

### 6.4.1 Model information and summary

Prior to the modeling, factor assignment and re-leveling of factor levels were maintained using code such as `factor(type, levels = c("single", "double"))` inside of a `mutate()` environment accessed via the `dplyr` package (Version 1.1.4; Wickham et al. 2022). This adjustment of re-leveling means that the model will predict the probability of the double form as the treatment level and the single form is the reference level. All factors were then contrast coded depending on the number of levels, e.g. `contrasts(df$type) <- c(0.5, -0.5)` or `contrasts(df$base_aspect) <- contr.treatment(3)`. For the conditional results presented in the form of a barplot above in Table 6.1, I ran mixed-effects logistic regression models using `glmer()` via `lme4` package (Version 1.1-35.5; Bates et al. 2015) testing the effects of the three-way interaction (i.e. `base_root * init_overttness * causee_overttness`), predicting the probability of recursive causatives.

The model was fit using an interaction term as a function of `CAUSATIVE_TYPE` together with a random intercept varying across `BASE_VERB` to interpret the distributional results in more reliable terms and to see whether there is verb-specific variability. `source` as a random effect did not constitute an important variance ( $N = 564$  among the 1021 observations); thus, it was not considered in the model.

Using a full random effects structure (i.e. random intercept and random slope) allows one to effectively visualize the by-verb variations of the effects rather than just the intercept. The generalized linear mixed-effects model testing the three-way interaction did not converge with a random slope for the interaction

effect and a random intercept varying across `BASE_VERB`. The reason for that is that data points are not spread across all unique levels (e.g. `result - init.null - causee.overt`) across each verb. For instance, the result verb *getir*- ‘bring’ has only 1 observation for the `init.overt - causee.overt` combination, whereas the same verb with the `init.null - causee.null` combination has 45 data points. Counting the number of unique combinations of all these factors for each verb, it is observed that the number of combinations differ drastically by individual verbs; therefore, fitting by-verb varying slopes for the interaction effect is not taken into account, since not all combinations are attested, considering the fact that there are even combinations with 0 observations. As a result, I implemented only random intercept (`1 | base_verb`). What the random intercept does is that it accounts for random variation in the results across different levels of `base_verb` ( $N = 17$ ), with 1 standing for the intercept to tell the model that it should calculate estimates with varying intercepts (Winter 2019), allowing to observe how much the reference levels vary across verbs without assuming that the probability of recursive causatives only relies on the fixed effects. This variation, however, only considers each predictor individually, holding other predictors constant. To account for the variation based on the predicted interaction effect, I needed to use varying slopes, which was not possible due to the reason as just outlined above, but see Section 6.4.3. (263) shows the formula used to run the statistical model.

```
(263) glmer(type ~
 base_root * init_overttness * causee_overttness +
 (1 | base_verb), family = "binomial", data = subdf)
```

The model summary below in Table 6.2 shows the coefficients calculated in logits for each term including (i) main effects of `base_root` (`manner` vs. `result`), `causee_overttness` (`null` vs. `overt`), and `INIT_OVERTNESS` (`null` vs. `overt`); (ii) the two-way interaction effects between the factors (e.g. `base_root * causee_overttness`); (iii) the three-way interaction effect of `base_root * causee_overttness * init_overttness`. Also listed are the standard errors of each term, the  $p$ -values representing the strength of the evidence against the null hypothesis, and the statistical significance levels ( $\alpha < 0.05$  ‘\*’; 0.01 ‘\*\*’; 0.001 ‘\*\*\*’) measured by the respective  $p$ -values calculated for each term. As the model predicts the probability of recursive causatives, a positive estimate means that the probability of recursive causatives increases given the predictor(s) and a negative estimate means the opposite. The number 1 occurring after each variable refers to the treatment levels as opposed to the reference levels (0). The coefficients are calculated for the treatment levels, indicating how much the treatment levels (1) differ from the reference levels (0).

| Fixed Effect                                 | Estimate ( $\hat{\beta}$ ) | SE     | p-value | $\alpha$ |
|----------------------------------------------|----------------------------|--------|---------|----------|
| (Intercept)                                  | 0.9553                     | 0.3011 | 0.00151 | **       |
| base_root1                                   | 0.4608                     | 0.6022 | 0.44416 |          |
| causee_overtness1                            | -0.4928                    | 0.1949 | 0.01145 | *        |
| init_overtness1                              | -0.1725                    | 0.1898 | 0.36341 |          |
| base_root1:causee_overtness1                 | 0.8459                     | 0.3899 | 0.03007 | *        |
| base_root1:init_overtness1                   | -0.8601                    | 0.3796 | 0.02345 | *        |
| causee_overtness1:init_overtness1            | 0.3335                     | 0.3754 | 0.37436 |          |
| base_root1:causee_overtness1:init_overtness1 | -0.5528                    | 0.7508 | 0.46157 |          |

**Table 6.2:** Fixed-effects coefficients table of the mixed-effects model

Note, however, that these estimates are not probabilities, but presented in logits (see below for back-transformation from the logit scale to probabilities). Reporting from the intercept, it shows the baseline probabilities of recursive causatives when all predictors (*base\_root*, *causee\_overtness*, and *init\_overtness*) are at their reference levels (i.e. manner verbs, *init.null* and *causee.null*). The positive estimate calculated for the intercept suggests that recursive causatives are highly likely with manner verbs when the causee and the initiator are null. This effect is highly significant measured by the given *p*-value ( $\hat{\beta} = 0.9553, p < 0.002, \alpha = **$ ). The main effect of *causee\_overtness* has a negative estimate and is statistically significant with a *p*-value below 0.05, suggesting that overt causees significantly disfavor recursive causatives. However, this effect is misleading since the model has significant interaction terms. That is to say, the causee overtness depends on a level of the verbal root; therefore, focusing on the causee overtness per se does not cover the overall behaviour of the relationship between recursive causatives and overt causees. To be more precise, arguing that the causee overtness in isolation has an effect on the probability of recursive causatives (cf. Göksel & Kerslake 2005) is incorrect given its significant interaction with the result verbs. The direction of this effect and the estimated probabilities are discussed widely below.

Moving forward, the two-way interaction effects suggest that both the causee and the initiator interact with the result verbs distinctly, as evident by the opposite directions in estimates. Specifically, the interaction between the causee overtness and the base root suggests that recursive causatives are more likely with result verbs when the causee is overt. This effect is statistically significant ( $\hat{\beta} = 0.8459, p < 0.05, \alpha = *$ ). In contrast, the interaction between the initiator and the base root indicates that recursive causatives are less likely with result verbs when the initiator is overt. This effect is also statistically significant ( $\hat{\beta} = -0.8601, p < 0.05, \alpha = *$ ). As visible in the coefficients table, the three-way interaction effect between the three predictors when they are at their treatment levels, that is, result verbs with overt

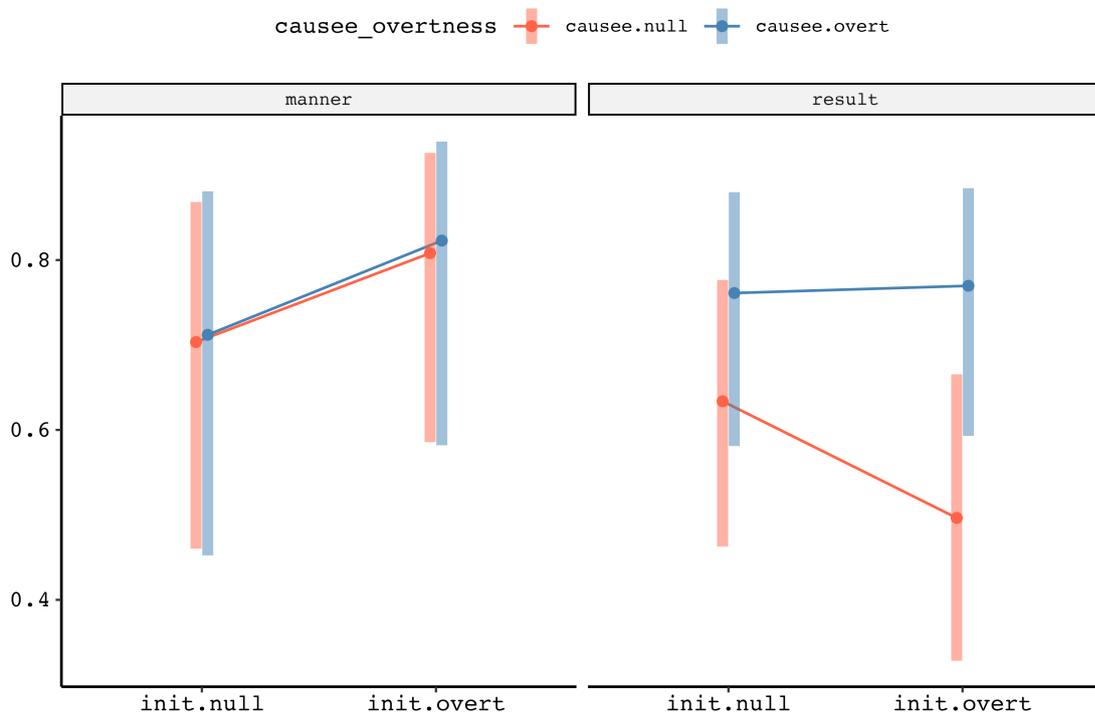
initiators and causees, is not statistically significant ( $\hat{\beta} = -0.5528, p > 0.05$ ). Note, however, that although the high negative estimate for the three-way interaction effect is not statistically significant, it suggests a possible trend that could influence the outcome when considered alongside other factors. The non-significance of this interaction means just that there is not enough evidence to state that recursive causatives are less likely likely with result verbs when the two arguments are overt. Despite that, it is worth looking into the potential effect of this interaction in light of the contrasts observed in the conditional effects, where certain combinations of the predictors (e.g. result verbs with `init.null` and `causee.overt`) yield significant effects. In what follows, I dive deeply into the contrasts and conditional effects together with data visualization of predicted probabilities of recursive causatives across different level combinations.

### 6.4.2 Three-way interaction effects

Using the `emmeans` package (Version 1.10.3; Lenth 2024), I plotted the predicted probability of recursive causatives as a function of the three-way interaction effect between `base_root`, `causee_overttness`, and `init_overttness`. The interaction between the overttness of the causee and the initiator is plotted separately for manner and result verbs, further allowing the contrast between the types of verbal roots across the unique levels of argument overttness to be visibly more understandable. The y-axis shows the predicted probabilities of recursive causatives, i.e. higher probabilities are in favor of recursive causatives. Confidence intervals are represented as shaded bands that indicate variability in the estimates, each with dots showing the predicted marginal means of probabilities for each combination. The fact that the confidence intervals (presented as CI below) are spread across a large area suggests that verb-specific variability plays a role, indicating individual variation across base verbs (see Section 6.4.3). Overt causees are shown by blue lines and null causees with red lines.

The plot below illustrates the following results. For **manner verbs**, the predicted probabilities of recursive causatives vary across different combinations of the overttness of the causee and the initiator: When both the initiator and the causee are null, the predicted probability is 0.703 (SE = 0.1088, 95% CI [0.460, 0.868]). This probability increases slightly when the initiator is null but the causee is overt, reaching 0.712 (SE = 0.1147, 95% CI [0.452, 0.881]). The most substantial increase in probability occurs when the initiator is overt, and the causee is null, where the predicted probability jumps to 0.808 (SE = 0.0864, 95% CI [0.586, 0.926]). The highest probability is observed when both the initiator and the causee are overt, with a predicted probability of 0.823 (SE = 0.0896, 95% CI [0.582, 0.939]). These

results suggest that overt initiators consistently boost the probability of recursive causatives for manner verbs, with overt causees adding an additional increase.



**Figure 6.2:** Estimated probabilities of recursive causatives as a function of the three-way interaction effect

For instance, consider (264) as a reference to the overall observation that the last sentence made. The overt initiator and the overt causee lead the predicted probability to the highest level (around 80%), although the contribution of the causee is marginal.

- (264) Sınıf öğrenci-ler-i ile sohbet ed-en Vali Arslantaş,  
class student-PL-POSS.3SG with conversation do-RELZ Governor Arslantaş,  
öğrenci-ler-e kitap oku-t-tur-du.  
student-PL-DAT book read-CAUS-CAUS-PST  
‘Governor Arslantaş, who chatted with the class students, made the students read a book.’  
(kazankayagazetesi.com; doc\_number: #19011586; token\_number: #5543246940)

For **result verbs**, the pattern differs to a great extent, illustrating a textbook example of an interaction effect. When both the initiator and the causee are null, the predicted probability of recursive causatives is 0.634 (SE = 0.0826, 95% CI [0.463, 0.777]), which is lower than for manner verbs. Interestingly, when the causee is overt but the initiator remains null, the probability increases to 0.761 (SE =

0.0772, 95% CI [0.581, 0.880]), showing a more pronounced effect of the overtness of the causee compared to manner verbs. However, when the initiator is overt and the causee is null, the predicted probability drops to 0.496 (SE = 0.0895, 95% CI [0.328, 0.665]). When both the initiator and the causee are overt, the probability recovers to 0.770 (SE = 0.0751, 95% CI [0.593, 0.885]). These results indicate that for result verbs, overt causees generally increase the likelihood of recursive causatives, but overt initiators without an overt causee significantly reduce this probability. In comparison to the behaviour of overt initiators and overt causees for manner verbs, it seems that the overtness of the causee is a more important predictor for result verbs than for manner verbs. Consider (265) below, where both the initiator and the causee is null. For such constructions, the predicted probability is the lowest among all conditions ( 50%).

- (265) Yan-in-da para-sı ol-ma-yan-ı mahçup et-mek  
 side-3SG-LOC money-POSS.3SG be-NEG-RELZ-ACC embarrassed make-N.DER  
 suretiyle senet imzala-t-tır-dı-lar.  
 by.way.of promissory.note sign-CAUS-CAUS-PST-3PL  
 'In order to embarrass those without money on them, they made them sign  
 a promissory note.'  
 (*hakikat.com*; doc\_number: #2165486; token\_number: #693066251)

Table 6.3 below provides an overview of the probabilities, standard errors, and 95% confidence intervals representing the area of shaded bands for the conditional effects of base\_root at different levels of *init\_overt* and *causee\_overt* calculated as probabilities back-transformed from the logit scale.

| Condition                        | Probability (SE, 95% CI)                   |
|----------------------------------|--------------------------------------------|
| <b>causee.null - init.null</b>   |                                            |
| manner                           | 0.703 (SE = 0.1088, 95% CI [0.460, 0.868]) |
| result                           | 0.634 (SE = 0.0826, 95% CI [0.463, 0.777]) |
| <b>causee.overt - init.null</b>  |                                            |
| manner                           | 0.712 (SE = 0.1147, 95% CI [0.452, 0.881]) |
| result                           | 0.761 (SE = 0.0772, 95% CI [0.581, 0.880]) |
| <b>causee.null - init.overt</b>  |                                            |
| manner                           | 0.808 (SE = 0.0864, 95% CI [0.586, 0.926]) |
| result                           | 0.496 (SE = 0.0895, 95% CI [0.328, 0.665]) |
| <b>causee.overt - init.overt</b> |                                            |
| manner                           | 0.823 (SE = 0.0896, 95% CI [0.582, 0.939]) |
| result                           | 0.770 (SE = 0.0751, 95% CI [0.593, 0.885]) |

**Table 6.3:** Conditional probabilities

As a next and finalizing step for this analysis, I ran a contrast analysis for each unique condition in order to estimate the statistical significance of these variability determining the probability for recursive causatives. Table 6.4 shows the two-way contrasts for result verbs, where only significant or marginally significant combinations are listed from the most significant to the least significant.

| Contrasts                                        | Estimate | SE    | <i>p</i> -value | $\alpha$ |
|--------------------------------------------------|----------|-------|-----------------|----------|
| init.overt causee.overt - init.overt causee.null | 1.221    | 0.340 | 0.0003          | ***      |
| init.overt causee.null - init.null causee.null   | -0.5625  | 0.247 | 0.0226          | *        |
| init.overt causee.overt - init.null causee.null  | 0.6582   | 0.343 | 0.0547          | .        |
| init.null causee.overt - init.null causee.null   | 0.6108   | 0.343 | 0.0750          | .        |

**Table 6.4:** Contrasts for recursive causative probabilities for result verbs

The analysis of the contrasts for recursive causative probabilities in **result verbs** reveals several important aspects. First, the most important finding is when the initiator is already overt, adding an overt causee leads to a substantial and highly significant increase in recursive causative probabilities ( $\hat{\beta} = 1.221, p = 0.0003$ ), emphasizing the critical role of the causee overtness for the choice of recursive causatives of result verbs. Second, the presence of overt initiators with a null causee significantly decreases the probability of recursive causatives compared to when both the initiator and causee are null ( $\hat{\beta} = -0.5625, p = 0.0226$ ). This suggests that an overt initiator alone does not promote recursive causatives of result verbs, rather, it has an impact disfavoring recursive causatives, an interesting finding that needs to be discussed (see Section 6.5). However, when the causee is overt (with null initiators), the probability of recursive causatives increases, though the effect is only marginally significant ( $\hat{\beta} = 0.6108, p = 0.0750$ ). The combination of both the overt causee and the overt initiator further increases recursive causative probabilities, but this effect remains marginally significant compared to when both of them are null ( $\hat{\beta} = 0.6582, p = 0.0547$ ), yet still highlighting the salience of argument overtness determining the interaction effect.

Overall, these findings highlight the interaction between the overtness of the two key arguments and their distinct contributions to recursive causative formation with result verbs, which were not possible to obtain for manner verbs as evident from the probabilities just discussed above. Nevertheless, the last step for the analysis of the three-way interactions is to look at the distinction between manner and result verbs for the significant interactions of argument overtness. So far, I only mentioned the effects at the border between manner and result verbs, but have not yet mentioned their contrast between one another in statistical terms.

| Contrasts                                | Estimate | SE    | <i>p</i> -value | $\alpha$ |
|------------------------------------------|----------|-------|-----------------|----------|
| manner causee.null - result causee.null  | 1.452    | 0.662 | 0.0283          | *        |
| manner causee.overt - result causee.null | 1.550    | 0.712 | 0.0294          | *        |

**Table 6.5:** Contrasts for recursive causative probabilities for overt initiators

Table 6.5 above shows the two-way contrasts for overt initiators, where only significant combinations are listed. The contrasts highlight several important aspects regarding the effect of base verb on recursive causative probabilities when the initiator is overt. Specifically, manner verbs consistently lead to significantly higher probabilities of recursive causatives compared to result verbs, regardless of the causee overtness. When the causee is null, manner verbs show a notable increase in recursive causatives relative to result verbs ( $\hat{\beta} = 1.452, p = 0.0283$ ), suggesting that even without an overt causee, manner verbs favor recursive causatives statistically more than result verbs. This effect is further strengthened when the causee is overt ( $\hat{\beta} = 1.550, p = 0.0294$ ), indicating that the combination of a manner verb and an overt causee strongly increases the likelihood of recursive causatives compared to result verbs with a null causee. Although it is not a fair comparison given that in one case the causee is overt but in the other null, as the rather fair comparison between manner causee.overt and result causee.overt did not yield statistical significance, I do not mention it. Overall, these findings underscore the critical impact that manner verbs yield in recursive causative formation, particularly in the presence of an overt initiator, further demonstrating significant contrasts with result verbs in overt/null conditions of the causee.

### 6.4.3 Verb-specific variability

Verb-specific variation might play an important role in shaping the conditional effects as discussed in the previous sections, especially when the theme argument is kept overt across different causative formations. For both manner and result verbs, the distribution patterns of overt initiators and null initiators show considerable variability across the type of verbs, reflecting how lexical semantics may potentially interact with syntactic structures (e.g. Rappaport Hovav & Levin 1998). This variation highlights the importance of distinct verbal meanings, suggesting that certain verbs may impose stronger syntactic constraints on the realization of the initiator or causee, particularly under conditions of increasing indirectness in recursive causatives discussed extensively throughout this monograph. Before I proceed with the results of the by-verb variation, I want to present below the distributional results of the aspectual classes of events (i.e. accomplishment,

achievement, and activity). Recall that the list of verbs were classified based on these classes, which are presented below in Table 6.6 as a reminder; see also Section 5.3 for more information on the annotation rules and diagnostics for the decision-making for these classes.

| activity                   | accomplishment         | achievement                   |
|----------------------------|------------------------|-------------------------------|
| <i>ara</i> 'call/look for' | <i>getir</i> 'bring'   | <i>imzala</i> 'sign'          |
| <i>izle</i> 'watch'        | <i>temizle</i> 'clean' | <i>koy</i> 'put/place'        |
| <i>kullan</i> 'use'        | <i>çek</i> 'pull'      | <i>kur</i> 'set/establish'    |
| <i>oku</i> 'read'          |                        | <i>sor</i> 'ask'              |
| <i>topla</i> 'pick up/add' |                        | <i>söyle</i> 'tell/say'       |
|                            |                        | <i>ver</i> 'give'             |
|                            |                        | <i>vur</i> 'shoot/hit'        |
|                            |                        | <i>yol</i> 'tear out/rip off' |
|                            |                        | <i>öde</i> 'pay'              |

**Table 6.6:** Verbs classified by aspectual classes of events

Table 6.7 below shows the distributional results of the interaction effect of the causative type and the base aspect on the overtness of all arguments. Recall that the data consist of cases where the theme is overt, thus, only displays the distributional results for the initiator overtness and the causee overtness, hence  $N = 1021$ . The data in the table reveal several interesting trends when comparing the interaction of causative formation and argument structure across different aspectual classes of events determined by telicity and durativity of individual verbs. As a reminder, activity verbs constitute manner verbs with atelic and durative aspects, accomplishment verbs are result verbs with telic and durative aspects, and achievement verbs are also result verbs but with telic and punctual aspects. Note, however, that these are not conditional results, meaning that (A) represents the distributional results of the interaction effect on the overtness of the initiator; (B) those of the causee.

Starting with activity verbs such as *ara-* 'call/look for', *izle-* 'watch', *oku-* 'read', and *topla-* 'pick up/add', the results reveal a difference from the previous categories given that the dataset was minimized to include only overt themes. In the single form, only 29.5% of the cases exhibit overt initiators, and 33% involve overt causees, demonstrating that activities, which describe ongoing processes without a definite endpoint, often leave both the initiator and the causee covert. This trend is even more pronounced in the double form, where 43.9% of the cases include overt

initiators, and 38.7% feature overt causees, indicating a slight increase in overt realization of arguments in more complex structures. Accomplishment verbs like *getir-* ‘bring’, *temizle-* ‘clean’, and *çek-* ‘pull’, the data show that 72.2% of the single form exhibit overt initiators, while only 7.1% include overt causees. This suggests that in constructions involving direct results with duration, the initiator is frequently overtly expressed, potentially emphasizing the initiator’s involvement in the action. Recursive causatives in this category present a more balanced trend: 40.5% overt initiators and 40.5% overt causees, indicating that in more complex causative structures, the causee becomes more overtly realized.

|                |        | A                             |                                 | B |  |
|----------------|--------|-------------------------------|---------------------------------|---|--|
| BASE_ASPECT    | TYPE   | INIT_OVERTNESS<br>% (n/total) | CAUSEE_OVERTNESS<br>% (n/total) |   |  |
| activity       | single | 29.5% (26/88)                 | 33% (29/88)                     |   |  |
| activity       | double | 43.9% (111/253)               | 38.7% (98/253)                  |   |  |
| accomplishment | single | 72.2% (192/266)               | 7.1% (19/266)                   |   |  |
| accomplishment | double | 40.5% (17/42)                 | 40.5% (17/42)                   |   |  |
| achievement    | single | 47.3% (44/93)                 | 35.5% (33/93)                   |   |  |
| achievement    | double | 47% (131/279)                 | 34.8% (97/279)                  |   |  |
|                |        | <b>50.6% (521/1021)</b>       | <b>26.6% (293/1021)</b>         |   |  |

**Table 6.7:** The distributional results of the interaction effect of the causative type and the base aspect on the overtness of the initiator (A) and causee (B)

Last, achievement verbs such as *imzala-* ‘sign’, *koy-* ‘put’, *ver-* ‘give’, and *vur-* ‘shoot/hit’ show a somewhat different pattern. In the single form, 47.3% of the cases exhibit overt initiators, and 35.5% show overt causees. In the double form, the overt initiator rate slightly increases to 47%, while the overt causee rate drops to 34.8%. This more balanced distribution suggests that punctual events tend to have clearer representation of both the initiator and the causee across causative types. It is clear that the distributional patterns of overtness in initiators and causees are strongly influenced by the aspectual class of the verb. Accomplishments emphasize overt initiators, especially in the single form of causatives, while achievements require a more balanced realization of both the initiator and the causee. Activities, by contrast, tend to have both roles more often left covert. These patterns not only reflect the nature of the events described by the verbs but also provide insights into the syntactic structure of causative constructions in Turkish. However, what

we cannot observe in the distributional results presented in Table 6.7 above is the three-way interaction between aspectual classes of events and the overtness of the initiator and the causee, nor the conditional effects discussed thoroughly for manner/result complementarity.

For this matter, I ran an additional model with the three-way interaction of `base_aspect`, `causee_overtness`, and `init_overtness`, predicting the probability of recursive causatives. The model included more complex random effects structure in order to investigate the random variation across individual verbs. As mentioned previously that `glmer()` model above did not converge with the full random effects structure, that is, with varying intercepts and varying slopes, I opted for a Bayesian logistic regression model using the `brms` package (Version 2.21.0; see Bürkner 2017). Following the advice by Gelman et al. (2008), I implemented a new weakly informative prior distribution adapted for logistic regression coefficients (see also Ghosh et al. 2018) and used a Cauchy prior distribution centered at zero with a `scale = 2.5`: `logistic_priors <- c(prior(cauchy(0, 2.5), class = b))`.

The regression results reveal a few key significant effects on the probability of recursive causatives. Notably, accomplishment verbs with overt causees significantly decrease the probability of recursive causatives. Specifically, overt causees in accomplishment verbs lead to a decrease in probability with an estimate of  $\hat{\beta} = -2.03$ , 95% CI  $[-3.45, -0.45]$ . Another effect is the interaction between accomplishment verbs and overt initiators. This interaction shows a positive trend, with an estimate of  $\hat{\beta} = 1.09$ , although the credible interval  $[-0.37, 2.42]$  suggests that this effect is not conclusive at the 95% level.

The conditional effects are shown in Figure 6.3 below. The plot shows the following conditional effects. Note that the intervals (color-coded bars) are represented as ‘highest posterior density (HPD)’ in the Bayesian framework as it provides with posterior probabilities, which are different probabilities than those in frequentist statistics; therefore, the term CI below is not confidence intervals but credible intervals (see Makowski et al. 2019).

First, for **activity** verbs, the predicted probability of recursive causatives is relatively high across conditions. When both the causee and initiator are null (`causee.null`, `init.null`), the probability is approximately 0.685, with a 95% CI of  $[0.475, 0.858]$ . When the causee is overt but the initiator remains null (`causee.overt`, `init.null`), the probability increases slightly to 0.713, 95% CI  $[0.514, 0.881]$ . When only the initiator is overt (`causee.null`, `init.overt`), the probability rises further to 0.789, 95% CI  $[0.576, 0.943]$ . Finally, when both the causee and initiator are overt (`causee.overt`, `init.overt`), the probability is highest at 0.820, with a 95% CI of  $[0.612, 0.959]$ . These results suggest that for activity verbs,

recursive causatives are more likely when both arguments are overt. Second, for **accomplishment** verbs, the pattern is more varied, with generally lower probabilities of recursive causatives. When both the causee and initiator are null (*causee.null*, *init.null*), the probability is low at 0.283, 95% CI [0.071, 0.557]. However, when the causee is overt and the initiator is null (*causee.overt*, *init.null*), the probability rises significantly to 0.748, 95% CI [0.455, 0.966]. Interestingly, when only the initiator is overt (*causee.null*, *init.overt*), the probability drops to 0.165, 95% CI [0.023, 0.454], indicating that overt initiators may reduce the probability of recursive causatives in accomplishment verbs. When both the causee and initiator are overt (*causee.overt*, *init.overt*), the probability rises again to 0.677, 95% CI [0.320, 0.958], showing a positive interaction effect between overt arguments.



**Figure 6.3:** Conditional effects of the Bayesian model predicting the probability of recursive causatives as a function of the three-way interaction effect

Third, for **achievement** verbs, the probability remains high across most conditions. When both the causee and initiator are null (*causee.null*, *init.null*), the probability is approximately 0.758, with a 95% CI [0.603, 0.879]. When the causee is overt but the initiator is null (*causee.overt*, *init.null*), the probability remains similar at 0.744, 95% CI [0.582, 0.882]. When only the initiator is overt (*causee.null*, *init.overt*), the probability decreases slightly to 0.694, 95% CI [0.493, 0.865]. Finally, when both the causee and initiator are overt (*causee.overt*, *init.overt*), the probability rises to 0.798, with a 95% CI [0.623, 0.927]. These results suggest that for achievement verbs, the probability of recursive causatives

remains high, with only minor fluctuations based on causee and initiator overtness. Overall, the results suggest that the interaction between aspectual classes of events, causee overtness, and initiator overtness reveals distinguished patterns that would be construed in a more generalized analysis. By examining how these factors vary across individual verbs, I aim to provide deeper insights into the underlying structure of causative constructions in Turkish.

Figure 6.4 shows the predicted probabilities for recursive causatives as a function of the three-way interaction effect of *base\_aspect*, *causee\_overtness* and *init\_overtness*. The plot provides a verb-specific analysis of recursive causatives across three levels of *base\_aspect*, separated by *causee\_overtness* and *init\_overtness*. The color and shape coding helps distinguish between these effects. The individual verbs are ordered from the lowest probabilities to the highest probabilities.

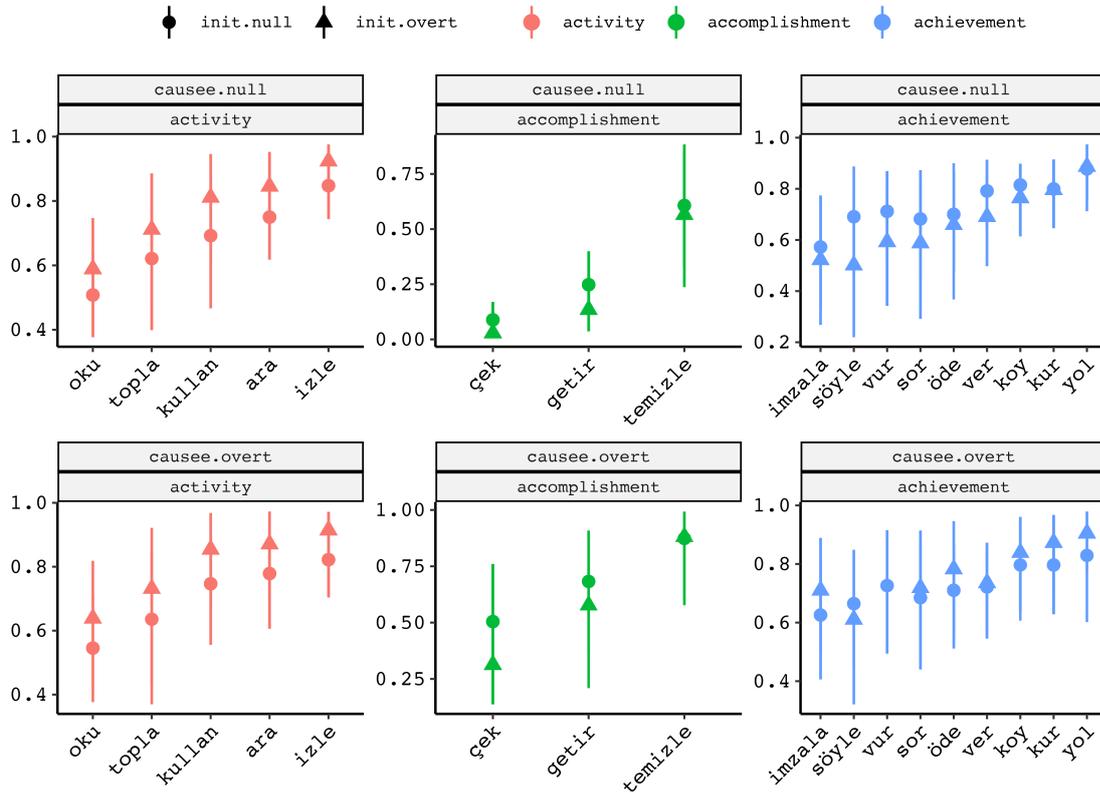


Figure 6.4: The three-way interaction effect across individual verbs

For **activity** verbs (colored in red), there is relatively high probabilities across most conditions. The verb *ara*- ‘call/look for’ has a probability range of approximately 0.6-0.8 depending on whether the causee and initiator are null or overt. Similarly, *izle*- ‘watch’ shows a comparable range, with slightly higher probabilities when

both the causee and the initiator are overt. The verbs *kullan-* ‘use’ and *oku-* ‘read’ exhibit a steady range of probabilities between 0.6 and 0.8, although the verb *topla-* ‘pick up/add’ has a slightly lower probability range, around 0.4-0.75. These verbs demonstrate that for activities, the presence of an overt initiator tends to increase the probability of recursive causatives, regardless of whether the causee is null or overt. This effect has already been mentioned in the previous model, where the contribution of the causee was marginal.

Moving forward, for **accomplishment** verbs (colored in green), there is more variability in the probabilities. The verb *çek-* ‘pull’ exhibits very low probabilities (close to zero) when both the causee and the initiator are null, but this increases to around 0.2, when both arguments are overt, and to 0.5, when the initiator is null and the causee is overt. On the other hand, *getir-* ‘bring’ shows probabilities of around 0.2-0.75, while *temizle-* ‘clean’ has a stable probability of around 0.25-0.5 across conditions. These results indicate that accomplishment verbs are more sensitive to the overtness of both the causee and the initiator, with overt arguments more likely to increase the probability of recursive causatives, which reaches to the highest probabilities with *temizle-* ‘clean’ when the causee is overt, regardless of the overtness of the initiator. A similar effect was mentioned previously for result verbs where the effect of the causee overtness did not depend on the initiator overtness, which was the opposite for manner verbs, where the causee overtness did not depend on the initiator overtness.

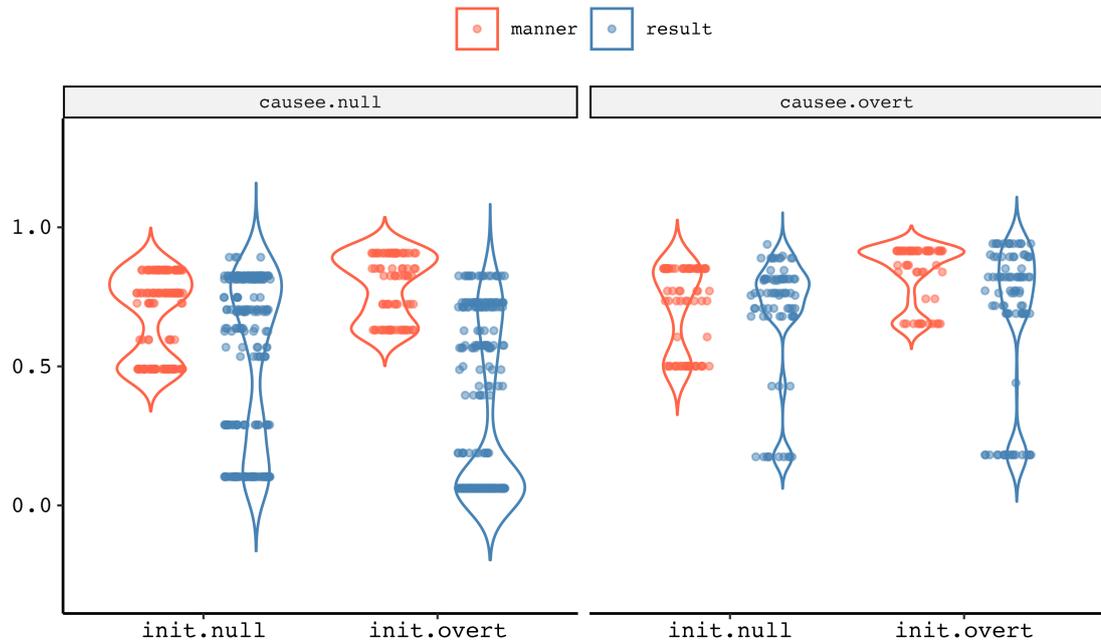
For **achievement** verbs (colored in blue), the probabilities are consistently high across all conditions. Verbs such as *imzala-* ‘sign’, *koy-* ‘put/place’, and *sor-* ‘ask’ exhibit probabilities in the range of 0.75-0.9 regardless of the overtness of the causee or the initiator. Similarly, *kur-* ‘set/establish’, *öde-* ‘pay’, and *vur-* ‘shoot/hit’ maintain high probabilities in both overt and null conditions. The verb *yol-* ‘tear out/rip off’, though slightly lower, still remains around 0.75-0.85. These achievement verbs suggest that recursive causatives are highly likely regardless of the overtness of the causee or the initiator, implying a less variable argument structure across conditions. The results emphasize the importance of examining verb-specific variation in recursive causatives, but subsequent work must explore additional morphosyntactic parameters such as `THEME_CASE` (the case marking on the theme argument, i.e. DOM) and `INIT_PERSON` (the person agreement marking of the initiator). These factors may further explain the observed variability in probabilities of recursive causatives. Exploring these parameters may provide a more comprehensive understanding of the underlying syntactic and semantic structure influencing causative formation. In what follows, I aim to present post-hoc analyses considering these parameters after discussing the main results.

## 6.5 Discussion and post-hoc analyses

The corpus-based study presented in this chapter tested the increasing indirectness hypothesis, formulated as a two-fold prediction. First, I hypothesized that recursive causatives of manner verbs favor overt realization of both the initiator and the causee. Given the mono-eventive nature of manner verbs and their strict constraints on argument realization (e.g. Rappaport Hovav & Levin 1998), I predicted that the increase in indirectness introduced by recursive causativization, combined with the event-structural properties of manner verbs, disallows omission of these core arguments. Second, I hypothesized that recursive causatives of result verbs permit greater flexibility in argument realization. Given the bi-eventive nature of result verbs, which foreground the resultant state rather than the manner in which it is brought about, I predicted that recursive causatives of result verbs encode a higher degree of indirectness. This higher indirectness allows for additional intermediary causal dependencies, increasing the separation between the higher-causing event and the embedded caused event. The degree of indirectness was operationalized via patterns of argument overttness, which I have argued to be determined by the interaction of causative formation and verbal semantics.

These hypotheses were justified on the basis of statistical significance and modeling the behaviour of distinct combinations including the levels of the three-way interaction term: `base_root * init_overttness * causee_overttness`. As predicted, manner verbs relied largely on the overttness of both arguments to increase the probability of recursive causatives. Though, the high probability calculated for manner verbs with overt initiators did not change significantly depending on the overttness of the causee, since it increased by the overttness of the initiator with the overttness of the causee, contributing marginally. More importantly, result verbs also aligned with the predictions that the overttness of both arguments offered variation for the interaction between result verbs and recursive causative formation. Although the overttness of the initiator did not contribute to the high probability of recursive causatives with overt causees, it contributed to the probability in the negative direction with null causees, highlighting the importance of the causee overttness for result verbs as a determining factor. Cross-conditions offered significant results, especially for result verbs, that the overt initiators significantly increased the probability of recursive causatives dependent on overt causees. This effect found to be extremely significant with a *p*-value below 0.0005. Also statistically significant combination was the one in which both arguments were null compared to when only the initiator was overt, with a negative estimate, suggesting a direction that decreases the probability of recursive causatives.

The results can be best reviewed using predicted values of recursive causatives attained for each data points, which was made possible using the `predict()` function with `type = "response"` to get the predicted probabilities of recursive causatives for each observation in the dataset. I plotted the predicted probabilities of recursive causatives in the form of a violin plot, which Figure 6.5 shows.



**Figure 6.5:** Predicted probabilities of recursive causatives

The violin plot presented above provides a detailed visualization of the density distribution of predicted values (i.e. `pred`) across different combinations of argument realization options. The x-axis represents two levels of `init_overt` (`init.null` and `init.overt`), and the plot is faceted by `causee_overt` (`causee.null` and `causee.overt`), which allows a side-by-side comparison of the conditions. The y-axis shows the predicted values, ranging from approximately  $-0.5$  to  $1.5$ , indicating the probability of a certain argument structure being realized.

The plot depicts two color groups to differentiate between the levels of `base_root`: `manner` verbs (in red) and `result` verbs (in blue). Each combination of `init_overt` and `causee_overt` is represented within each facet, and within these, the two verb types are compared based on their respective densities. Jittered points (with slight transparency) are overlaid on the violins to represent individual predicted values, providing a detailed view of how each observation is distributed within the density of the corresponding violin. The violin shape itself offers insight into the distribution of the data, depending on how much the density is at what range of predicted values.

Focusing on the results for **manner verbs**, the distribution of predicted values is relatively narrow and more concentrated around the median, especially under the `init.null` condition. The density is compact, and there are no significant tails, indicating minimal variability in the realization of arguments. This is consistent with the hypothesis that recursive causatives of manner verbs exhibit restrictions on argument realization options due to their mono-eventive nature. In these verbs (e.g. *oku-* 'read'), causation is inherently tied to the manner of action, thus requiring the realization of both key arguments more often. The lack of variability suggests that argument omission is generally disallowed in these structures. Furthermore, the limited spread of values highlights that the predictions for manner verbs under recursive causatives are restricted across conditions. In both `causee.null` and `causee.overt` conditions, the presence or absence of the causee does not result in major shifts in predicted values, further supporting the view that manner verbs resist flexible argument realization options within recursive causatives.

In contrast, **result verbs** exhibit a much wider distribution in predicted values, with visible peaks and tails in the violins, particularly under the `init.overt` condition. This distribution reflects greater variability in argument realization, aligning with the hypothesis that result verbs afford more flexibility in argument structure. Recursive causatives of result verbs, due to their bi-eventive nature, allow for the omission of key arguments without disrupting the overall causative event structure. This flexibility results in more complex interactions across the different conditions. For instance, under the `causee.overt` and `init.overt` conditions, it is observed that a broad range of predicted values exists, indicating that these structures can accommodate a variety of syntactic realizations. The significant interactions seen across these combinations point to the fact that result verbs allow recursive causatives to take on more diverse forms, especially in the context of argument omission measuring the degree of indirectness. The presence of multiple peaks in the violins reflects this flexibility, where both fully realized and partially omitted arguments are predicted to occur within the model. Moreover, the condition `result, causee.null, init.overt` shows a wide spread in predicted values, suggesting that when the causee is omitted, and the initiator is overtly realized, recursive causatives involving result verbs allow for considerable variation in argument realization. This finding highlights the importance of considering argument omission and its interaction with verb type in recursive causative structures.

Given these findings, it was necessary to explore verb-specific variability for whether certain individual verbs exhibit specific tendencies for the significant effects discussed. This step helped me determine if the observed patterns hold universally across verbs or if certain verbs display unique behavior in terms of the

probability of recursive causatives, potentially strengthening our understanding of the syntactic and semantic interactions at play. The analysis of the verb-specific variability was attained through the Bayesian mixed-effects logistic regression model including a full random effects structure to account for not only varying intercepts but also varying slopes for the main effects of the overtness of the causee and the initiator.

For **activity** verbs as part of manner verbs (*ara-* 'call/look for', *izle-* 'watch', *kullan-* 'use', *oku-* 'read', and *topla-* 'pick up/add'), there were relatively high probabilities across most conditions, most of which increased together with the overtness of the initiator—although the overtness of the causee did not make much difference. The fact that *oku-* 'read' shows the lowest probabilities across the levels of the two arguments, with the null initiator lower than the overt initiator, suggests that verb-specific variability exists going beyond the aspectual classes of verbs, including telicity and duration. A possible explanation might be the case marking of the theme argument that these verbs take. For **accomplishment** verbs as one side of result verbs (those that are non-punctual, i.e. *çek-* 'pull', *getir-* 'bring', and *temizle-* 'clean'), there was more variability in the probabilities in comparison to those for activity verbs. The verb *çek-* 'pull', for instance, exhibited very low probabilities (close to zero) when the causee was null, irrespective of the initiator overtness, but the probabilities increased when the initiator was null but the causee was overt.

A rather more interesting finding was with *temizle-* 'clean', where the probability reached to over 80% when the causee was overt, but this did not interact with the initiator overtness at all. These results for accomplishment verbs showed that there is verb-specific variability that requires further inspection into the nature of these verbs when considered in the context of causative recursion. I would argue that this might have to do with the affectedness of the theme argument representing how much the theme is undergone change through the attainment of the resultant state, which can be measured by the overt case marking of the theme argument (cf. Kızılkaya 2024). As a last point, for **achievement** verbs as the other side of result verbs (those that are punctual, i.e. *imzala-* 'sign', *koy-* 'put/place', *sor-* 'ask', *kur-* 'set/establish', *öde-* 'pay', *vur-* 'shoot/hit', and *yol-* 'tear out/rip off'), the probabilities for recursive causatives were consistently high across all conditions, with *imzala-* 'sign' having the lowest probabilities slightly dependent on the overtness of the causee and the initiator. The highest probability was observed with *yol-* 'tear out/rip off', when the causee was null, which, however, did not depend on any of the levels of initiator overtness.

This variability across individual verbs suggests that neither the categorization of the verbs on the basis of manner/result complementarity nor the aspectual clas-

sification of events can account for the argument structure of recursive causatives by themselves. Therefore, new directions that might be potentially affecting the interaction of causative formation and verbal semantics must be discovered. As cross-conditions of the three-way interaction effect have yielded significant results, especially for result verbs, such that overt initiators significantly increase the probability of recursive causatives in the presence of overt causees, while null causees significantly decrease this probability in the presence of overt initiators, the interaction between argument realization and recursive embedding emerges as a central explanatory factor. These findings indicate that the degree of indirectness encoded by recursive causativization cannot be reduced to root semantics alone, but must be understood relative to how arguments are morphosyntactically realized and distributed across causative type. The statistical patterns therefore motivate a closer inspection of argument overtness, linear order, and further argument-internal properties that may systematically constrain recursive causatives.

Section 6.5.1 examines in detail the distribution of initiator overtness and causee overtness and provides discussions regarding their patterns, and then reports the distributional results of argument order across the entire dataset. Section 6.5.2 extends the analysis to additional grammatical factors and adds two further analyses. First, it examines whether the theme's case marking co-varies with the interaction of causative formation and root semantics. Second, it analyzes the initiator's animacy based on this interaction. Finally, it includes an analysis that covers both the theme's case and the initiator's animacy in order to determine whether these properties further modulate the degrees of indirectness.

### 6.5.1 Argument overtness and order

As also concisely mentioned previously, especially in Section 5.3, I had the dataset automatically annotated for the person agreement markers (i.e. 1s, 2s, 3s, 1p, 2p, and 3p). As the null initiator seemed to have a great impact on the observed interaction effect of causative formation and verbal semantics, the motivation arises to look into the distributional results of the person agreement markers with null initiators as opposed to those with overt initiators. To do that, I focus on the initial dataset ( $N = 1174$ ) without restricting attention to overt themes. I created two subsets, one including those that were annotated as `init.null` ( $N = 626$ ) and the other including those that were annotated as `init.overt` ( $N = 548$ ) in order to compare (i) the distributional difference for 3s as Turkish does not overtly mark the third person singular; (ii) the distributional difference of other markings, especially 1s since it refers to speaker of the utterance in question. Table 6.8 below shows the distributional results of person across causative type, which split by

*init\_overt*ness for reasons of comparison, providing great insights into the nature of the interaction of initiator overtness and person agreement.

| PERSON | init.null              |                        | init.overt             |                        |
|--------|------------------------|------------------------|------------------------|------------------------|
|        | single                 | double                 | single                 | double                 |
| 1s     | 34.4% (67/195)         | 65.6% (128/195)        | 45.8% (11/24)          | 54.2% (13/24)          |
| 2s     | 33.3% (5/15)           | 66.7% (10/15)          | 16.7% (1/6)            | 83.3% (5/6)            |
| 3s     | 31.7% (69/218)         | 68.3% (149/218)        | 48.4% (230/475)        | 51.6% (245/475)        |
| 1p     | 48.1% (38/79)          | 51.9% (41/79)          | 37.5% (3/8)            | 62.5% (5/8)            |
| 2p     | 41.4% (12/29)          | 58.6% (17/29)          | 12.5% (1/8)            | 87.5% (7/8)            |
| 3p     | 33.3% (30/90)          | 66.7% (60/90)          | 70.4% (19/27)          | 29.6% (8/27)           |
|        | <b>34.5% (221/626)</b> | <b>65.5% (405/626)</b> | <b>47.6% (265/548)</b> | <b>52.4% (283/548)</b> |

**Table 6.8:** The distribution of person across causative type split by *init\_overt*ness

To begin with, comparing *init.null* with *init.overt*, 3s is more frequent when the initiator is overt (475) than when it is null (218). Given Turkish is a *pro*-drop language, it is reasonable to see so many null initiators in the third person singular, which must be linked to a discourse referent. As the investigation of anaphoric *pro* subjects whose antecedents are given in the previous discourse goes beyond this monograph, I rather focus on other aspects that would help comprehend the variation observed for the initiator overtness and the person agreement morphology. As for double, the frequency of 3s is higher for *init.null* with 68.3% (149/218), as in (266), whereas *init.overt* does not depict a considerable contrast between causative types (48.4% vs. 51.6%).

(266) Kaldırım-a kon-muş ve henüz açıl-ma-muş gazete-ler-i  
 sidewalk-DAT place-PART and yet open-NEG-PART newspaper-PL-ACC  
 toplat-tır-dı.  
 collect-CAUS-CAUS-PST

‘She had the newspapers, placed on sidewalk and not opened yet, collected.’  
 (*aydinpost.com*; doc\_number: #5780164; token\_number: #1817770668)

Moreover, the results for 3p show opposite trends depending on initiator overtness: 66.7% (60/90) for *init.null*; 29.6% (8/27) for *init.overt*. This, I would argue, has to do with person agreement asymmetry with third person plural subjects. The asymmetry with third person plural subjects, as literature argues, is mostly governed by the principles of the animacy scale (see Bamyacı et al. 2014), where plural subjects that do not agree with their verb. Therefore, instead of 3p (*-lAr*), the verb receives 3s ( $\emptyset$ ) (see also Kornfilt 1997; Haspelmath 2013). Kornfilt (1997: 387)

notes that “overt plural agreement with non-human third person plural subjects is rejected by many speakers (although not by all), and acceptability deteriorates further with inanimate subjects”, which she illustrates using the following two examples in (267), where the contrast between animals and inanimate objects determines the acceptability with person agreement, further supporting the interaction of the animacy of third person plural subjects and the (optional) use of person agreement suffix.

- (267) a. ??Köpek-ler bahçe-ye gir-miş-ler.  
 dog-PL garden-DAT enter-EVID-3PL  
 ‘They say that the dogs entered the garden.’
- b. ??/\*Taş-lar yamaç-tan vadi-ye doğru yuvarla-n-dı-lar  
 stone-PL slope-ABL valley-DAT towards roll-REFL-PST-3PL  
 ‘The stones rolled down the slope (of the mountain) towards the valley.’

Kornfilt (1997: 387) further notes that in the case of the omission of the subject, agreement must take place. For instance, in the context of recursive causatives, where the initiator is null, third person plural subject needs to be realized through the agreement suffix 3p (-*lar*); see (268) for an example from the dataset. This argument explains to a certain extent, comparing it with the distributional results, why there are more 3p for *init.null* (90) than for *init.overt* (27). However, no generalizations can be made without having controlled for animacy effects as just discussed above.

- (268) Son defa göbeğ-im-le bana sarıl-ıp fotoğraf çek-tir-di-ler.  
 last time belly-1SG.POSS-COM 1SG.DAT hug-CVB photo take-CAUS-PST-3PL  
 ‘For the last time, they hugged me with my belly and took a photo.’  
 (*bebekokusu.com*; *doc\_number*: #11663160; *token\_number*: #3482394502)

The optionality of the person agreement for third person plural subjects including those that are semantically plural (i.e. collectives) and the fact that 3s constitutes the majority for the double form when the initiator is null suggest that there are more to look into when it comes to what contributes to the degree of indirectness in recursive causatives. (269) shows an instance of a collective noun *ekip* ‘team’, which does not agree with person, hence does not receive 3p (see Göksel & Kerslake 2005: 117). Both semantically and lexically plural subjects are optionally marked by person, as in (270), which Kornfilt (1997) argues to be determined by specificity or referentiality of the subject. As evident from the examples below, not only animacy but also specificity are important factors determining the interaction of initiator overtness and person agreement markers.

- (269) Ekibimiz ilk devre-de ilçe halk-ımız-a ve spor  
 team-1PL first half-LOC district people-POSS.1PL-DAT and sport  
 sever-ler-e heyecanlı maç-lar izle-t-tir-di.  
 lover-PL-DAT exciting match-PL watch-CAUS-CAUS-PST  
 ‘In the first half, our team made the district people and sports fans watch  
 exciting matches.’  
 (*bursasporx.com*; doc\_number: #8138919; token\_number: #2491251572)
- (270) Çocuk-lar ve aile-ler, sevgi gösteri-ler-in-de bul-un-duk-ları  
 child-PL and family-PL, love show-PL-POSS.3PL-LOC find-PASS-RELZ-PL  
 Başkan Uysal-la, bol bol hatıra fotoğraf-ı çek-tir-di-ler.  
 Mayor Uysal-COM, many many memory photo-ACC take-CAUS-PST-3PL  
 ‘The children and families, who showed love to Mayor Uysal, took many  
 souvenir photos with him.’  
 (*muratpasa-bld.gov.tr*; doc\_number: #18435627; token\_number: #5396294386)

Moving forward to the discussion on the overttness of the causee, Key (2013: 186) argues that the pragmatic knowledge of the event type described by the verbal root allows us to interpret the agent of the embedded action, thereby making the causee more likely to be dropped in contexts when it is inferred. However, it should be addressed that the majority of the causees are dropped in the dataset with 28,7% (337/1174) when considered with cases including null themes and with 26,6% (293/1021) when considered with cases including only overt themes. The omission of the causee that frequently seems to be not only emerged from discourse pragmatics and prominence of these agents that may easily be inferred from the context as just mentioned, but also be due to reasons related to indirectness of causation. In a construction such as (271) below, it is clear that those who did the *signing-of-the-jersey* can be inferable from the context, that is, the football players of the team. However, if we look at the sentence in (272), it seems that the claim suggesting that the omission of the causee largely relies on the availability of implicit discourse referents as dropped arguments (cf. missing subject, see Aissen 1979) cannot per se account for the variability observed in the dataset. What this example shows is that it is impossible to judge who did the *calling-of-Alo-182*, which begs the question whether it has rather to do with indirectness of causation as it was measured in this monograph.

- (271) Bazı Ereğli-li vatandaş-lar da Bursaspor forma-sın-ı  
 some Ereğli-N.DER citizen-PL also Bursaspor jersey-3SG-ACC  
 imzala-t-tir-di.  
 sign-CAUS-CAUS-PST  
 ‘Some citizens from Ereğli also had the Bursaspor jersey signed.’  
 (*dostyakasi.com*; doc\_number: #8060440; token\_number: #2468868847)

- (272) Bakan Akdağ, basın mensub-un-un şikayet-i üzerine  
 minister Akdağ press member-3SG-GEN complaint-AGR upon  
 kamere-lar karşısında Alo 182'yi ara-t-tır-dı.  
 camera-PL in.front.of Alo 182-ACC call-CAUS-CAUS-PST  
 'Upon the complaint of the press member, Minister Akdağ had Alo 182  
 called in front of the cameras.'  
 (erzurumhabergazetesi.com; doc\_number: #19789357;  
 token\_number: #5767046978)

Recall that Figure 6.4 has shown that in observations where the causee is null, the probability of recursive causatives was too low for the verb *çek-* 'pull', which has increased to its highest in the context of overt causees with null initiators. The dataset consisted of 254 tokens with this verb. The single form had a total of 235 tokens, with 8,5% (20/235) of overt causees. In the remaining 19 tokens for the double form, the proportion for overt causees was 57,9% (11/19). (273) shows yet another example, whose overt realization seems to be dependent on the context of the *pulling-out-of-the-teeth*. This motivates further investigations on the three-way interaction, but controlling for potential pragmatic effects, which future research should address within experimental settings.

- (273) 2 adet 20'lik diş çek-tir-di-m.  
 2 piece 20-N.DER tooth pull-CAUS-PST-1SG  
 'I had 2 wisdom teeth pulled out.'  
 (dokortakvimi.com; doc\_number: #15286723; token\_number: #4509694753)

The use of recursive causatives and its interaction with manner/result complementarity significantly affects the ways arguments are syntactically and positionally realized. Looking at the argument order parameter that was mentioned in the previous chapter, it is visible that certain constructions are favored over others when all arguments are overt. This serves as an initial evidence for further research considering the syntactic position of arguments and their case. Note that the overt case marking on the direct object allows it to change positions. Order of arguments rely on certain constraints, the most important of which is the overt accusative marking of the direct object. If the direct object is unmarked, then it cannot move from the immediate preverbal position. (274) and (275) represent this word order constraint, depending on the overt accusative marking of the theme.

- (274) Her iki ameliyat-ta da bana A RH pozitif [kan]<sub>THEME</sub>  
 every two operation-LOC too 1SG.DAT A Rh positive blood  
 ara-t-tır-dı-lar.  
 look.for-CAUS-CAUS-PST-3PL  
 'They had me look for A Rh+ blood in both surgeries.'  
 (memurlar.net; doc\_number: #5010589; token\_number: #1572426400)

(275) Taraf-tar-lar mağaza-dan al-dik-lar-ı [forma ve atkı-lar-ı]<sub>THEME</sub>  
 fan-PL shop-ABL take-RELZ-3PL-AGR jersey and scarf-PL-ACC  
 futbolcu-lar-a imzala-t-tır-dı.  
 football.player-PL-DAT sign-CAUS-CAUS-PST

‘Fans had the football players sign the jerseys and scarves they bought from the store.’

(*memurlar.net*; doc\_number: #4986390; token\_number: #1565758409)

Looking at the distributional results of argument order when all arguments are overt, out of 1174 tokens, only 144 tokens had overt realization of all arguments, corresponding to 12.56% (144/1174) for both causative types, with the double form more often with 74.3% (107/144) than the single form of causatives. The most frequent argument order is the following: (i) for recursive causatives (double) 1, 3, 2, V with 67,3% (72/107); for productive causatives (single) also 1, 3, 2, V with 78,4% (29/37). Notice that this argument order has been discussed as the canonical word order for ditransitives and causatives of transitives as well as double causatives of unergatives in Chapter 3 and Chapter 4. The most frequent argument order 1, 3, 2, V is followed by 1, 2, 3, V for both types.

Other observed argument orders that are attested for both causative types include 3, 1, 2, V and 2, 1, 3, V. Interesting is the fact that the single form does not have any argument after the predicate, for which the double form has many options to choose from. This begs an empirical question that future research should address, especially experimentally manipulating overt argument order and linearization.

## 6.5.2 Theme’s case and initiator’s animacy

As previously mentioned in Section 5.3, I had the dataset manually annotated for the case of the theme argument (i.e. zero and acc) and the animacy of the initiator (minimized to human and non-human; see Section 5.3.3). In what follows, I give an overview of the distributional results of these factors as well as potential significant effects observed through mixed-effects logistic regression models.

Arguing that the manner vs. result distinction plays an important role for the external structure brought about by causative formation raises another question, that which relates to the overall transitive construction considered together with its internal argument, i.e. the theme. My analysis included the annotation for the case of the theme argument with the levels zero and acc. Recall that I have mentioned a line of research widely referred to as Differential Object Marking (DOM). Although not entirely relevant to the purposes of this monograph, I want to give a quick overview of some recent findings from Kızılkaya (2024), which

deals with the relationship between the affectedness of the direct object and the morphological marking of the accusative suffix. Kızılkaya (2024) observed, through acceptability judgment tasks–forced-choice task, to be more precise–that speakers’ choice for the overt accusative marking was closely tied to the affectedness of direct objects, independently of the animacy scale, within both telic and atelic predicates. Empirical evidence highlighted that participants favored accusative marking more for affected objects than non-affected ones, suggesting a clear role for affectedness in object realization. Moreover, telicity was shown to affect the speaker preference, which is restricted to cases when the direct object was affected, indicating an interaction. In cases where affectedness was not encoded, telicity in isolation did not significantly impact the choice for the accusative-marked direct objects. Nevertheless, the interaction of affectedness and telicity - although marginally significant ( $\hat{\beta} = -1.67, p = 0.07$ ) begs the question whether result verbs in my dataset, which are all telic, interacts with the case of the theme argument in the context of recursive causatives. In other words, it is noteworthy to look at the distribution of the interaction of causative formation and manner/result complementarity to investigate whether recursive causatives of result verbs have more accusative-marked theme arguments than those of manner verbs.

Having motivated a small further investigation, I present below the aforementioned interaction. Note that, I do not consider the themes in my dataset as candidates of the phenomenon of DOM given that it can only refer to indefinite expressions in Turkish (e.g. von Heusinger & Kornfilt 2005; see Section 3.2.1). The idea I motivate here entirely depends on the case variation between zero and accusative suffixes for the theme argument, regardless of the type of expression.

| BASE_ROOT | TYPE   | THEME_CASE              |
|-----------|--------|-------------------------|
| manner    | single | 54.5% (48/88)           |
| manner    | double | 74.7% (189/253)         |
| result    | single | 23.4% (84/359)          |
| result    | double | 46.1% (148/321)         |
|           |        | <b>47.2% (469/1021)</b> |

**Table 6.9:** The case of the theme based on base root and causative type

Table 6.9 above shows the distributional results of the interaction effect of causative type and manner/result complementarity on the overt accusative marking of the theme argument. Since the literature argues that the definite expressions functioning as the direct object should be case-marked in Turkish, the distributional

results presented above include those that may be potentially definite, hence the accusative suffix is not optional. Also, it should be noted that I did not annotate the animacy of the direct object, either. Therefore, the results below solely represent an initial evidence that must be handled thoroughly in the future by taking morphosyntactic and semantic features of the theme into account.

Based on the data presented in Table 6.9, the distribution of the theme case reveals distinct patterns influenced by both the base root and the causative type. Reporting from distributions of individual conditions, for manner verbs, the results show that the proportion of the overt accusative case on the theme is notably higher in the double form of causatives compared to the single form. Specifically, in single, 54.5% (48/88) of the instances take overt accusative case, while in double, this proportion rises to 74.7% (189/253). This suggests that manner verbs in the double form tend to trigger the overt accusative case more frequently than in the single form, indicating a strong correlation between recursive causativization and case marking of the theme for manner verbs. For result verbs, a similar preference for the double form is observed, though the overall percentages are lower than those seen with manner verbs. In single, only 23.4% (84/359) of the themes are marked with accusative case, which represents the lowest proportion across all individual conditions. In double, this proportion nearly doubles to 46.1% (148/321), yet remains remarkably lower than the results for manner verbs. This indicates that result verbs, which typically denote a change of state or location and encodes a resultant state, are less frequently to mark the theme with accusative case, though they still favor its use in double causative constructions more than in single ones. Overall, there is a clear tendency for recursive causatives to involve the accusative case more frequently than productive causatives across both types of base root. Furthermore, the distributions highlight that manner verbs are inherently more predisposed to the accusative case for the theme arguments than result verbs, with the total average distribution across all categories standing at 47.2% (469/1021).

To make sense of the results in statistical terms, I ran a mixed-effects logistic regression model using the two-way interaction term of *base\_root* and *theme\_case* together with a varying intercept across *base\_verb*; however, the model did not yield a statistically significant interaction effect, but the main effects separated by the manner/result distinction turned out to be significant. Recursive causatives of both manner verbs and result verbs increasingly mark the direct object with the accusative suffix: (i) the effect of the accusative suffix on the probability of recursive causatives of manner verbs is statistically significant ( $\hat{\beta} = 0.828, p = 0.0042$ ); (ii) the effect of the accusative suffix on the probability of recursive causatives of result verbs is also statistically significant ( $\hat{\beta} = 0.574, p = 0.0150$ ).

The results shown by Kızılkaya (2024) based on the interaction of the affect- edness and the case marking of the direct objects of result verbs seem to be consistent with the current results; however, a thorough comparison can only be possible when the parameters such as definiteness and the occurrence of the indefinite article *bir* are controlled (see Ketrez 2023). My analysis did not include any parameters regarding the morposyntactic realization of the direct object (e.g. modification) except for its case. The results suggest that not only result verbs but also manner verbs show a tendency towards the overt accusative marking with recursive causatives. What would also be interesting to look at is the fact that these distributional results of the case of theme includes both human and non-human entities as the initiator of the higher causing event. This fact inspires me to look further at the distributional results of humanness of the initiator first, and then its three-way interaction with base root and the case of the theme. Recall that non-human initiators are non-agentive arguments that consist of inanimate causers, as in (276); see Chapter 4.

- (276) Fransa'da sel Louvre'ü kapa-t-tır-dı.  
 France-LOC flood PN-ACC close-CAUS-CAUS-PST  
 'The flood in France forced the Louvre to close.'  
 (trTenTen20: doc\_number: #1657654; token\_number: #551598854)

Also, the relevance of these examples is the fact that humanness of the initiator was semi-automatically annotated with the help of `INIT_PERSON` taken as a reference. That is, 1s, 2s, 1p, and 2p were annotated as human, and the rest of the tokens were manually annotated. (277) shows an example of null initiator which is human retrieved from the first person singular agreement marker 1s and (278) shows an example of null initiator, whose humanness is, however, retrieved from the context.

- (277) Peteğ-imiz-i temizle-t-tir-di-m.  
 radiator-3PL.POSS-ACC clean-CAUS-CAUS-PST-1SG  
 'I had our radiator cleaned.'  
 (goptesisat.com; doc\_number: #7288657; token\_number: #2230833012)
- (278) Penaltı-yı da Zlatan-a kullan-dır-t-ti.  
 penalty-ACC also Zlatan-DAT use-CAUS-CAUS-PST  
 'Ø also made Zlatan take the penalty.'  
 (blogspot.com; doc\_number: #19577127; token\_number: #5704070104)

Table 6.10 shows the distributional results of the interaction of causative type and the manner/result distinction on `init_human`. Human initiators across base root types and causative types reveal that the majority of initiators are human referents with 86.3% (1006/1160) across all categories (unclear cases of 3s for `INIT_PERSON` were removed,  $N = 14$ ), indicating a strong tendency for human initiators.

| BASE_ROOT | TYPE   | INIT_HUMAN               |
|-----------|--------|--------------------------|
| manner    | single | 85.6% (89/104)           |
| manner    | double | 80.4% (251/312)          |
| result    | single | 93.7% (357/381)          |
| result    | double | 85.1% (309/363)          |
|           |        | <b>86.3% (1006/1160)</b> |

**Table 6.10:** The distribution of `init_human` based on base root and causative type

Looking at individual conditions, the results show, for manner verbs, that the proportion of human initiators is slightly higher in the single form compared to the double form of causatives. Specifically, in `single`, 85.6% (89/104) of the initiators are human, while in `double`, the proportion drops to 80.4% (251/312). This suggests that manner verbs in the single form tend to involve human initiators more frequently than in the double form, where there is a slight increase in non-human initiators. For result verbs, the preference is such that human initiators are even stronger, especially in the single form. In `single`, 93.7% (357/381) of the initiators are human, which is the highest proportion across all categories. In `double`, this proportion is slightly lower at 85.1% (309/363), but still very high. This indicates that result verbs, which typically denote a change of state, strongly favor human initiators with productive causatives more than recursive causatives. Overall, there is a tendency that recursive causatives, as in (280), have more non-human initiators than productive causatives, as in (279). I would argue that this pattern makes sense given the literature suggesting that the realization of inanimate causers (either as DPs or as PPs) contribute to the degree of indirectness (e.g. Alexiadou et al. 2015).

- (279) Film aslında bana kendim-e çok sık sor-duğ-um beyin mi kalp mi  
 film actually me-DAT self-DAT very often ask-RELZ-1SG brain Q heart Q  
 soru-sun-u sor-dur-du.  
 question-3SG-ACC ask-CAUS-PST

'The film actually made me ask myself the question I often ask myself: "Is it the brain or the heart?"'

(*neokur.com*; doc\_number: #1426395; token\_number: #467952900)

- (280) Onun bu iyi görüntü-sü de, maddi açı-dan biz-ler-e  
 3SG.GEN this good image-3SG also material angle-ABL we-PL-DAT  
 hayal-ler kur-dur-t-tu.  
 dream-PL set-CAUS-CAUS-PST

'This good image of his had us build dreams in financial terms.'

(*sportifcumleler.com*; doc\_number: #17690728; token\_number: #5193758588)

Moving forward to the three-way interaction between base root, humanness of the initiator, and the case of the theme, the distributional results show the following. Reporting only from the highest proportions for the interaction of causative formation and the manner/result distinction, human initiators with accusative-marked themes occur 48.9% of the times (43/88) with the single form and 60.1% (149/248) with the double form, suggesting that double causativization increases the proportion of this unique condition. As for result verbs, human initiators with zero-marked themes occur 72.1% of the times (258/358) with the single form, whereas the double form shows a rather stable distribution between zero and acc, that is, 44.6% (141/316) for human initiators with zero-marked themes and 39.2% (124/316) for human initiators with accusative-marked themes. These results suggest that humanness of the initiator and the markedness of the direct object behave differently across the types of verbal roots, however, the type of causative formation does not influence much the proportion of the highest frequent conditions. To consolidate these distributional results, I ran an additional mixed-effects regression model, which has shown only one unique condition to be significant: *manner non-human acc - manner non-human zero* ( $\hat{\beta} = 1.5517, p = 0.0217$ ). Again, the role of individual verbs has strong implications for an effect to be significant considering the power of the categories of verbal type involved in the observed interaction.

Considering the infrequency of overt argument expression, with only 12.56% of all arguments being overt, as discussed in the previous subsection, the role of humanness, argument order, and the overt case marking on the theme argument emerges as central factors in shaping the nature of recursive causatives. In particular, overt accusative case facilitates flexibility in argument order, where the most frequent word order, 1, 3, 2, V, appears in 67.3% (72/107) of double causative constructions and 78.4% (29/37) of single causative constructions. This underscores the relevance of syntactic positioning and thematic alignment in these structures.

Additionally, the presence of the intermediary causer as supported structurally introduces further complexity, particularly in recursive causatives of result verbs considering the significant interaction effects observed for unique conditions with argument overtness. These results call for a more precise examination of the acceptability of argument realization in recursive causative constructions when animacy, person, social roles, word order, and case marking are controlled.

## 6.6 Summary

This chapter has provided detailed statistical analyses of recursive causatives based on the annotated dataset introduced in the previous chapter. I have presented the main hypotheses and predictions, offered descriptive statistics to establish the basic distributional patterns in the data, and motivated the statistical modeling strategy by summarizing the models and their specifications as well as further relevant analyses including parameters such as case, person, and animacy.

Building on this, this chapter has shown that the probability of recursive causatives is systematically shaped by a three-way interaction between verbal root type (manner vs. result), causee overttness (null vs. overt), and initiator overttness (null vs. overt). I have presented contrast analyses that make these interaction patterns explicit, with particularly robust effects emerging for result verbs, where initiator and causee realization jointly modulate the probability of recursive causatives. This chapter has also shown substantial verb-specific variability. Predicted probabilities, varying intercepts, and varying slopes for main effects differ across individual verbs, indicating that root type and broad event classification do not concretely define the argument structure patterns of recursive causatives; however, they still offer great insights into the differences of individual verbs. Finally, I have presented post-hoc analyses that refine the main results by examining argument overttness together with linear order, and by assessing additional factors, namely the theme's case marking and the initiator's humanness.



# Chapter 7

## Conclusion

In this monograph, I have investigated the morphosyntax of causative constructions in Turkish, with a focus on recursive embedding in productive causatives, adopting a decompositional approach to event structure and argument realization (Alexiadou et al. 2015). My theoretical aim has been to provide novel proposals for the structure of lexical causatives as defined in terms of transitive result verbs, productive causatives, and more importantly, recursive causatives. I have joined in a current debate that argues whether productive causatives in Turkish are recursive (e.g. Key 2013; Nie 2022). I have investigated the potential for syntactic recursion and addressed conflicting views on the morphosyntax, event structure, argument structure of recursive causatives, despite previous literature arguing against the acceptability of recursive causatives (e.g. Acartürk & Zeyrek 2010), contending that the second productive causative suffix brings no change into the argument structure but merely emerges from the parameters such as the overt realization of the causee (Göksel & Kerslake 2005), the semantics of indirect causation (Key 2013), and the intensification of the caused event (e.g. Sebüktekin 1971). Given that these assumptions notably lack systematic operationalization and empirical testing, I have presented empirical investigations through observational data, underscoring the pressing need to address the research gap, paving the way for further quantitative research. I have examined the complex interaction between causative formation and verbal semantics in Turkish, with a focus on how manner/result complementarity impacts argument structure under recursive causativization.

Chapter 2 has established the theoretical background for the analysis developed in the remainder of the monograph. I have shown that causativization provides a window into the interaction between event structure, root semantics, and argument realization, and that cross-linguistic differences in causative constructions reflect systematic differences in how these components are encoded (Pylkkänen 2008). A first set of observations has concerned predicate classes. I have clarified

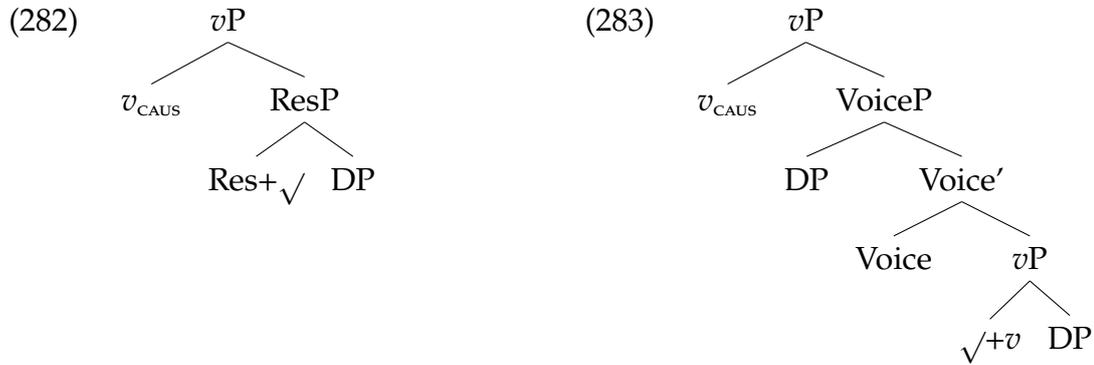
the distinctions among unaccusative, unergative, and transitive predicates and have shown that these distinctions are crucial for explaining how different verb classes behave under causativization. In particular, this chapter has shown that causativization of unaccusatives exhibits properties that sharply diverge from those of unergatives and transitives, and that these asymmetries follow from differences in internal structural representations and event-semantic profiles. I have also presented aspectual classes of dynamic events, providing the background necessary to capture systematic variation in causative structures in the empirical chapters. A second set of observations has concerned root semantics. Building on these class distinctions, I have presented the notion of manner/result complementarity (e.g. Levin & Rappaport Hovav 2005) and listed diagnostics to classify predicates accordingly. This chapter has shown that manner and result roots impose distinct constraints on event decomposition and argument realization: result roots lexically encode a change of state and thereby determine the availability of a resultant state (bi-eventive), whereas manner roots specify how an event unfolds without encoding a result component (mono-eventive). This asymmetry has been argued to have direct consequences for causative formation, for the interpretation of causative relations, and for the extent to which causative morphology can affect event structure. A third set of observations has concerned the relationship between causation and causativization. I have sharpened the conceptual distinction between causation as a semantic relation between eventualities and causativization as a morphosyntactic operation that introduces such a relation. Within a relational view of causation, I have defined  $v_{\text{CAUS}}$  as an operator that introduces a causing event and relates it to a caused eventuality via an underspecified causative relation, as in (281a), which ranges over D-CAUSE and I-CAUSE, as shown in (281b).

$$(281) \quad \text{a. } \llbracket v_{\text{CAUS}} \rrbracket = \lambda P. \lambda e. \exists \varepsilon [R_{\text{CAUS}}(e, \varepsilon) \wedge P(\varepsilon)]$$

$$\text{b. } R_{\text{CAUS}} \in \{\text{D-CAUSE}, \text{I-CAUSE}\}$$

The relation D-CAUSE encodes direct causation and requires a non-interrupted causal chain between the causing event and the caused state. As a result, the caused state must be non-autonomous and non-agentive, lacking independent causal force. By contrast, the relation I-CAUSE encodes indirect causation and merely expresses causal dependency between events, without imposing constraints on intervening causal structure. I have shown that the interpretive contrast between direct and indirect causation can be derived compositionally from the interaction of this relation with the internal size of the embedded structure: when  $v_{\text{CAUS}}$  embeds a ResP-sized constituent, the relation is interpreted as D-CAUSE (direct causation), whereas embedding a VoiceP-sized constituent yields I-CAUSE (indirect causation). This allows a unified treatment of causative constructions in which  $v_{\text{CAUS}}$  remains a

single operator, while systematic variation in causative interpretation is captured by the type of causative relation it introduces. In this configuration, D-CAUSE refers to the configuration where the single  $v$  head takes ResP as its complement (i.e. lexical causatives), as in (282) whereas I-CAUSE represents the higher  $v$  in a double  $v$ P configuration (i.e. productive causatives), as in (283).



Under this view, selectional differences between ResP- and VoiceP-sized complements are not stipulated but follow from the semantic constraints associated with the respective causative relations, yielding the default correlations summarized in Table 7.1. Overall, this chapter has provided the assumptions, definitions, and diagnostics required for the subsequent structural analysis of causative formation and for the evaluation of recursive causativization and increasing indirectness in the chapters that follow.

|                                  | Unaccusatives | Unergatives | Transitives |
|----------------------------------|---------------|-------------|-------------|
| Lexical<br>(ResP-selecting)      | ✓             | ✗           | ✗           |
| Direct causation                 |               |             |             |
| Productive<br>(VoiceP-selecting) | ✗             | ✓           | ✓           |
| Indirect causation               |               |             |             |

**Table 7.1:** Default correlations between verb classes, causative formation, and causative relations

This chapter laid the groundwork for a deeper exploration of the parameters governing causative constructions, setting the stage for a more detailed examination of the syntactic and morphological factors that shape causativization in Turkish. Chapter 3 has provided a detailed account of the morphosyntax of Turkish causatives and has established the empirical and analytical foundation for the

investigation of recursive causativization pursued in subsequent chapters. I have shown that Turkish causative morphology interacts systematically with argument structure and event composition, and that this interaction is constrained by principled morphosyntactic and semantic factors. I have first clarified the core morphosyntactic properties of Turkish that are crucial for the analysis of causatives, by examining case marking, flexible word order, and information-structural conditions for argument realization. Building on this background, I have presented a comprehensive overview of Turkish causative morphology. I have distinguished regular from irregular allomorphy of the causative morpheme and surveyed causatives derived from unaccusative, unergative, transitive, and ditransitive bases. I have also shown that causatives can co-occur with other voice morphology (e.g. passives) and that causative suffixes can be iterated.

The chapter has further situated Turkish causatives within broader alternation patterns between lexical causatives and anticausatives. I have shown that both marked and unmarked lexical causatives participate in the causative alternation. Marked lexical causatives alternate with unmarked anticausatives; marked anticausatives alternate with unmarked lexical causatives. I have analyzed unmarked lexical causatives, such as *kır-* 'break', *kes-* 'cut', *aç-* 'open', in the same way as marked lexical causatives such as *düş-ür-* 'drop', *piş-ir-* 'cook', *bit-ir-* 'finish', as in (284), in comparison to their anticausative alternants, such as *düş-* 'drop', *piş-* 'cook', *bit-* 'finish' as unmarked anticausatives (i.e. unaccusatives) and *kır-ıl-* 'break', *kes-ıl-* 'cut', *aç-ıl-* 'open' as marked anticausatives, as in (285). These analyses have constituted the causative alternation in Turkish as a whole; see (284c) for the proposed structure of both marked and unmarked lexical causatives, see (285b) and (285d) for the proposed structure of unmarked and marked anticausative variants. By examining these alternations, I have argued that differences in event structure and argument realization determine the locus of causativization. I have maintained that causative semantics is uniformly introduced by  $v_{\text{CAUS}}$  realizing D-CAUSE, and that the crucial alternation involves the presence vs. absence of Voice.

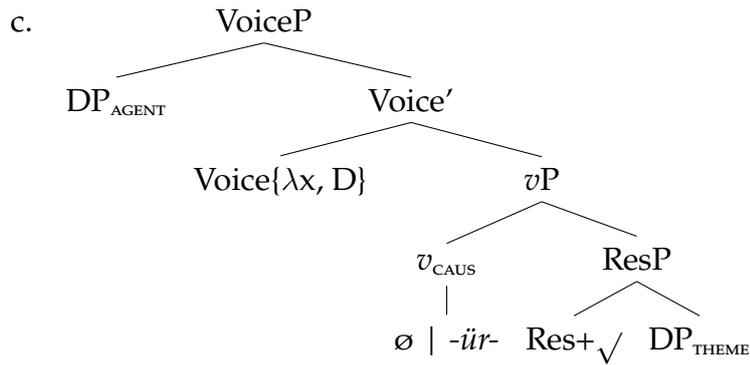
(284) Lexical causatives in Turkish

a. *Unmarked lexical causatives*

Ece pencere-yi kır-dı.  
 Ece window-ACC break-PST  
 'Ece broke the window.'

b. *Marked lexical causatives*

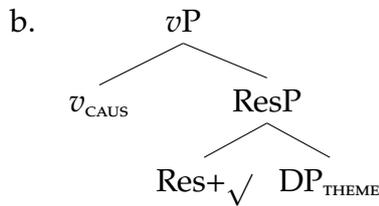
Ece anahtar-ı düş-ür-dü.  
 Ece key-ACC fall-CAUS-PST  
 'Ece dropped the key.'



(285) Anticausatives in Turkish

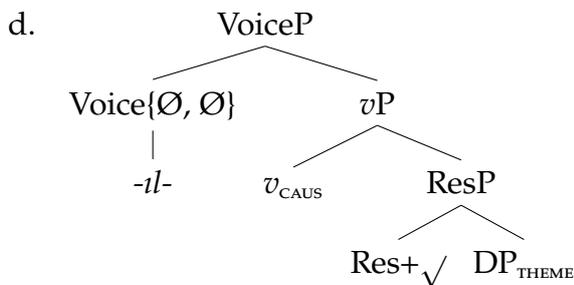
a. *Unmarked anticausatives*

Anahtar düş-tü.  
 key fall-PST  
 'The key fell.'



c. *Marked anticausatives*

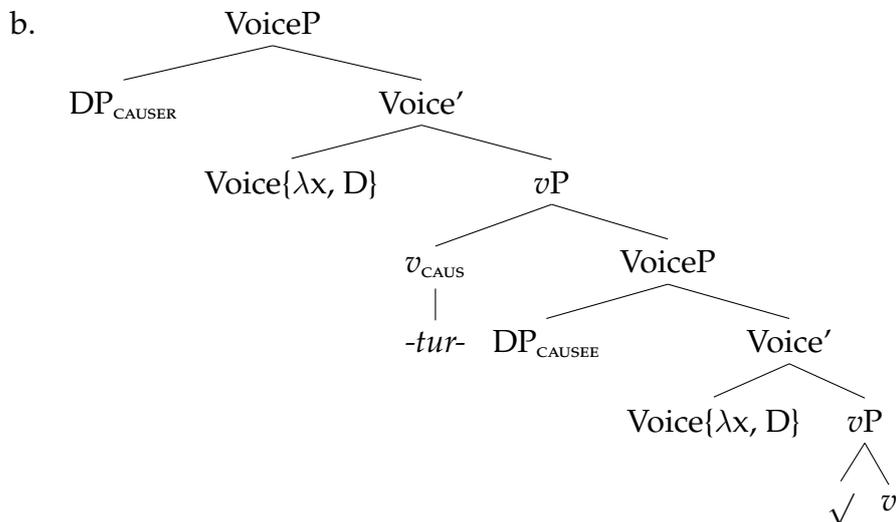
Pencere kır-ıl-dı.  
 window break-PASS-PST  
 'The window broke.'



The chapter has then turned to productive causativization in detail. Using diagnostics such as agent-oriented adverbial modification, tests for eventhood and decomposition, and diagnostics for the presence of result states, I have motivated a structural analysis in which productive causatives embed VoiceP-sized complements. On this view, productive causatives uniformly encode indirect causation (I-CAUSE):  $v_{CAUS}$  relates a causing event to a caused event without collapsing them into a single event layer. Causatives of unergatives were analyzed as involving two thematic active Voice projections, as in (286b): the higher Voice introduces the causer, and the embedded Voice introduces the causee, with the base predicate introducing the lower event.

(286) *Causativization of unergative verbs*

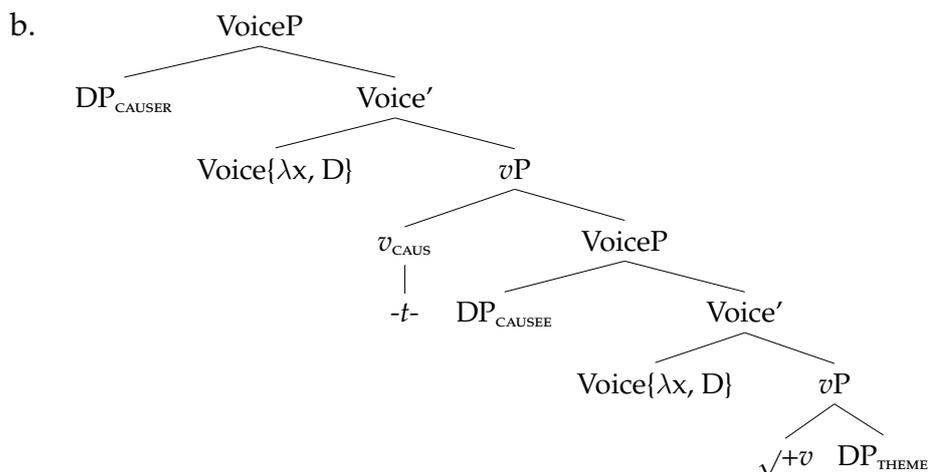
- a. Öğretmen Ece'yi koş-tur-du.  
 teacher Ece-ACC run-CAUS-PST  
 'The teacher made Ece run.'



Causatives of transitive manner verbs were analyzed as involving a double *vP* configuration with two thematic active Voice projections, as in (287b): the higher Voice introduces the causer, and the embedded Voice introduces the causee, with the lower *v* introducing the embedded event with its theme.

(287) *Causativization of transitive manner verbs*

- a. Aşçı garson-a bulaşık-lar-ı yıka-t-tı.  
 chef waiter-DAT dish-PL-ACC wash-CAUS-PST  
 'The chef made the waiter wash the dishes.'

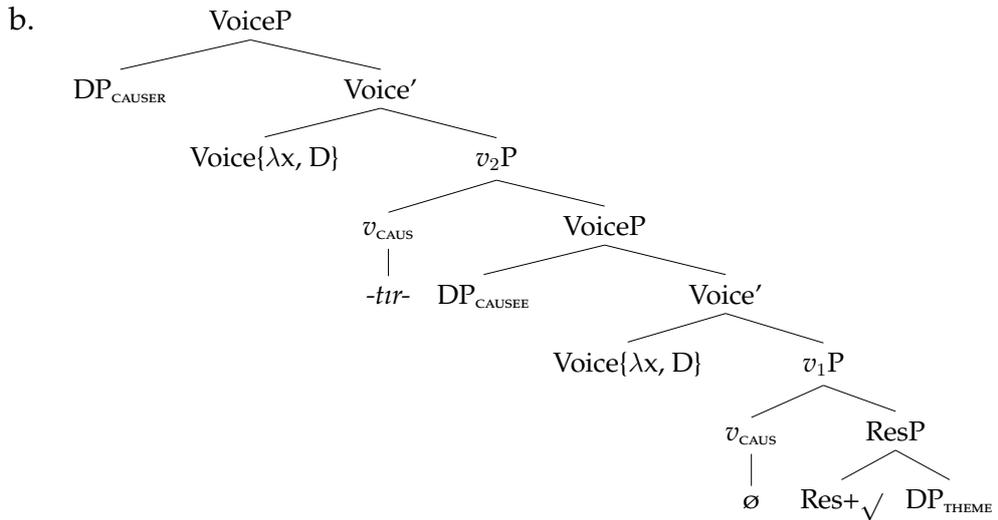


Causatives of transitive result verbs instantiate the same overall causative configuration, but differ in the internal makeup of the embedded predicate, as in (288b) and (289b): the lower *v* decomposes into a dynamic event and a result state (a  $v_{CAUS} + ResP$  complex), yielding a *D-CAUSE* relation inside the embedded

event. Variation across verb classes thus follows from the internal structure of the embedded predicate, not from a different causative configuration.

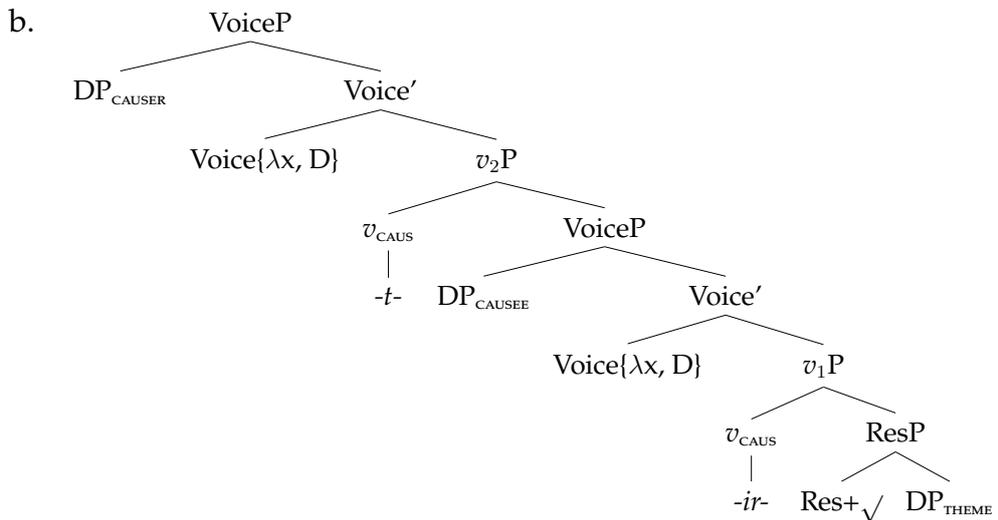
(288) *Causativization of non-derived transitive result verbs*

- a. Ece Ada'ya kapı-yı aç-tır-dı.  
 Ece Ada-DAT door-ACC open-CAUS-PST  
 'Ece made Ada open the door.'



(289) *Causativization of derived transitive result verbs*

- a. Ada Ece'ye balon-u şiş-ir-t-ti.  
 Ada Ece-DAT balloon-ACC inflate-CAUS-CAUS-PST  
 'Ada made Ece inflate the balloon.'

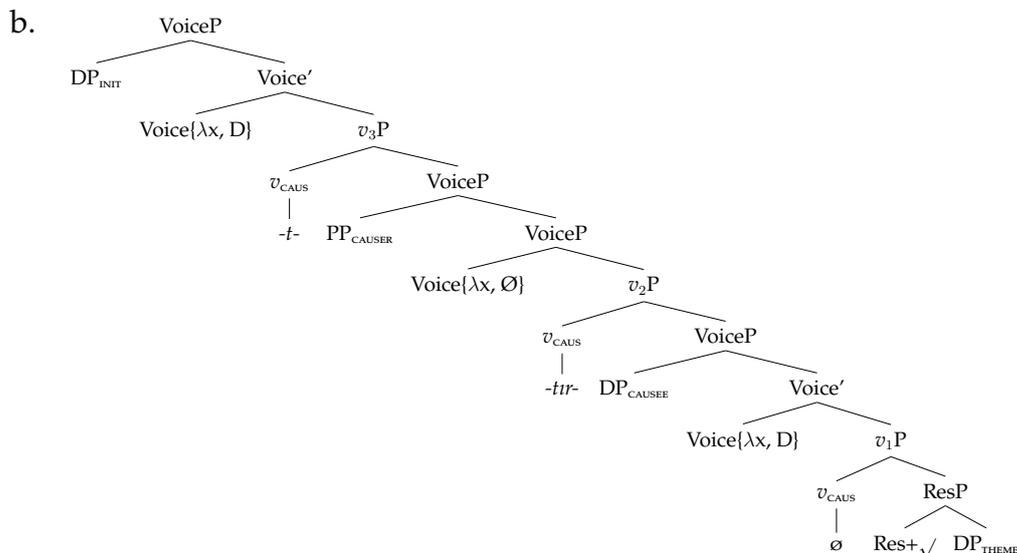


This chapter has established both the descriptive generalizations and the analytical machinery required for the analysis of recursive causatives. By grounding the analysis in detailed morphosyntactic patterns and event-structural diagnostics, it has provided the necessary basis for the structural and empirical investigation of causative recursion developed in the following chapters.

Chapter 4 has shown that productive causatives of unergative predicates provide clear evidence for  $v$ P and VoiceP-recursion (cf. Nie 2022), supported by event-structural diagnostics and agent-oriented modification. Extending the analysis to transitives, I have argued that recursive causativization is systematically constrained by independent conditions on argument realization, including case-theoretic requirements and linearization pressures as defined in terms of the distinctness condition (Richards 2001). In particular, the degradation of multiple dative arguments within a single domain accounts for the ban on dative-marked causees in causatives of ditransitives and on dative-marked intermediary causers in double causatives of transitives. Speakers therefore resort to repair strategies such as dislocation, *pro*-drop, or postpositional realization, offering substantial interspeaker variation (e.g. Kural 1996; Akkuş 2021). I have proposed the structure for the analysis of double causatives of transitive result verbs, as in (290b), which decomposes recursive causatives into three  $v$  layers:  $v_1$ P encodes the D-CAUSE component and embeds a ResP that introduces the theme;  $v_2$ P encodes the I-CAUSE component and embeds an active VoiceP that introduces the causee; and  $v_3$ P adds a further indirect layer and embeds a non-active VoiceP that can optionally license an intermediary causer via a *tarafından* ‘by’-phrase.

(290) *Double causativization of non-derived transitive result verbs*

- a. Oya Ada tarafından Ece’ye kapı-yı aç-tır-t-ti.  
 Oya Ada by Ece-DAT door-ACC open-CAUS-CAUS-PST  
 ‘Oya had Ada make Ece open the door.’



This analysis is stated for configurations in which all event participants are overt, in order to fix the baseline mapping between thematic roles and syntactic positions. Null causees, null causers, and restrictions related to inanimacy are not derived here (see Akkuş 2021), but are taken up empirically in Chapter 5 and Chapter 6.

Finally, the chapter has argued that productive causatives of unergatives and transitives are genuinely recursive, in the sense that recursion amounts to adding an additional  $v_{\text{CAUS}}$  layer to an already causativized event structure. For transitives, the causee is introduced by an active Voice layer, while an intermediary causer is licensed by a higher non-active Voice head via *tarafından*. Adopting a split analysis of manner vs. result roots, I have formulated the increasing indirectness hypothesis: recursive causativization increases indirectness only to the extent permitted by the embedded event structure. On this view, recursive causatives of manner verbs are tightly constrained by requirements on argument overtness, whereas recursive causatives of result verbs allow more flexibility because the resultant state can be identified independently of the causal chain. These claims yield concrete predictions about argument realization and omission, which motivate the corpus-based investigations in the subsequent chapters.

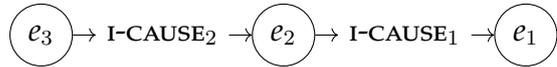
The empirical work presented in Chapter 5 and Chapter 6 has utilized corpus-linguistic tools to collect and scrutinize large amounts of authentic linguistic data. I have examined the complex interaction between causative formation and verbal semantics, with a focus on how manner/result complementarity impacts argument structure, challenging previous assumptions (Sebüktekin 1971; Göksel & Kerslake 2005; Acartürk & Zeyrek 2010; Key 2013) that lacked systematic operationalization and empirical examination, and filling the research gap by offering the first quantitative study within this paradigm.

Using a morphologically annotated corpus via Sketch Engine, Turkish Web 2020 (trTenTen20), Chapter 5 has established a rigorous empirical foundation for investigating Turkish causatives by defining controlled sampling parameters and an annotation scheme that operationalizes the effect of increasing indirectness determined by the interaction of causative formation and the manner-result contrast and utilizes argument realization of the key arguments, the initiator and the causee, as the measure of this effect. Through structured data wrangling and quantitative approach, it provides a systematic test of the increasing indirectness hypothesis. Ultimately, by evaluating recursive causatives (double) as opposed to productive causatives (single) across distinct verbal and aspectual classes, the chapter has offered a large-scale, corpus-based contribution to the literature grounded in explicit structural and semantic predictions.

Chapter 6 has aimed to evaluate the increasing indirectness hypothesis by testing the prediction that verbal semantics, in particular the manner/result distinction, interacts with causative formation in a way that systematically shapes argument structure and realization. The core assumption has been that eventive verbs encode either a manner component or a result component, and that this

lexical-semantic distinction constrains the event composition, yielding a mono- and bi-eventive structural realization, respectively, which in turn determines how much causal distance can be introduced, as result verbs encode an additional causative semantics, as illustrated in (291) and (292).

(291) *Recursive causal chain with manner verbs*



(292) *Recursive causal chain with result verbs*



On this view, indirectness is not an abstract label but a scalar property derived from the interaction of (i) the embedded event structure and (ii) the number of causative layers: causativized manner predicates, whose event structure is mono-eventive and root-dependent, are predicted to permit the least indirectness, whereas causativized result predicates, whose event structure provides an independently identifiable resultant state, are predicted to tolerate the greatest indirectness under recursive causativization.

Against this background, the chapter has pursued an empirical strategy that treats argument realization as a diagnostic of indirectness. The chapter has therefore focused on whether increased indirectness correlates with systematic changes in the overt realization and distribution of event participants. The investigation began with argument overtness as the primary measure, testing how initiator and causee realization co-varies with recursive causative formation across manner vs. result predicates. To interpret the distributions of these parameters, a mixed-effects logistic regression model was employed featuring a three-way interaction term (`base_root * init_overtness * causee_overtness`) as a function of `causative_type`. To ensure the reliability of the results and to account for by-verb variation, the model included a random intercept varying across individual base verbs, allowing for the observation of verb-specific variability within broader semantic categories.

The empirical results largely corroborate these predictions, suggesting that argument overtness played a key role in determining the interaction of causative formation and verbal semantics as predicted, with manner verbs being more restrictive, while result verbs, showing more flexibility in argument realization under recursive environments. For manner verbs, the probability of a recursive causative was the highest when both the initiator and causee are overt. While an overt initiator significantly increased the probability of recursive causatives, the overtness of the causee contributed a further, albeit more marginal, boost to

these estimates. The behavior of result verbs provided more nuanced evidence for the indirectness hypothesis. As shown in Table 7.2, the contrast between `init.overt causee.overt` and `init.overt causee.null` is the most significant predictor ( $\hat{\beta} = 1.221, p = 0.0003$ ), indicating that causee overtness is the primary factor driving recursive formation in this class. Interestingly, for result verbs, an overt initiator actually contributes in a negative direction when the causee is null ( $\hat{\beta} = -0.5625, p = 0.0226$ ). This suggests that for result verbs, the absence of an overt causee significantly diminishes the probability of recursive causatives, even when the initiator is present.

| Contrasts                                                     | Estimate | SE    | p-value | $\alpha$ |
|---------------------------------------------------------------|----------|-------|---------|----------|
| <code>init.overt causee.overt - init.overt causee.null</code> | 1.221    | 0.340 | 0.0003  | ***      |
| <code>init.overt causee.null - init.null causee.null</code>   | -0.5625  | 0.247 | 0.0226  | *        |
| <code>init.overt causee.overt - init.null causee.null</code>  | 0.6582   | 0.343 | 0.0547  | .        |
| <code>init.null causee.overt - init.null causee.null</code>   | 0.6108   | 0.343 | 0.0750  | .        |

**Table 7.2:** Contrasts for recursive causative probabilities for result verbs

The implications of these results have highlighted the importance of verbal semantics in shaping complex syntactic structures, especially in recursive causatives where syntax and semantics interacts significantly. The statistical behavior of result verbs underscores a fundamental tension in the encoding of causal distance. For the broader study of causation, these results suggest that “indirectness” is not merely a linear addition of causative morphemes, but is contingent on the verb’s internal boundaries. Because result verbs already identify a caused state, adding recursive morphology forces the grammar to differentiate between the inherent cause and the newly introduced causing events that play a role in the transition to the caused state.

The three-way interaction effect revealed significant variability across individual verbs, which was further strengthened by the Bayesian mixed-effects logistic regression model including a full random effects structure to account for not only varying intercepts but also varying slopes for the main effects of the overtness of the causee and the initiator. The model tested the three-way interaction (`base_aspect * init_overtness * causee_overtness`), predicting the probability of recursive causatives. The statistical results suggested, within the activity (manner) class, that verbs like *izle-* ‘watch’ and *ara* ‘search’ show a higher baseline probability for recursive causatives than *oku-* ‘read’ when both the initiator and the causee are overt. Within the accomplishment and achievement (result) classes, the impact of causee overtness varies; for instance, the achievement verb *yol-* ‘tear out/rip off’ shows

a very high probability of recursive causatives regardless of initiator overtness when the causee is overt, whereas accomplishment verbs like *çek-* ‘pull’ are much more sensitive to these argument realizations. This suggests that while broad semantic classes (manner vs. result) provide the structural template, individual verbal semantics further refine the probability of recursive causativization.

The evaluation was extended by probing further contributors that can modulate the degrees of indirectness: aspectual classification of events (including whether duration, alongside telicity, affects the availability of recursive structures), detailed examination of initiator and causee overtness, linear order of arguments (as additional constraints on realization in multi-argument configurations), the humanness of the initiator, and the case marking of the theme (as a potential indicator of how discourse-linked object realization interacts with causative recursion). In doing so, the chapter has aimed to determine whether the predicted indirectness scale is reflected in converging distributional patterns across these domains.

In conclusion, this monograph has contributed to our understanding of the complex domain of causative constructions by combining a structural analysis that supports the existence of causative recursion with corpus-based evidence showing that manner/result complementarity is a decisive factor in argument realization in recursive causatives. This mixed approach, integrating qualitative diagnostics with quantitative modeling, has made it possible to characterize argument structure and realization in recursive causatives as a measurable property of the degree of indirectness. By analyzing this morphosyntactically signaled process and its consequences for the morphosyntax-semantics interface, this monograph has offered a unified perspective on how event composition, causative relations, and the realization or omission of arguments co-vary in Turkish.

Several directions follow naturally from the present results. First, an immediate extension concerns the interaction between causative and passive morphology. Future work should investigate nested valency operations in Turkish by targeting passive-over-causative configurations and their effects on argument realization, alternations of intermediary arguments, case assignment, and information structure. Building on the recursion analysis developed in this monograph, such work would extend the perspective to valency-decreasing over valency-increasing operations (Legate et al. 2020) and clarify how these complex structures are licensed and interpreted. Second, experimental studies can complement the corpus findings. Acceptability judgment tasks can systematically test the argument realization options discussed in Chapter 4, including the case of the causee, the case of the theme (DOM), the realization of an intermediary causer (e.g. *tarafından*-phrases), and alternative repair strategies (e.g. dislocation and *pro*-drop), allowing a controlled

evaluation of the constraints and gradient preferences that underlie the observed distributions. In addition, experimentally manipulating pragmatic factors, such as the relative social status of event participants, could help assess whether speaker biases about plausible causal chains modulate the acceptability of different argument realization patterns. Third, large-scale corpus investigations across Turkic (and more broadly Altaic, where relevant) languages can broaden the empirical base and provide a typological perspective on recursive causativization and increasing indirectness. Extending the annotation scheme and modeling strategy to typologically related languages would help determine which correlations are language-specific and which reflect more general properties of causativization, root semantics, and argument realization. Overall, these directions preserve the core claim of the monograph while expanding its empirical coverage and methodological scope: recursive causativization is structurally genuine, and its interpretive and morphosyntactic effects are systematically mediated by event structure and root semantics.



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# Appendices

## Appendix A: Search queries

(293) *The final search query for single causatives*

```
[tag = " <V><caus><past><1p> | <V><caus><past><1s> |
<V><caus><past><2p> | <V><caus><past><2s> | <V><caus><past><3p>
| <V><caus><past><3s> " &
stem = " imza | kul | top | ek | öde | düşün | getir | çek | yap | ara | vur | ye | iz |
ver | oku | kur | dene | yol | temiz | koy | boğ | din | söyle | yaz | sor "]
```

(294) *The final search query for double causatives*

```
[tag = " <V><caus><caus><past><1p> | <V><caus><caus><past><1s> |
<V><caus><caus><past><2p> | <V><caus><caus><past><2s> |
<V><caus><caus><past><3p> | <V><caus><caus><past><3s> " &
stem = " imza | kul | top | ek | öde | düşün | getir | çek | yap | ara | vur | ye | iz |
ver | oku | kur | dene | yol | temiz | koy | boğ | din | söyle | yaz | sor "]
```

## Appendix B: R code chunks

(295) *The creation of the dataframe including the double form*

```
raw_df_double <- raw_data_double |>
 mutate(source = str_before_first(all, ",", ","),
 doc_number = str_after_first(all, ",", ","),
 doc_number = str_before_first(doc_number, ",", ","),
 token_number = str_after_first(all, ",", ","),
 token_number = str_after_first(token_number, ",", ","),
 token_number = str_before_first(token_number, ",", ","),
 item = str_after_first(all, "<s>"),
 item = str_remove(item, "<\\s>"),
 tag = str_after_first(item, "/"),
 tag = str_before_first(tag, " "),
 base_verb = str_after_first(tag, "/"),
 person = str_extract(tag, "\\d[ps]*")) |>
 filter(!is.na(person))
```

## Appendix C: Verbs in the dataset

- (296) *ara-* ‘call/look for’ — MANNER  
Her iki ameliyat-ta da bana A RH pozitif kan  
every two operation-LOC too me.DAT A Rh positive blood  
ara-t-tır-dı-lar.  
look.for-CAUS-CAUS-PST-3PL  
‘They had me look for A Rh+ blood in both surgeries.’  
(*memurlar.net*; doc\_number: #5010589; token\_number: #1572426400)
- (297) *getir-* ‘bring’ — RESULT  
Bira şişe-ler-i boşal-dıkça yeni-sin-i getir-t-ti.  
beer bottle-PL-AGR empty-CVB new-3SG-ACC bring-CAUS-PST  
‘As the beer bottles emptied, Ø had new ones brought in.’  
(*edebiyatdefteri.com*; doc\_number: #16937206; token\_number: #4946133471)
- (298) *imzala-* ‘sign’ — RESULT  
Taraftar-lar mağaza-dan al-dık-lar-ı forma ve atkı-lar-ı  
fan-PL shop-ABL take-RELZ-3PL-AGR jersey and scarf-PL-ACC  
futbolcu-lar-a imzala-t-tır-dı.  
football.player-PL-DAT sign-CAUS-CAUS-PST  
‘Fans had the football players sign the jerseys and scarves they bought from the store.’  
(*memurlar.net*; doc\_number: #4986390; token\_number: #1565758409)
- (299) *izle-* ‘watch’ — MANNER  
Tenisçi-ler final-e yakış-an bir mücadele  
tennis.player-PL final-DAT fit-RELZ a battle  
izle-t-tir-di-ler.  
watch-CAUS-CAUS-PST-3PL  
‘Tennis players had a game watched, which was worthy of the final.’  
(*blogspot.com*; doc\_number: #20292376; token\_number: #5986665654)
- (300) *koy-* ‘put/place’ — RESULT  
Kendi resm-in-i koy-dur-t-tu.  
self drawing-3SG-ACC put-CAUS-CAUS-PST  
‘Ø had ø own drawing placed.’  
(*archive.org*; doc\_number: #12475298; token\_number: #3723662232)
- (301) *kullan-* ‘use’ — MANNER  
Banka-lar 3 yıl-da 561 milyar YTL kredi kullan-dır-dı.  
bank-PL 3 year-LOC 561 billion YTL credit use-CAUS-PST  
‘In 3 years, the banks had 561 billion YTL in loans used.’  
(*yeniiasya.com.tr*; doc\_number: #12162011; token\_number: #3618295142)

- (302) **kur-** ‘set/establish’ — RESULT  
 Onun bu iyi görüntü-sü de, maddi açı-dan biz-ler-e  
 3SG.GEN this good image-3SG also material angle-ABL WE-PL-DAT  
 hayal-ler kur-dur-t-tu.  
 dream-PL set-CAUS-CAUS-PST  
 ‘This good image of his had us build dreams in financial terms.’  
 (*sportifcumleler.com*; doc\_number: #17690728; token\_number: #5193758588)
- (303) **oku-** ‘read’ — MANNER  
 Geçen gün öğretmen, Türkçe ders-in-de bir gazete-den bir  
 past day teacher Turkish class-3SG-LOC a newspaper-ABL a  
 yazı oku-t-tu.  
 article read-CAUS-PST  
 ‘The other day, the teacher had a newspaper article read in the Turkish  
 class.’ (*kigem.com*; doc\_number: #230683; token\_number: #80802658)
- (304) **sor-** ‘ask’ — RESULT  
 Her gün kendi-m-e kart-lar-la soru-lar  
 every day self-1SG-DAT card-PL-INST question-PL  
 sor-dur-t-tu-m.  
 ask-CAUS-CAUS-PST-1SG  
 ‘Every day, I had questions asked to myself with the cards.’  
 (*edebiyatseminerleri.com*; doc\_number: #19494278; token\_number: #5677336865)
- (305) **söyle-** ‘tell/say’ — RESULT  
 Hatta birkaç arkadaş-a da chat-te söyle-t-tir-di-m.  
 Even a.few friend-DAT also chat-LOC say-CAUS-CAUS-PST-1SG  
 ‘I even had a few friends say it in the chat.’  
 (*erepublik.com*; doc\_number: #7047495; token\_number: #2148212612)
- (306) **temizle-** ‘clean’ — RESULT  
 Ev-imiz-i temizle-t-tir-di-k.  
 house-1PL-ACC clean-CAUS-CAUS-PST-1PL  
 ‘We had our house cleaned.’  
 (*aydinlar.net*; doc\_number: #3529323; token\_number: #1126062994)
- (307) **topla-** ‘collect’ — MANNER  
 Polis-ler-e her küpe-li, uzun saç-lı, siyah  
 police.officer-PL-DAT every earring-N.DER long hair-N.DER black  
 tişört-lü delikanlı-yı topla-t-tir-di-k.  
 T-shirt-N.DER young.man-ACC collect-CAUS-CAUS-PST-1PL  
 ‘We made the police arrest every young man with earrings, long hair and a  
 black T-shirt.’  
 (*gnoxis.com*; doc\_number: #608819; token\_number: #207671195)

- (308) *ver-* ‘give’ — RESULT  
 Sonradan bana konferans-lar ver-dir-t-ti-ler.  
 later me.DAT conference-PL give-CAUS-CAUS-PST-3PL  
 ‘Then they had me give conferences.’  
 (*perfectgazete.com*; doc\_number: #14414485; token\_number: #4276386605)
- (309) *vur-* ‘shoot/hit’ — RESULT  
 Bana sabah-a kadar adam vur-dur-t-tu-nuz.  
 me.DAT morning-DAT until man shoot-CAUS-CAUS-PST-2PL  
 ‘You had me shoot men until the morning.’  
 (*memurlar.net*; doc\_number: #5086013; token\_number: #1593504483)
- (310) *yol-* ‘tear out’ — RESULT  
 Lincoln saç baş yol-dur-t-tu.  
 Lincoln hair head tear.out-CAUS-CAUS-PST  
 ‘Lincoln had hair torn out.’  
 (*sporx.com*; doc\_number: #432246; token\_number: #142895215)
- (311) *çek-* ‘pull’ — MANNER  
 2 adet 20’lik diş çek-tir-di-m.  
 2 piece 20-N.DER tooth pull-CAUS-PST-1SG  
 ‘I had 2 wisdom teeth pulled out.’  
 (*doktortakvimi.com*; doc\_number: #15286723; token\_number: #4509694753)
- (312) *öde-* ‘pay’ — RESULT  
 Bir-leş-me karşı-lığ-ı 72 tane araba-nın  
 one-V.DER-N.DER opposite-N.DER-AGR 72 piece car-GEN  
 bedel-in-i bize öde-t-tir-di.  
 compensation-3SG-ACC US.DAT pay-CAUS-CAUS-PST  
 ‘Ø made us pay for the compensation of the 72 cars in exchange for the merger.’  
 (*namsori.com*; doc\_number: #3126892; token\_number: #965297447)

## Appendix D: Aspectual classification of events

- (313) **ara-** ‘call/look for’ — MANNER  
112’yi aramak ‘to call 112’,  
ev aramak ‘to look for a house’  
??1 dakika içinde / ??2 saat içinde  
??saniyeler boyunca / <sup>ok</sup>2 saat boyunca  
→ atelic + durative = activity
- (314) **getir-** ‘bring’ — RESULT  
arabayı getirmek ‘to bring the car’  
??1 dakika içinde / <sup>ok</sup>2 saat içinde  
??saniyeler boyunca / ??2 saat boyunca  
→ telic + durative = accomplishment
- (315) **imzala-** ‘sign’ — RESULT  
raporu imzalamak ‘to sign the protocol’  
<sup>ok</sup>saniyeler içinde / ??2 saat içinde  
??saniyeler boyunca / ??2 saat boyunca  
→ telic + punctual = achievement
- (316) **izle-** ‘watch’ — MANNER  
bir gösteri izlemek ‘to watch a show’  
??saniyeler içinde / ??2 saat içinde  
??saniyeler boyunca / <sup>ok</sup>2 saat boyunca  
→ atelic + durative = activity
- (317) **koy-** ‘put/place’ — RESULT  
haciz koymak ‘to confiscate’  
<sup>ok</sup>1 dakika içinde / ??2 saat içinde  
??saniyeler boyunca / ??2 saat boyunca  
→ telic + punctual = achievement
- (318) **kullan-** ‘use’ — MANNER  
bir klavye kullanmak ‘to use a keyboard’  
??1 dakika içinde / ??2 saat içinde  
??saniyeler boyunca / <sup>ok</sup>yıllar boyunca  
→ atelic + durative = activity
- (319) **kur-** ‘set/establish’ — RESULT  
alarm kurmak ‘to set an alarm’  
<sup>ok</sup>saniyeler içinde / ??2 saat içinde  
??saniyeler boyunca / ??2 saat boyunca  
→ telic + punctual = achievement

- (320) **oku- ‘read’** — MANNER  
*bir roman okumak* ‘to read a novel’  
 ??saniyeler içinde / ??2 saat içinde  
 ??saniyeler boyunca / ok2 saat boyunca  
 → atelic + durative = activity
- (321) **sor- ‘ask’** — RESULT  
*bir soru sormak* ‘to ask a question’  
 oksaniyeler içinde / ??2 saat içinde  
 ??saniyeler boyunca / ??2 saat boyunca  
 → telic + punctual = achievement
- (322) **söyle- ‘tell/say’** — RESULT  
*bir laf söylemek* ‘to say a word’  
 oksaniyeler içinde / ??2 saat içinde  
 ??saniyeler boyunca / ??2 saat boyunca  
 → telic + punctual = achievement
- (323) **temizle- ‘clean’** — RESULT  
*odayı temizlemek* ‘to clean the room’  
 ??saniyeler içinde / ok2 saat içinde  
 ??saniyeler boyunca / ??2 saat boyunca  
 → telic + durative = accomplishment
- (324) **topla- ‘pick up/add’** — MANNER  
*çiçek toplamak* ‘to pick flowers’  
 ??saniyeler içinde / ??2 saat içinde  
 ??saniyeler boyunca / ok2 saat boyunca  
 → atelic + durative = activity
- (325) **ver- ‘give’** — RESULT  
*talimat vermek* ‘to give instructions’  
 ok1 dakika içinde / ??2 saat içinde  
 ??saniyeler boyunca / ??2 saat boyunca  
 → telic + punctual = achievement
- (326) **vur- ‘shoot/hit’** — RESULT  
*bir kuş vurmak* ‘to shoot a bird’  
 oksaniyeler içinde / ??2 saat içinde  
 ??saniyeler boyunca / ??2 saat boyunca  
 → telic + punctual = achievement

- (327) **yol-** ‘tear out/rip off’ — RESULT  
*otları yolmak* ‘to tear the weeds out’  
*<sup>ok</sup>saniyeler içinde / <sup>??</sup>2 saat içinde*  
*<sup>??</sup>saniyeler boyunca / <sup>??</sup>2 saat boyunca*  
→ **telic + punctual = achievement**
- (328) **çek-** ‘pull’ — RESULT  
*aracı çekmek* ‘to pull the vehicle’  
*<sup>??</sup>saniyeler içinde / <sup>ok</sup>2 saat içinde*  
*<sup>??</sup>saniyeler boyunca / <sup>??</sup>2 saat boyunca*  
→ **telic + durative = accomplishment**
- (329) **öde-** ‘pay’ — RESULT  
*hesabı ödemek* ‘to pay the bill’  
*<sup>ok</sup>saniyeler içinde / <sup>??</sup>2 saat içinde*  
*<sup>??</sup>saniyeler boyunca / <sup>??</sup>2 saat boyunca*  
→ **telic + punctual = achievement**