Resultatives and Causation

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Abstract The well-formedness of a transitive resultative construction is said to require a relation of direct causation between its causing and caused subevents; that is, resultatives conform to the same well-formedness condition as lexical causatives. Isolating the best formulation of this condition continues to be the subject of discussion. This paper revisits it in the context of transitive resultatives. Such resultatives are ideal for this investigation as they explicitly provide information about the causing subevent in their verb, while lexical causatives are silent about this subevent. This paper investigates the relation between the causing and caused subevents through case studies of resultatives with the result phrases dry and awake. The case studies probe the complex interplay between the subject, the verb, the postverbal NP, and the adjective in examples drawn from an annotated corpus of naturally occurring resultatives. A final case study investigates why resultatives with certain verb–adjective combinations disallow a particular interpretation. Together these case studies support the prototypical understandings of direct causation found in the literature.

1 Introduction

Any discussion of the semantics of the English resultative construction, illustrated in (1) and (2), seems necessarily to be enmeshed with the notion of cause, and this paper looks at an under-discussed facet of this construction to further illuminate not only the appropriate analysis of the resultative construction, but also the linguistic representation of causation and, thus, perhaps the representation of causation more generally.

(1) The waitress comes back, wiping the silverware dry with a cloth napkin before laying it out. (M.G. Jaffe, Dance Real Slow, Farrar Straus Giroux, New York, 1996, p. 24)

(2) Last night, the dog poked me awake every hour to go outside. (G. Dunford, “Charity’s for the Birds”, The Toronto Sun, November 27, 1994, p. 6)

The link between resultative constructions and causation arises because transitive resultative constructions — those with an NP following the verb, as in (1) or (2) — are easily
given a causative paraphrase. For example, (1) is paraphrasable as ‘The waitress wiped the silverware causing it to become dry’. The availability of a paraphrase in terms of a causative relation between two events suggests that resultative constructions should receive an analysis which involves explicit reference to causation even though the construction itself does not involve any overt causative element; as Bittner (1999:1) puts it, ‘the causal relation appears to come from nowhere’. In (1) the causing event — the wiping — and the caused event — the drying — share a participant — the silverware. It is this participant that the result state — i.e. dry in (1) — is predicated of.

One hypothesis is that the causative interpretation might be attributed to this shared participant. However, this explanation cannot be extended to other resultative constructions. Certain resultative constructions, although equally amenable to a causative paraphrase, show an apparently ‘looser’ link between the causing and caused events. Consider (3), which could be paraphrased as ‘The roosters crowing caused me to awake’. Here the causing event — the crowing — describes an action not carried out on a particular entity, and certainly not on the entity that attains the result state. Such constructions are referred to as nonselected NP resultatives as the NP following the verb — the apparent ‘object’ of the verb — is not selected (or more formally, ‘subcategorized’) by it. For instance, in (3) the rooster does not ‘crow me’; that is, *The rooster crowed me.

(3) When the roosters that scratch in the yard of Brastagi’s best hotel **crowed me awake** that dawn a few months ago, I knew it was destined to be a memorable day … (T. Robbins, “True Adventure: Crowned King of The Cannibals”, Sect. 6, Part 2, The New York Times, March 16, 1986, p. 8)

The existence of such resultatives is significant for the analysis of the construction. The causative interpretation of selected NP resultatives such as (1) and (2) could be imputed to the existence of a participant shared by the causing and caused events, but that explanation does not obviously extend to the causative interpretation of nonselected NP resultatives such as (3). It is necessary, then, to look more closely at the nature of the link between the two events.

Although nonselected NP resultatives have received considerable attention, particularly with respect to the best syntactic analysis of the construction, they have not received sustained attention in the context of a theory of causation, with Kratzer (2005) being an exception in putting them center stage in this respect. Yet an examination of their make-up, especially in the context of other constructions which express causation, has much to tell us about the types of causative relations between events that are linguistically privileged, and, for this reason, most likely also cognitively privileged.

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1Throughout this paper I assume a ‘biclausal’ or ‘bieventive’ analysis of causation as argued for by Dowty (1979:91–96), Parsons (1990), and Shibatani (1976a, 1976b), among others, and adopted in the work of linguists such as Pustejovsky (1991) and Van Valin (1990). This contrasts with work that models causation as a relation between an individual and a proposition (McCawley 1968) or as a relation between individuals (Croft 2001:162–163), an approach adopted by much work in cognitive linguistics (e.g., Talmi 1976). There is a parallel debate in philosophy over the appropriate model of causation.
Both selected and nonselected NP resultative constructions are deserving of interest because their constituent subevents are taken to show the kind of tightness of integration that so-called ‘lexical causatives’ show. Lexical causatives are transitive sentences such as The waitress dried the silverware or The dog woke me that allow a causative paraphrase (e.g., ‘The waitress caused the silverware to be dry’ or ‘The dog caused me to wake up’). Yet, like resultatives, they also lack an overt causative element; they too are what Bittner (1999) calls ‘concealed causatives’. In contrast to resultatives, lexical causatives also leave the causing event implicit; they only specify the caused event. That is, in Tracy warmed the soup, we do not know whether Tracy heated the soup in a pot on the stove, in a bowl in a microwave, or perhaps even by another more far-fetched method. Unlike lexical causatives, resultative constructions do include explicit reference to the causing event (via the verb), as well as to the caused event (via the XP). Thus, in The waitress wiped the silverware dry, we know that the waitress brought about the silverware’s dry state by wiping it (and not, say, airdrying it). Similarly, in The dog poked me awake, we know that the dog woke me by nudging me (and not, say, by barking). What makes resultative constructions of interest is that the more explicit information about the causing event they provide may illuminate what forms of causation falls under ‘concealed’ causation.

The link between the subevents in both lexical causatives and resultatives is taken to instantiate a special type of causation, which has been shown to involve a fairly tight relation between the two subevents. This tightness is sometimes described as enabling two causatively related events to be understood as forming a single, but complex event. For instance, from a syntactic perspective, the two events form a monoclausal structure (Shibatani 1976a, 197b). This proposed tight connection is often supported by contrasting lexical causatives with periphrastic causatives, which contain an overt causative verb, cause in the examples in (4).

(4)  
   a. The waitress caused the silverware to be dry.  
   b. The dog caused me to awake.

There is a considerable literature showing that the link between the events in periphrastic causatives is looser than in lexical causatives. For instance, not all situations that can be described using periphrastic causatives can be described by the corresponding lexical causative (e.g., Dowty 1979:96–96, Hall 1968:28, Shibatani 1976b:28–31), as in (5).²

(5)  
   a. The low air pressure caused the water to boil.  
   b. ∗The low air pressure boiled the water.  
   (Hall 1965:28, (2-33), (2-34))

²Counterfactuality is often said to be necessary for causation (Dowty 1979:99–110, Lewis 1973). Levin & Rappaport Hovav, for instance propose that ‘The result subevent would not have happened if the causing subevent had not happened and all else had remained the same’ (1999:212, (29c)). But counterfactuality holds of periphrastic and lexical causatives as well as resultatives, so there must be another condition that differentiates lexical causatives and resultatives from periphrastic causatives.

(6) Concealed Causative Semantics: If a causal relation is syntactically concealed (only its arguments are overtly expressed), then it is semantically direct (no intermediate causes). (Bittner 1999:2, (C))

Shibatani (1976b:31) characterizes the type of causation found in lexical causatives as ‘manipulative’ causation, reflecting the intuition that in many such causatives the causer physically manipulates the causee. This intuition is indirectly reflected in other efforts to elaborate on the notion of causation characteristic of concealed causatives, where it is most commonly referred to as ‘direct causation’. This notion has received a variety of overlapping characterizations which though less specific than Shibatani’s manipulative causation, nevertheless subsume it. In (6), Bittner defines it in terms of a lack of intermediate causes, a definition which is elaborated by Kratzer (2005:196–198) within a bieventive, event-cause-event model of causation. Rappaport Hovav & Levin (2001), building on Levin & Rappaport Hovav (1999), make a related proposal in setting out a set of well-formedness conditions on the relation between the two subevents of resultatives.

(7) There is no intervening event between the causing subevent and the result subevent; that is, causation is direct. (Rappaport Hovav & Levin 2001:783, (45d))

The implicit assumption here is that an intervening event introduces an intermediate cause. Also often-adopted is the definition of direct causation in (8) from Wolff (2003).

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1 Neeleman & van de Koot (2012) call into question direct causation as a condition on lexical causatives, citing examples such as A slip of the lip can sink a ship (2012:28, (8d)), and replace it with the notion ‘contributing causal factor’. Martin (2017) and Wolff (2003:33–34) offer ways of accommodating such examples under the umbrella of direct causation. Whatever the implications of such examples, there is nevertheless agreement that some kind of a tightness condition must be met by two subevents to be expressible by a lexical causative — or resultative — and it is this condition that I examine in this paper.

2 Despite rejecting a notion of direct causation, Neeleman & van de Koot introduce a notion of ‘accountability’ to deal with intentional entities in a causal chain (2012:31). Interestingly, they then introduce a condition that once a causal chain has an accountable individual in it, there cannot be another intervening accountable individual (2012:33, (16)).

3 The other well-formedness conditions that Rappaport Hovav & Levin propose on resultatives are: (i) the subevents need not be temporally dependent, (ii) the result subevent cannot begin before the causing subevent, and (iii) only the result subevent can bound the event as a whole (Rappaport Hovav & Levin 2001:783, (45)).
Direct causation is present between the causer and the final causee in a causal chain (1) if there are no intermediate entities at the same level of granularity\(^6\) as either the initial causer or final causee, or (2) if any intermediate entities that are present can be construed as an enabling condition rather than an intervening causer. (Wolff 2003:4–5)

See Wolff (2003:4, Table 1) for even more proposals about the nature of direct causation.

The Rappaport Hovav & Levin characterization of direct causation in terms of an intervening event builds on the assumption that a causal relation holds between two events, while Wolff’s definition assumes an individual-act on-individual model of causation, which builds on ideas in Croft (1991:167–174). For Wolff, events are represented in terms of a ‘causal chain’ composed of a set of segments, each of which relates two event participants. The segments in the causal chain and, thus, the participants are ordered in the direction of ‘transmission of force’ from one participant to the next. Kratzer (2005:197) also uses the term ‘causal chain’, but defines it in terms of a series of events, with each non-initial event counterfactually related to the preceding event in the chain.

Although there is disagreement concerning whether ‘direct’ causation in any form is the right characterization of the tightness condition on lexical causatives and resultatives (see note 3), there is nevertheless some type of tight relation between their subevents, and it is the tightness of this relation that has led to proposals that they are construable as a single event — a property that sets them apart from periphrastic causatives. This relation must subsume the intuitions behind the use of the term ‘direct causation’; these include the lack of an intervening cause and the presence of physical manipulation of the causee by the causer in prototypical instances. However, to remain open about the best characterization of the condition and to avoid any presuppositions that accompany the term ‘direct causation’, I refer to a tightness condition in this paper. A key goal of the paper is to investigate its nature further. As I show, the tightness relation demonstrated by the resultatives in the case studies conforms to direct causation in the sense of a causer directly affecting a causee, often via physical manipulation.

The existing characterizations of direct causation share a property that bears on the nature of the tightness condition: their reference to the ‘middle’ of a causal chain — the portion where the causing event and caused event come together — via notions such as ‘intermediate’ or ‘intervening event’, ‘intervening causer’, or ‘intermediate entity’. Since lexical causatives leave the causing event implicit, they do not provide an optimal domain for exploring the middle of a causal chain. In contrast, transitive resultatives explicitly express the causing event; thus, they provide a laboratory for exploring what properties the causing event must have so that the relation between it and the caused event meets the tightness condition. Furthermore, transitive resultatives fall into two types, selected and nonselected NP resultatives, and this difference too can be leveraged in understanding the tightness condition. In selected NP resultatives, the entity denoted by the postverbal NP is

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a participant in both the causing event and the caused event. That is, the two events share a participant, in itself a sign of a tight relation between them. In nonselected NP resultatives even if the causing event is explicit, the postverbal NP is not understood as the ‘object’ of the verb in the causing event. Thus, the nature of the link between the causing and caused events is not self-evident, and it has only received scattered discussion in the literature; see Sect. 4.

Thus, identifying the precise relation between the subevents in both types of resultatives should provide insight into the well-formedness conditions on resultatives, including the tightness condition, and, thus into the nature of causative events. The questions to be considered in the remainder of the paper include: How are the causing and caused events able to be integrated into a resultative construction when the postverbal NP is not selected by the verb representing the causing event? What role do the verb and the result XP play in making this possible? Does this NP still bear some relation to the caused event? This paper probes these issues using naturally occurring data that illuminate the complex interplay among the verb, the result XP, and the postverbal NP — whether selected or not — in controlling the well-formedness of a resultative construction and, thus, in satisfying the tightness condition.

Section 2 puts transitive resultatives in the context of the full range of resultative constructions; it also introduces the corpus used in this paper. Section 3 examines how the choice of result XP constrains the choice of verb due to the tightness relation between the causing and caused events. Section 4 probes the nature of the causing event–caused event relation in nonselected NP resultatives, highlighting the question of shared event participants. Sections 5 and 6 present case studies of resultatives whose result XPs are dry and awake, respectively, as a way of illuminating the tightness condition. Section 7 further clarifies the tightness condition by examining some unavailable interpretations of nonselected NP resultatives. Section 8 concludes, with a discussion of the well-formedness of resultatives in light of the preceding sections and its implications for the tightness condition.

2 Background: Types of Resultatives and Sources of Data

Before looking more closely at resultative constructions as they bear on causation, I use this section to set out the basic properties of the subtypes of this construction that are this paper’s focus. Resultative constructions can be subdivided into transitive and intransitive constructions, according to whether they have a postverbal NP. Transitive resultative constructions take the form ‘NP1 V NP2 XP’, where the XP, whether an AP or PP, is predicated of NP2, the postverbal NP. They contrast with intransitive resultative constructions, which lack such an NP. Such constructions take the form ‘NP1 V XP’, where the XP, again either an AP or PP, is predicated of NP1, as in (9) and (10).

This paper focuses on a subset of transitive resultative constructions, those whose result XP is an AP, i.e. constructions of the form ‘NP1 V NP2 AP’, where AP is predicated of NP2. Transitive resultatives may also have a PP as the result XP, taking the form ‘NP1 V NP2 PP’, where PP is predicated of NP2, as in (11) and (12). Such resultatives too are found in selected NP versions as in (11) and nonselected NP versions as in (12); see Gröne (2014) for interesting recent discussion of the semantics of such resultatives.

(11) a. . . . she couldn’t afford to spook Ryan into silence. (T. Fields, Midnight Crossing, St. Martin’s, New York, 2016, p. 143)

b. She spooked Ryan.


Such resultatives are set aside here to limit the scope of the investigation, but insights that emerge from the study of selected and nonselected NP resultatives with AP result phrases would be expected to carry over to those with PP result phrases, and this expectation should be explored in the future. Intransitive resultatives are also ignored as they do not include an explicit mention of the causer, and this paper focuses on the nature of causation.

As mentioned, among transitive resultative constructions, the key distinction is between selected and nonselected NP constructions. The criterion used to determine whether the postverbal NP is selected or not is whether it can be understood as the object of the verb when the verb is used outside the resultative construction. In a selected NP resultative construction, as in the (a) sentences in (13) and (14), it can, as shown in the (b) sentences. Such constructions necessarily are found with transitive verbs.

(13) a. Last night, the dog poking me awake every hour to go outside. (G. Dunford, “Charity’s for the Birds”, The Toronto Sun, November 27, 1994, p. 6)

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7Intransitive resultatives are typically taken not to be causative (e.g., Goldberg & Jackendoff 2004, Levin & Rappaport Hovav 1999:204–207, Rappaport Hovav & Levin 2001:784). This assumption would explain why such resultatives seem to lack causative paraphrases. For example, ‘the lake’s freezing caused it to become solid’ does not truly capture the sense of The lake froze solid; here solidness is really the endpoint of the freezing process. However, causative paraphrases are not always odd: The clothes steamed dry on the radiator might be paraphrased as ‘the clothes steaming on the radiator caused them to become dry’. The causative status of intransitive resultatives might merit further scrutiny, especially as intransitive resultatives bear a syntactic resemblance to anticausative constructions, and some researchers have analyzed anticausative constructions as causative in nature (e.g., Alexiadou et al. 2015, Chierchia 2004, Koontz-Garboden 2009, Levin & Rappaport Hovav 1995, Reinhart 2002:241–242, but see Rappaport Hovav 2014, Rappaport Hovav and Levin 2012).
b. The dog poked me.

(14) a. She snipped off the end of the cotton and **patted the mend flat**. (C. Curzon, *Three-Core Lead*, Doubleday, New York, 1990, p. 69)

b. She patted the mend.

In nonselected NP resultatives such as the (a) sentences in (15) and (16), the postverbal NP is not understood to be the object of the verb, as shown in the (b) sentences. The verb may be an intransitive verb, as in (15), as well as the earlier example (3); that is, a verb that does not typically select an object. Alternatively, it may be a transitive verb. In such instances, the verb’s object though unexpressed, is still understood, as in (16). In this example, the addressee is cranking something; here, its identity — a hospital bed — can be inferred from context (cf. (16c)).

(15) a. He had set an alarm, which rang at five thirty the following morning, **shrilling them both awake**. (R. Pilcher, *Voices in Summer*, St. Martin’s, New York, 1984, p. 116)

b. *The alarm shrilled them.


b. *You cranked me.

c. You cranked the hospital bed.

Some studies single out a subclass of resultative constructions with a reflexive pronoun as the postverbal NP. There are selected and nonselected NP resultative constructions with reflexive pronouns as the postverbal NP. For example, (17a) is a selected NP resultative, as shown by (17b), while (18a) is a nonselected NP resultative, as shown by (18b).


b. Even after she scrubbed herself . . .


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8In English, it can be tricky to attribute intransitivity to a verb because many verbs that are considered intransitive can take certain ‘special’ types of objects, most notably cognate objects, as well as reaction objects (Levin 1993:95–96, 97–98). Thus, *smile* is typically considered intransitive, but it can take a cognate object as in *She smiled the smile of a Mona Lisa* or a reaction object as in *She smiled her approval*. Not all intransitive verbs allow such objects so readily. Consider *shrill* in (15): *The alarm shrilled a shrill* seems quite odd, although perhaps *The alarm shrilled a warning* is better. I assume that a verb is intransitive if it can be found without a postverbal NP without the existence of such an NP having to be inferred. This caveat is necessary because transitive verbs like *eat* can be found with or without an object, but in the absence of an object, one is still understood: *Casey ate* means that ‘Casey ate something’.
Nonselected NP resultatives with reflexive pronouns are noteworthy since the pronoun seems simply to be present to allow the result XP to be predicated of the subject; in fact, such pronouns have been referred to as ‘fake reflexives’ (Simpson 1983:144). The presence of the reflexive pronoun has been understood in the context of the Direct Object Restriction (DOR), the generalization that result XPs must be predicated of (underlying) objects (Simpson 1983:145, Levin & Rappaport Hovav 1995). Such resultatives contrast with intransitive resultatives, where the result XP is predicated of the subject. Intransitive resultatives are taken not to contravene the DOR as their verbs are unaccusative, and, thus, their subjects are underlying objects (Levin & Rappaport Hovav 1995, Simpson 1983). Further, the DOR also explains why transitive resultative constructions have the XP predicated of the postverbal NP and not the subject.\footnote{See Mateu (2005), Rappaport Hovav & Levin (2001:770-773, 786–787), and Wechsler (1997:313) for different perspectives on potential exceptions to the DOR.}

The selected vs. nonselected NP subtypes are recognized here for their descriptive usefulness. Many formal accounts analyze all resultatives as having nonselected postverbal NPs; see T. Hoekstra (1988, 1992a, 1992b) and den Dikken & E. Hoekstra (1994) for syntactic arguments and Gröne (2014) and Kratzer (2005) for semantic arguments. I use the label ‘postverbal NP’ rather than ‘object’ for the NP following the verb to remain agnostic about the best syntactic analysis of the construction, as the choice of analysis determines whether the postverbal NP is indeed ever an object.

The data analyzed in this paper are drawn from a collection of just under 1250 naturally occurring transitive resultative constructions with adjective-headed result phrases\footnote{They are drawn from a larger collection which includes intransitive resultatives with result APs and both transitive and intransitive resultatives with result PPs, as well as examples of the way construction (e.g., She swam her way to good health). These are all ignored here.} predominantly drawn from newspapers and fiction written since the mid-1980s; some recent examples from web searches have been added to explore particular verb–result AP combinations further. There is an important limitation to the data. The examples were primarily collected opportunistically and are not drawn from a ‘balanced’ corpus designed to be representative of current English. Thus, they bear on claims about which options are possible — claims which are important in their own right. But I refrain from giving counts, and any quantitative assessments quoted in this paper should at best be taken to be suggestive of patterns that may exist.

3 The Result State’s Implications for the Verb in the Resultative

Resultative constructions are concealed causatives. Although they lack an explicit marker of causation, the result state is understood to be brought about by the causing event. Thus, the causing event must be one that can lead to the result state, while maintaining the tightness condition. This in turn means that the set of possible causing events is constrained by...
the range of attested result states. This section examines how this interrelation plays out at a high level, as a prelude to two case studies of resultatives with certain result XPs. The case studies examine how particular XPs influence the choice of causing event and, thus, the selected vs. nonselected NP nature of the relevant resultative construction, while maintaining a tight relation between the causing and caused events.

A survey of the result states in the corpus shows that a preponderance of these states are physically instantiated as in (19), although there are exceptions, including the mental states listed in (20).

\[(19)\] awake, bare, barkless, black, blank, bloody, clean, clear, closed, coarse, dark, dry, empty, flat, full, free, hoarse, insensible, . . .

\[(20)\] alert, calm, clueless, crazy, helpless, loopy, speechless, witless, . . .

When a resultative has a result XP that names a physically instantiated state, the causing event must describe an action that can bring about such a state, and such actions necessarily must involve physical manipulation (magic aside!). Thus, force exertion, such as pushing or pulling, is often used to open or close a door or window and surface contact, such as sweeping or mopping, is often used to clean floors. Indeed, many of the verbs attested in such resultatives in the corpus lexicalize actions that involve physical manipulation such as surface contact, impact, or force exertion. These actions are typically, although not always, performed by an animate agent. Since resultatives with a physically instantiated result XP typically have a volitional agent, they instantiate what Croft (1991:168) considers the most unmarked type of causation, in which a volitional agent physically manipulates an entity to bring about a physically instantiated result state in it. Such scenarios also instantiate what would be considered prototypical instances of direct causation.

The verbs in resultatives whose result XPs describe a mental state of an animate entity such as (21) are more diverse; they may describe physical actions which can provoke these states, as in (21a), as well as acts of communication, which might too, as in (21b).

\[(21)\]

\[b.\] Well, the conclusion was that my mistress *grumbled herself calm*. (E. Brontë, *Wuthering Heights*, 1847; Penguin English Library edition, London, 1965, p. 78)

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11 Previous work notes that there are constraints on the adjectives in result phrases. Most important, Wechsler (2005, 2012) shows that they must be maximum endpoint closed scale adjectives (e.g., clean, empty). Open scale adjectives (e.g., cool, long, wide) and minimal endpoint closed scale adjectives (e.g., dirty, wet) are not attested (except in rare instances where they are coerced to have a maximum endpoint interpretation).

12 The types of resultatives being described here instantiate the types of causation described in Talmy (1976) and summarized in Croft (1991:166-167). Croft and Talmy distinguish between two types of causers: those which are physical objects and those which are entities with a mental state. They extend the same distinction to causees, giving rise to four types of causation.
I focus on resultatives whose result XPs describe physically instantiated states, but the paper’s conclusions can be extended to result XPs that describe mental states.

The verbs found in resultatives with physically instantiated result states are almost exclusively instances of what are called ‘manner’ verbs, a set which contrasts with ‘result’ verbs (Levin & Rappaport Hovav 1991, 2012, 2013, Rappaport Hovav & Levin 1998, 2010). Result verbs lexically specify a change in a scalar valued property of an entity (Hay, Kennedy & Levin 1999, Kennedy & Levin 2008, Rappaport Hovav 2008); that is, they describe the attainment of a result state of an action (e.g., remove, cover, empty, clean), including the types of result states that are expressed in the result XPs of resultative constructions. Thus, many of them are the verbs found in lexical causatives. Manner verbs, in contrast, are not verbs of scalar change, and have been called ‘manner’ because many specify ways of carrying out an action such as various gaits (e.g., walk, amble, prance) or ways of making contact with a surface (e.g., pound, sweep). Some of these actions are regularly intentionally performed to bring about one or more result states. Thus, wiping is used to clean surfaces such as tables or counters, while mopping is used to clean floors. I will say that such actions are conventionally associated with the relevant results. A manner verb does not entail its conventionally associated result, if there is one (Talmy 2000); in contrast, the result cannot be denied with a result verb. Compare (22) and (23).

(22) I just wiped the counter, but it’s still dirty/sticky/covered in crumbs.

(23) # I just cleaned the counter, but it’s still dirty/sticky/covered in crumbs.
    (Contradiction)

A small number of resultative constructions have a result verb. Such resultatives have result XPs that further specify the result lexicalized in the verb, as in smooth flat or fill full, consistent with a constraint against having an action leading to two result states (e.g., Goldberg 1991:368, Tenny 1987:183–184, 1994:68). In the preponderance of resultatives, the result XP is typically found with a manner verb, and specifically a manner verb which describes an action intended to bring about the relevant result. This observation holds equally of selected and nonselected NP resultatives: just as wiping is a way of drying silverware or cleaning a surface (cf. (1)), so is pouring a way of filling a container, as in (24).

(24) Audrey flipped a mug into the air, caught it by its handle, and poured it full. (L. Greenlaw, Fisherman’s Bend, Hyperion, New York, 2008, p. 219)

But there are exceptions among nonselected NP resultatives, as in the crow–awake example in (3), repeated in (25).

(25) When the roosters that scratch in the yard of Brastagi’s best hotel crowed me awake that dawn a few months ago, I knew it was destined to be a memorable day . . . (T. Robbins, “True Adventure: Crowned King of The Cannibals”, Sect. 6, Part 2, The New York Times, March 16, 1986, p. 8)
This example builds on our knowledge that loud noises often wake a sleeper, even if they are not emitted with that intention as in this example or in those where the emitter is inanimate as in the *shrill–awake* example in (15a), repeated in (26).

(26) He had set an alarm, which rang at five thirty the following morning, *shrilling them both awake*. (R. Pilcher, *Voices in Summer*, St. Martin’s, New York, 1984, p. 116)

Nevertheless, examples such as (25) and (26) involve a conventional association between the causing event and the caused event. The observed relation then between a manner verb and a result XP — that is, that the result is conventionally brought about by the action lexicalized by the verb — seems to be a reason for taking the relation between the causing and caused subevents in a resultative to involve a tight link.

In closing this section, I reiterate that I have couched my discussion in terms of how the choice of result XP constrains the choice of verb to one that describes an action that can bring the relevant result about; this formulation is consistent with the counterfactual nature of causation. The general idea appears in the literature on resultatives, but the relation is typically described in the other direction. Wechsler (1997:310, (10)) writes that in selected NP resultatives the result must denote ‘a ‘canonical’ or ‘normal’ result state of an action of the type denoted by the verb’. Kaufmann & Wunderlich (1998:15) make a comparable point about nonselected NP resultatives. Iwata (2014: 253–259) comes closest to taking the perspective I take here in a discussion of possible and impossible nonselected NP resultatives. He examines certain unacceptable resultatives and points out that the action described by their verb could not bring about the relevant result, couching the discussion in force dynamic terms.

Since the result state affects the choice of causing event in a resultative, the case studies I present in Sect. 5 and 6 to examine the tightness condition are organized around particular result XPs — *dry* and *awake* — and not particular verbs. The question is how this plays out in selected vs. nonselected NP resultatives. Are there differences in the types of actions required to bring about various result states that are reflected in the form of the resultative construction? To answer this question, I present the case studies after providing more general background on nonselected NP resultatives.

### 4 More on Nonselected NP Resultatives

Before turning to the case studies, this section elaborates on the pertinence of resultative constructions in general and nonselected NP resultatives in particular to understanding the middle of a causal chain — the area that comes up in the various characterizations of direct causation, the notion most often mentioned in efforts to identify the tightness condition.

13Still in some instances, the verb–result XP association may be ‘one off’, but it must be understood to qualify as ‘tight’ in the sense elaborated in the remainder of this paper.
It focuses on the relation between the causing and caused events in nonselected NP resultatives with respect to the participants in the event denoted by the resultative construction and the (non)expression of these participants. It highlights some properties of nonselected NP resultatives that illuminate how the causing and caused events can meet the tightness condition when the postverbal NP is not selected by the verb representing the causing event.

The key property of nonselected NP resultatives is that their postverbal NP is not the object of the verb in the causing event. Yet their acceptability suggests that they meet the tightness condition, so there must be an implicit link between the subevents. The nature of this link, which constitutes the ‘middle’ part of the causal chain, has received some attention in the literature. There is some discussion of unexpressed participants in the causing event, particularly unexpressed objects, and also of the role of certain nonselected NPs in the causing event.

As noted in Sect. 2, when the verb in a nonselected NP resultative is transitive, its object although unexpressed, is nevertheless understood, as many have noted (e.g., Carrier & Randall 1993, Iwata 2014, Kaufmann & Wunderlich 1998, Levin & Rappaport Hovav 1995), among others. For example, in (24), repeated as (27), and (28) we understand it to be a liquid, since that is what is typically poured.

(27) Audrey flipped a mug into the air, caught it by its handle, and poured it full. (L. Greenlaw, *Fisherman’s Bend*, Hyperion, New York, 2008, p. 219)

(28) Maxey stood up to get a glass and pour it full of milk. (C. Cail, *Unsafe Keeping*, St. Martin’s, New York, 1995, p. 146)

In both examples we assume that the liquid that is poured is the liquid that fills the mug or glass. That is, the causing event cannot, for instance, be understood as pouring liquid onto the floor, while the mug or glass somehow get full; see Sect. 7 for more discussion. In (27), the identity of the liquid must be inferred from context; given the function of a mug, we infer that it is a hot beverage such as coffee or tea. In (28) although the liquid is left unexpressed in the causing event, we assume that it is milk since milk is mentioned as the complement of the adjective full.

Resultatives with understood objects always involve manner verbs. As discussed in Levin (1999) and Rappaport Hovav & Levin (1998, 2010), two-argument manner verbs need not express their non-subject (perhaps, more accurately, non-agent or more broadly non-effector (Van Valin & Wilkins 1997)) argument. This property is just the prerequisite needed to give rise to a nonselected NP resultative, and Rappaport Hovav & Levin (1998, 2010) tie this distributional fact to argument realization differences inherent to manner and result verbs. Such analyses build on earlier observations that nonselected NP resultatives are only found with unergative verbs, which lack objects altogether, or with those transitive verbs that independently allow unexpressed objects (Carrier & Randall 1993, Goldberg & Jackendoff 2004:548, Levin & Rappaport Hovav 1995). However, the restatement in terms of manner verbs is superior because there are recoverability conditions on unexpressed objects with transitive manner verbs which appear to be more easily met in resultatives, so
that some manner verbs that appear not to allow unexpressed objects in isolation allow them in nonselected NP resultatives. An example is *crank, which sounds odd in an object drop use (*He cranked), yet is attested in the resultative (16a).

Returning to larger issues, although these understood participants are ‘intermediate entities’ in the causal chain, the acceptability of these resultative constructions means that they do not count as the ‘intervening causers’ or ‘intermediate causes’ mentioned by Bit
tner (1999) and Wolff (2003). In this respect, they are no different from instruments, which also do not count as ‘intervening causers’ according to Wolff (2003), who takes them to qualify as enabling conditions, rather than as true causers which could ‘disrupt’ the causal chain, i.e. lead to the ill-formedness of a concealed causative description. An important question is what types of intermediate entity can be present, while allowing the causing and caused events still to be in a tight relation.

As noted, there must be a link between the subevents in a resultative construction, and in fact some researchers note an implicit relation between the postverbal NP and the causing event, perhaps mediated by the unexpressed participant, if one is available (Kaufmann & Wunderlich 1998:32). They suggest that the nonselected NP, although not the object of the verb in the causing event, is nevertheless sometimes a participant in it. For instance Jackendoff (1990:226–227) and Sato (1987:93) propose that the postverbal NP is often an ‘adjunct’ of the verb in the causing event. Thus, (29) shows that the container that coffee — the unexpressed participant in (27) — is poured into may be expressed as a PP complement of *pour.

(29) They poured coffee into the mug.

However, the postverbal NP does not always bear a relation to the verb in the causing event. Consider (15a), repeated in (30a); here it does not seem possible to accommodate the nonselected NP in a sentence with the verb, as shown in (30b). In other instances, this option might seem to exist, but on closer scrutiny it may not capture the precise sense of the resultative construction. Consider (3), repeated in (31a): roosters could crow someone awake at dawn without explicitly crowing at them.

(30) a. He had set an alarm, which rang at five thirty the following morning, shrilling them both awake. (R. Pilcher, Voices in Summer, St. Martin’s, New York, 1984, p. 116)

b. ?? The alarm shrills at/to them.

14Unexpressed objects must be pragmatically recoverable in context. See Brisson (1994) for some discussion of the recoverability condition. The wider availability of unexpressed objects in some constructions than in others is noted in Levin (1999:244, n. 10), but it remains to be explained.

15 The literature distinguishes between those instruments that have their own energy source and can perform an action independently and those that cannot. The former, sometimes called ‘intermediary’ instruments, can occur as subjects, while the latter, sometimes called ‘facilitating’ or ‘enabling’ instruments, cannot (Marantz 1984:247, McRkercher 2001:52–54, Ono 1992, Wojcik 1976:165). Facilitating instruments do not qualify as intervening causers, but intermediary instruments do, as discussed further in Sect. 7. See Wolff et al. (2010) for discussion of the place of these two types of instruments in a causal chain.
a. When the roosters that scratch in the yard of Brastagi’s best hotel *crowed me awake* that dawn a few months ago, I knew it was destined to be a memorable day . . . (T. Robbins, “True Adventure: Crowned King of The Cannibals”, Sect. 6, Part 2, *The New York Times*, March 16, 1986, p. 8)

b. The roosters crowed at me that dawn a few months ago.

These observations raise several questions. Most important, is there some kind of relation between the postverbal NP and the causing event and its participants that allows the tightness condition to be satisfied? Further, how does this relation relate to the shared participant found in selected NP resultatives and the understood participant associated with some nonselected NP resultatives? The case studies in the following two sections are intended to illuminate these questions.

5 **A Case Study: Result APs Headed by the Adjective dry**

Resultatives with the result AP *dry* provide a good domain for examining the factors governing the well-formedness of both selected NP and nonselected NP resultatives and specifically for investigating how the link between the causing and caused events qualifies as tight in nonselected NP, as well as selected NP, uses. The reason is that this result AP, unlike many others, is prevalent in both selected NP and nonselected NP resultatives in the corpus, allowing the conditions on each to be compared.

An examination of the data shows that the type of resultative overwhelmingly correlates with the nature of the entity that the adjective *dry* is predicated of, and specifically with whether it is a surface or a container. By container, I mean an entity designed to contain something; thus, it must be 3-dimensional and have an interior. By a surface, I mean an entity that is conceived of as 2-dimensional, which is sometimes a matter of construal. Thus, a tub is prototypically a container: it is designed to be filled with water or other liquid, say for bathing; however, sometimes a tub can be conceived of as a surface; for instance, when being wiped with a sponge or scrubbed with a brush.

In nonselected NP resultatives such as (32) the result AP *dry* is overwhelmingly predicated of an entity that is a container which is fulfilling this function, such as a teapot or kettle. That is, its three-dimensional nature matters. In contrast, in the selected NP resultatives such as (33) the result AP *dry* is predicated of a surface such as silverware or a face, though it may also be be predicated of a container that is conceived of as a surface.


(33)  a. The waitress comes back, **wiping the silverware dry** with a cloth napkin . . . (M.G. Jaffe, *Dance Real Slow*, Farrar Straus Giroux, New York, 1996, p. 24)

    b. He took the towel from her hands and **patted her face dry**. (A. Meyers, *The Groaning Board*, Doubleday, New York, 1997, p. 266)

I now look at resultatives with *dry* as their result XP more closely, beginning with those where *dry* is predicated of a surface and then turning to those where *dry* is predicated of a container. As I show, the reason the surface vs. container distinction affects the nature of the resultative is that *dry* shows slightly different senses when predicated of surfaces and containers. I show how the manners of causing the type of dryness holding of a surface vs. a container give rise to the differential preference for selected vs. nonselected NP resultatives. However, both types still maintain tight relations between the causing and caused subevents, relations that seem to fall under prototypical direct causation.

### 5.1 The Result AP Is Predicated of a Surface

When *dry* is predicated of a surface, it indicates that the surface has no liquid on it, as in *a dry floor/counter*. This state is typically brought about by removing any liquid from the surface. This in turn is usually accomplished through contact with and motion over the surface — that is, by an action directed at the surface. The precise action selected depends on the nature of the surface and often involves an instrument designed to absorb liquid such as a sponge, dishcloth, or towel. Thus, dishes are usually dried with a dishcloth, while a face is usually dried with a towel. The verbs attested in these resultatives lexicalize precisely such actions, as in (34). (Some of these actions can also be carried out on a dry surface (e.g., *pat, rub, wipe*).)

(34)  blot, brush, dab, lick, rub, spin, wipe, . . .

Unsurprisingly, as these actions are directed at the surface whose state is being changed, they are lexicalized by verbs which take the surface as object. Thus, the postverbal NP is understood as both a participant in the action denoted by the verb and the holder of the result state, giving rise to a selected NP resultative. In these resultatives, then, the causing and caused events share a participant. Such resultatives involve direct causation in the strong sense; the entity that changes state is directly manipulated in the causing event, and the only other intermediary entities involved are instruments used in the causing event to effect the result state, such as the napkin mentioned in (33a), but such entities do not qualify as causers.

### 5.2 The Result AP Is Predicated of a Container

When predicated of a container, *dry* indicates that the container is empty of liquid, as in *a dry well/tank or even dry throat/lungs*, where body parts are being taken to be containers.
This state is usually brought about by removing liquid from the container. Such actions are often directed at the liquid in the container — the container’s contents — rather than at the container itself. Two types of actions can bring about this type of dry state, and which type is relevant depends on the nature of the container.

With a prototypical container or something construed as such, the actions are designed to (re)move the liquid, perhaps through the use of an appropriate instrument (e.g., a pump); thus, they are lexicalized by verbs that take the liquid as their object, as in (36).

(35) Having . . . drunk the teapot dry . . . (E. Dark, Lantana Lane, Virago, London, p. 94)

(36) boil, drain, drink, pump, slurp, suck, . . .

In such examples, then, the container is not the object of the verb lexicalizing the action denoted in the causing event and, thus, it qualifies as a nonselected NP. However, the container and the liquid that is being removed are spatially contiguous so that removing the liquid brings about the state of dryness in the container. It is by virtue of this relation that these resultatives, despite their nonselected NP, meet the tightness condition.

Instances of the second type typically involve a body part such as the lungs or vocal tract, or even the body itself, which can also be construed as a container. The actions involved in ‘drying’ the body part involve the secretion (usually by a human) of a substance or the emission of a substance or sound — actions which may result in a body (part) becoming dry (i.e. empty). The secretion/sound is usually unexpressed in resultatives, but outside of such constructions, it may be the object of the verb lexicalizing the action (e.g., shriek an ear-shattering shriek or cry a mournful cry).\textsuperscript{16}

(37) Davina and I erupted from the knife-sharp grass, shrieking our lungs dry . . . (M. Meyers, Swimming in the Congo, Milkweed Editions, Minneapolis, MN, 1995, p. 29)

(38) After the funeral yesterday she thought she’d cried herself dry. (M. Sefton, Knit One, Kill Two, Berkley, New York, 2005, p. 7)

(39) boil, cry, shriek, sweat, talk, whistle, . . .

In (37) the nonselected NP is a body part, but in other instances, including (38), this NP may be a reflexive pronoun which stands in for the whole body; see Sect. 6.2 for more discussion of reflexive pronouns as the nonselected NP. In these examples the result is often an incidental, although necessary consequence of the action denoted in the causing event. The causer in the causing event may also be an inanimate entity, as in (40): here

\textsuperscript{16}Dan Lassiter (p.c.) suggests that perhaps (37) is actually a surface construal because the interpretation involves a ‘subjective feeling of dryness around the sides of the lungs’. 17
an inanimate entity which is viewed as having an internal energy source is portrayed as
drying out its insides by emitting steam — a direct result of the substance emission which
accompanies the whistling.

(40) One of them [=tea kettles] must’ve whistled itself dry . . . (S.J. Conant, Ruffly
Speaking, Doubleday, New York, 1995, p. 76)

In this second type there is once again a relation of spatial contiguity between the container
and the understood substance, whose removal from the container leads to its dryness. Here
too the causing event is bringing about the the result state even though the container is
not a basic participant in the causing event and, thus, the NP expressing it qualifies as a
nonselected NP.

5.3 The Bottom Line on Result APs Headed by dry

A resultative construction is used to convey a change in the result state of the postverbal
NP. The nature of this NP affects the type of action needed to effect the relevant result state.
As shown with dry, the action may be directed at the postverbal NP or it may be directed
at some entity contiguous to it. Certain states in an entity, then, can be brought about by
acting on entities that are contiguous to that entity. This difference, in turn, is behind why
selected vs. nonselected NP resultatives are found. With dry, nonselected NP resultatives
emerge since states of containers can be altered by affecting their contents.17 Thus, it is not
surprising that surfaces and containers are found in different types of resultatives as they
reflect the different ways that dryness is brought about in surfaces and containers.18

It is worth noting that the sensitivity of resultative constructions to whether dry is pred-
icated of a container or a surface is not surprising. The notion of ‘container’ is privileged
conceptually, if not linguistically. First, consider the phrase a cup of milk; although taken
literally it refers to ‘a cup filled with milk’, it may also be used to refer to ‘a quantity of
milk equal to a cup’, whether or not the milk itself is in a cup. In this second instance, the
container is really referring to its contents. Further, spatial relational terms comparable to
the English preposition in, which are used to refer to a figure contained in a ground, are

17 A question that arises is why these manners of drying a container are rarely lexicalized by a verb with the
container as object. I am aware of only one such verb, drain, and it allows either the contents (e.g., drain the
water) or the container (e.g., drain the tub) as object. In contrast, although the state of a surface is often affected
by affecting what is on it (typically unwanted material or detritus), the verbs lexicalizing the relevant activities
such as sweep or wipe tend to take the surface as their basic argument. This question relates to possible verb
meanings, and I leave it aside here.

18 Having isolated the conditions which determine when resultatives whose result XP is the dry predicated
of containers can have selected vs. nonselected NPs, we predict the conditions which could give rise to a
nonselected NP resultative with the dry predicated of surfaces. If the dryness of a surface could be altered
by an action directed at some third entity contiguous to the surface, then we might expect a nonselected NP
resultative. I have not found such resultatives, which would involve a reversal of the contents–container relation
from the container dry nonselected NP scenarios: in those the action is directed at the contents causing a change
in the container.
present in even small inventories of spatial relational terms (Levinson et al. 2003). It is also interesting that this relation is defined functionally rather than purely geometrically. Thus, English *in* and some of its counterparts in other languages can be used to describe both partial and full inclusion of the figure by the ground as long as containment is present. That is, they apply equally to flowers in a vase, which are unlikely to be fully contained by the vase, and an apple in a bowl, where full containment is most often the case (Feist 2004, Levinson et al. 2003).

5.4 Results APs Headed by the Adjectives *empty* and *full*

Since states of containers can be altered by affecting their contents, we predict that result XPs headed by adjectives that are near-synonyms or antonyms of container *dry* like *empty* and *full* should pattern like it in resultatives; that is, they should be found in nonselected NP resultatives with the container as the postverbal NP. These result APs are found in nonselected NP resultatives comparable to those with container *dry*.

(41) Maxey stood up to get a glass and **pour it full of milk**. (C. Cail, *Unsafe Keeping*, St. Martin’s, New York, 1995, p. 146)

(42) Tom waggled the bottle at me, and **swigged it empty** when I declined. (S.W. Boneham, *The Money Bird*, Midnight Ink, Woodbury, MN, 2013, p. 11)

Unlike *dry*, *full* and *empty* may hold with respect to solids as well as liquids. Thus, a wider set of actions can be performed on containers to achieve these states. Among them are actions that directly affect the container, giving rise to selected NP resultatives with *full* and *empty*. For instance, the corpus includes three examples of ‘*shake NP empty*’, among them (43). In this example, the container is moved back and forth, and its motion causes its contents to fall out, leaving it empty. Thus, the container participates in both events.

(43) She knelt before him and taking one of his hands in hers, **shook the bag empty**. (P. Patterson, *Spirit Path*, iUniverse, Lincoln, NE, 2002, p. 94; https://books.google.com/books?isbn=0595216714)

Also among the selected NP resultatives with *full* are five instances of ‘*fill NP full*’. Although this result AP seems to reiterate the final state associated with a change of state verb, in several of the examples *full* is modified, so the result XP provides additional information relevant to resolving any vagueness or imprecision in the interpretation of *full* (Kennedy 2007, Lasersohn 2009).

(44) “Don’t **fill the bags too full**.” (R. MacPherson, *Family Skeletons*, St. Martin’s, New York, 1997, p. 64)

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19Kaufmann & Wunderlich (1998:32) note the importance of the container–content relation in discussing a German nonselected NP resultative whose result AP is the German counterpart of *full*.
I filled a serving bowl with cat food, set it on the floor, along with the biggest pot I owned, filled full of water. (B. Thornton, High Lonesome Road, Thomas Dunne, New York, 2001, p. 166)

Kratzer (2005:196) points to an unavailable nonselected NP interpretation of the German counterpart of They drank the teapot empty. As in English, this sentence can describe drinking the contents of the teapot, thus causing it to be empty. However, Kratzer points out that this sentence cannot be used to describe the following scenario: drinking from a well to such an extent that there is no water left in the well to fill the teapot, so it remains empty. Kratzer uses this contrast to refine her formal definition of direct causation, including the definition of a causal chain. What is of particular interest in the context of this section is that in the unavailable interpretation the unexpressed NP — the water in the well — does not denote the content of the teapot, so there is no contiguity relation between the contents and the container. The observation that Kratzer’s scenario cannot be described by a nonselected NP resultative, then, underscores the importance of contiguity between contents and container to ensuring that the tightness condition between the causing and caused subevents is satisfied. In fact, the observation in Sect. 4 that the causing event in the two pour–full examples (27) and (28) cannot be understood, say, as an event of pouring liquid on the floor makes the same point. Again, such a scenario would lack contiguity. The contiguity relation, then, is essential to the well-formedness of these nonselected NP resultatives. The reason most likely is that due to contiguity, manipulating the content of a container is in some sense manipulating the container (cf. the discussion of why containers are special in Sect. 5.3). In this sense ‘direct causation’ as it is typically understood is instantiated in such examples.

6 A Second Case Study: Result APs Headed by the Adjective awake

This section explores resultatives with the result state awake, which necessarily holds of animate entities. Although a sleeper may awake naturally, this state may also be brought about via actions that impinge on the sleeper. In many instances, the causer — the doer of these actions — is someone other than the sleeper, but in some instances, a sleeper might wake him/herself. There are two ways in which the state of wakefulness typically ensues. First, a causer can cause a sleeper to awake through physical manipulation. Second, a causer can cause a sleeper to awake by making a sound — usually a loud or high-pitched sound; relatedly, sometimes someone can cause a sleeper to awake by simply looking at the sleeper. Turning to the sleeper as causer, a sleeper might wake him/herself through an involuntary bodily process or through a deliberate activity intended to restore wakefulness.

Considering these prototypical scenarios in the context of the case study of dry leads to predictions about whether they will be expressed by selected or nonselected NP resultatives. First, when a causer directly manipulates the sleeper, who then awakens, there is a shared participant in the causing and caused event, so such a scenario should be expressed via a selected NP resultative. Second, when a causer emits a sound or speech which impinges on
the sleeper, the scenario should be expressed by a nonselected NP resultative since only an emitter is necessarily involved in the sound emission or speaking event. There is a special subcase of the second prediction, which constitutes a third prediction. In some instances the causer is the sleeper, who awakens him/herself through an involuntary bodily process or other activity. As a subcase of the second prediction, such scenarios should also be expressed via a nonselected NP resultative. I argue that although the causer and the sleeper refer to the same person, they constitute distinct event participants; however, the coreference relation is indicated through the use of a reflexive pronoun as the postverbal NP. These three predictions are verified in the following subsections.

6.1 Selected NP Resultatives

The first prediction is that when the causing event involves a causer directly manipulating the sleeper, the scenario should be expressed via a selected NP resultative as the causing and caused events share a participant. Attested selected NP resultatives with awake as the result XP indeed have causers awakening the sleeper through some sort of physical contact or manipulation. Thus, their causing events usually involve impact or force exertion verbs, as in (46), as these lexicalize such actions.

(46) bump, hug, jerk, kiss, poke, slap, tickle, tug, . . .

(47) a. Last night, the dog **poked me awake** every hour to go outside. (G. Dunford, “Charity’s for the Birds”, *The Toronto Sun*, November 27, 1994, p. 6)

b. . . . the moment he was deeply asleep Vinck was **tugging him awake** . . . (J. Clavell, *Shogun*, Atheneum, New York, 1980, p. 652)

These are selected NP resultatives since these verbs take the sleeper — the event participant that the result AP is predicated of — as their object.

6.2 Nonselected NP Resultatives

I turn now to the second prediction: when a causer emits a sound or speech which impinges on the sleeper, the scenario should be expressed by a nonselected NP resultative since only the emitter or speaker is necessarily involved in the sound emission or speaking event. Indeed, many attested nonselected NP resultatives with the result XP awake involve a causer, either animate or inanimate, emitting a sound or speech. Thus, such resultatives involve sound emission verbs (e.g., crow) and manner of speaking verbs (e.g., shout) — verbs of the types that lexicalize these actions, such as those in (48). Furthermore, the attested verbs tend to be those members of the manner of speaking and sound emission classes that involve loud or high-pitched sounds, precisely the types of sound most likely to wake someone.

(48) bark, crow, jangle, scream, shout, shrill, . . .
a. ... the roosters that scratch in the yard of Brastagi’s best hotel **crowed me awake** that dawn a few months ago ... (T. Robbins, “Treks for the Sophisticated Traveler”, Sect. 6, Part 2, *The New York Times*, March 16, 1986, p. 8)

b. Half an hour later I had finished my day’s work, **shouted Howard awake**, and headed to my truck ... (S. Andrews, *Tensleep*, Otto Penzler Books, New York, 1994, p. 143)

Such verbs are typically intransitive, with the emitter or speaker as subject, and to the extent they allow an object, it denotes a sound or speech (e.g., **shout an answer**). What matters is that the verb’s object is not the sleeper. Such resultatives, then, express the sleeper as a nonselected postverbal NP. Although the sound/speech is left unexpressed, it does impinge on the sleeper: the sound waves or the speech move across space and make ‘contact’ with the sleeper in an abstract sense. Thus, the sleeper could be taken to be a participant in the causing event as the recipient of this abstract transfer, a point raised in Sect. 4. As discussed there, in some instances the causing event may not have an intended recipient, either because the emitter is inanimate or because the emitter, although animate, may simply emit the sound for its own sake. Concomitantly, some of the attested verbs describe actions that may be directed at someone or something (e.g., **shout at Howard**), but that may, as in (49b), or may not, as in (49a), be the case in a given resultative.

In fact, this second prediction can be generalized from events of sound emission and speaking — the domain of sound — to events of light emission and looking — the visual domain. The corpus does include a few **awake** resultatives with the looking verb **stare**, In these examples, a causer directs his or her gaze at a sleeper, who senses the gaze and awakens. Further, web searches reveals a few **awake** resultatives with light emission verbs (e.g., **flash, shine**). They describe scenarios in which emitted light impinges on and wakes a sleeper. They are much less frequent than comparable resultatives with sound emission verbs probably because sounds is more effective than light as a means of waking a sleeper.

(50) **Even Charlotte had been unable to stare her awake** as she usually did. (J. McGown, *Unlucky for Some*, Ballantine, New York, 2004, p. 203)

(51) **My Bonamassa warning light has just flashed me awake** ... (http://theafterword.co.uk/eyes-wide-open-aynsley-lister/)

These scenarios are analogous to those discussed with sound emission and speaking events, and it is not surprising that they too are described with nonselected NP resultatives.

A third prediction, which is a subcase of the second, involves scenarios where the sleeper is both the causer and the one that awakes, and as a subcase a nonselected NP resultative is again expected. Such instances arise because a sleeper may awake through a bodily process or other activity that disrupts sleep. In fact, a small number of attested nonselected NP resultatives describe precisely such scenarios. In some sleepers wake themselves

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20 I thank Cleo Condoravdi for asking about this extension.
through a bodily process, as in (52a); often these are involuntary processes which are not under the sleeper’s control. In others the causing event involves a deliberate activity on the sleeper’s part, as in (52b).

(52)  


b. Yarborough was “a biblio-holic” and history buff who “**read himself awake** each morning.” (J. Gonzalez, “Hundreds Mourn Yarborough”, *Texas Section, The Fort Worth Star-Telegram*, January 31, 1996, p. 17; Nexis)

Concomitantly, the examples involve verbs describing bodily processes whose occurrence may cause a sleeper to wake up, as in (53a), as well as other activities, including screaming or shouting, that someone might engage in when sleeping — say, due to a nightmare — that bring back a state of wakefulness, as in (53b).

(53)  

a. **blink, cough, puff, snort, stretch, . . .**

b. **read, scream, shout, . . .**

As with the verbs discussed with respect to the second prediction, the relevant verbs are typically intransitive, and to the extent they allow an object, it is a cognate object (e.g., *blink a little blink* or *cough a loud cough*) or denotes a sound or speech (e.g., the content of the communication, *shout an answer*). As discussed with respect to the second prediction, the sleeper is not the object of these verbs, but there is an understood entity — the sound or cognate object — which impinges on the sleeper, just as it does in examples falling under the second prediction.

The examples in (52) involve the physical causation of a mental state. Focusing first on the bodily process examples, the bodily process involves the sleeper’s body. That is, the sleeper is treated as a physical object in the causing event, while the caused event, which involves a change in mental state, involves the sleeper’s mind and is generally incidental to the bodily process. Animate entities are often understood in terms of their mental state, but they are also physical objects; that is, they allow for a dual construal in terms of either their ‘mind’ or their ‘body’. I argue that due to the involvement of the sleeper’s body in the causing event and mind in the caused event, the sleeper is being treated as two distinct participants, which happen to have the same referent.\(^{21}\) To signal the existence of a single referent, a reflexive pronoun is used for the holder of the result state,\(^ {22}\) so that the ensuing nonselected NP resultative is of the ‘fake’ reflexive type. In the examples with activity and manner of speaking verbs, the dichotomy may be less pronounced, but there is again a dissociation between the sleeper as actor and the sleeper as patient of a change of state event. Once again, a nonselected NP resultative arises.


\(^{22}\)See Haiman (1985:144–145) on the use of reflexive pronouns to convey a ‘mind’ vs. ‘body’ dichotomy.
7 The Significance of Unavailable Interpretations of Resultative Constructions

In perusing the verb–AP combinations in the resultative corpus, it becomes evident that there are certain scenarios that they are not used to describe. Specifically, certain verb–AP combinations found in selected NP resultatives are not attested with nonselected NP interpretations. I argue that the relevant verb–AP combinations simply cannot have the relevant interpretations. A closer look at these scenarios shows that they involve causal chains with true intervening causers. Thus, they provide support for a formulation of the tightness condition that does not allow for intervening causes, as in the definitions of direct causation cited in Sect. 1.

Before considering specific examples, I point out that it is not a priori impossible for a given verb–AP combination to be found in both selected NP and nonselected NP resultatives, so the lacuna I present cannot be attributed to this possibility. Although my corpus does suggest that certain verb–AP combinations are more likely to be found in selected NP resultatives and others in nonselected NP resultatives, there are nevertheless combinations which are found in both. One such combination is *rub–raw*. This combination receives a selected NP interpretation in (54) and a nonselected NP interpretation in (55).

(54) The salt [in the ocean water] rubbed their feet raw. (L. Alvarez, “For Cubans in Miami, the Gulf to their Homeland Narrows”, *The New York Times*, December 21, 2014, p. 21)

(55) . . . the author had rubbed her hands raw while scrubbing the hems of her older sisters’ long dresses . . . (M.M. Hill, *Death Books a Return*, Pemberley Press, Corona del Mar, CA, 2008, p. 238)

In (54), the water directly rubs some feet causing their rawness. In (55) the author is scrubbing — and, thus, rubbing — the dresses, and this activity causes her hands to be raw. She is not rubbing her hands directly.

Certain verb–AP combinations are attested in the resultative corpus only with selected NP interpretations. Thus, attested strings of the form ‘*kick* NP open/closed/shut’ all receive a selected NP interpretation. That is, (56) is understood as ‘Sam’s foot makes contact with the door, causing it to open’. On this interpretation a causer directly comes into contact with the entity denoted by the postverbal NP.

(56) Sam kicked the door open.

Unattested in the corpus is a nonselected NP interpretation of the same string. For instance, (56) never means ‘Sam kicks a ball which hits the door, causing it to open’, and my intuition is that this interpretation is simply impossible. On this interpretation, a projectile set in motion by a causer comes into contact with another entity, changing its state. That is, *kick*
has an understood, but unexpressed object, a ball, so that the *door* is now a nonselected NP. Such a scenario seems plausible, and might even have seemed a candidate for description by a resultative.\(^{23}\)

I propose that the relevant interpretation of (56) is unavailable because it violates the tightness condition. As I now argue, the ball that figures on this interpretation qualifies as a cause; thus, it would be an intervening cause between Sam’s kicking action and the change of state in the door. A launched ball is what Kearns (2000:241), drawing on Cruse (1973:19–20), terms a projectile: an entity that moves due to the kinetic energy it receives from an imparted force; see also Wolff et al. (2010:96). Such an entity may itself impart this force to another entity through contact, just like other causes — agents, natural forces, and instruments with their own energy source (i.e. the ‘intermediary’ instruments of note 15) — may (Wolff et al. 2010:96). Further, projectiles pattern with other causes with respect to common diagnostics for causes (Cruse 1973:19-20). First, they pass the ‘what *X* did’ test, just as agents, natural forces, and autonomous machines do.\(^{24}\)

\[(57)\]
\[
\begin{align*}
a. \text{What the ball did was break the window.} \\
b. \text{What Cameron/the wind/the crane did was break the window.}
\end{align*}
\]

Second, they may be subjects of certain transitive verbs, again patterning like agents, natural forces, and autonomous machines.

\[(58)\]
\[
\begin{align*}
a. \text{The ball broke the window.} \\
b. \text{Cameron/the wind/the crane broke the window.}
\end{align*}
\]

As a second example, consider (59), which involves the verb–AP combination *push–open*. It too is attested in the corpus with a selected NP interpretation. For instance, a selected NP interpretation is clearly available for (59): ‘Tracy pushed (on) the door, causing it to open’. But, the sentence cannot describe a situation where Tracy pushes on a red button that sets a mechanism in operation that opens the door. This scenario would involve a nonselected NP interpretation.

\[(59) \text{Tracy pushed the door open.}\]

Once again, the missing interpretation involves an intervening cause. The button here serves as a (proxy for a) mechanism with its own energy source, qualifying as a cause. Again, it passes the diagnostics for a cause, as shown in (60).

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\(^{23}\)The resultative construction *shoot someone dead* may appear to be just such an example, but it is not. It does not have an interpretation comparable to the missing interpretation of (56) since the meaning lexicalized by *shoot* involves firing a gun and not a bullet; it is the latter which would be the analogue of the ball in (56).

\(^{24}\)DeLancey (1984:203) uses the example *The axe broke the window* to show that facilitating instruments are odd as the subject of *break*. This sentence can describe an axe which falls off a shelf onto a window, a scenario where it qualifies as a projectile, but it would not be used to describe a scenario where someone uses an axe to hit a window, except perhaps in a contrastive context.
It is worth noting that the missing interpretations discussed in this section are qualita-
tively different from the missing interpretation of Kratzer’s (2005:196) example They drank
the teapot empty, discussed in Sect. 5.4. Kratzer’s example lacks an interpretation not be-
cause the unexpressed argument is an intervening cause, but because there is too large and
too loose a ‘gap’ in the causal chain.

In concluding this section, I acknowledge the potential limitations of drawing conclu-
sions from non-occurring data and intuitions about unavailable interpretations, but I believe
that these lacunae are real. Interestingly, the missing interpretations involve an intervening
cause. The absence of resultatives with such interpretations, then, supports proposals that
the tightness condition includes a no-intervening-cause condition. Including such a condi-
tion still allows for the types of link between subevents found in the resultatives examined
in the dry and awake case studies, which are even tighter. Once again, however, nonselected
NP resultatives provide a source of insight into the tightness condition.

8 Conclusion: On the Well-Formedness of Transitive Resultatives

Returning to the questions raised in the introduction, a goal of this paper was narrowing
in on the relation between the subevents in selected NP and nonselected NP resultative
constructions in order to gain insight into the tightness condition on resultatives, and, thus
into the nature of causative events. The major question under consideration was: How are
the causing and caused events able to be integrated into a resultative construction when
the postverbal NP is not selected by the verb representing the causing event? Two related
questions were also considered: What role do the verb and the result XP play in making
this possible? Does this NP still bear some relation to the caused event? I now review what
the case studies revealed before making some concluding remarks.

8.1 Selected NP Resultatives

In selected NP resultatives the result state in the entity denoted by the postverbal NP is one
that a causer, perhaps using an instrument, brings about by acting directly on this entity,
usually via physical manipulation. Concomitantly, verbs denoting actions involving contact
with a surface or exertion of a force on an entity are prevalent in selected NP resultatives.
The choice among these semantic types depends on the nature of the result state. There is
no ‘intermediate entity’ (except perhaps for an enabling (i.e. facilitating) instrument and,
thus, no ‘intervening causer’ (let alone, an ‘intervening event’): the causer directly affects
the postverbal NP, bringing about the result state. Thus, in such resultatives the tightness
between the subevents falls under the typical understanding of direct causation as manipu-
lation by a causer of a physical object to cause a change of state in it.
8.2 Nonselected NP Resultatives

In nonselected NP resultatives the result state in the entity denoted by the postverbal NP is again one that a causer, perhaps using an instrument, brings about by acting in some way that causes a change of state in the entity denoted by the postverbal NP. There are several ways in which this may happen, as the case studies show, with different types of understood entities mediating the relation between the causing and caused events. I focus on two.

The action may be on an understood entity which is spatially contiguous with the entity denoted by the postverbal NP, e.g., in a contents–container relation to it. In (61) the understood entity, tea, is contained in the entity denoted by the postverbal NP, the teapot.

(61) Having . . . drunk the teapot dry . . . (E. Dark, *Lantana Lane*, Virago, London, p. 94)

Such actions typically involve physical manipulation of this understood entity, and, concomitantly, the verb denotes such an action. Due to the spatial contiguity relation, when the causer acts on the understood entity, the causer is also acting on the entity denoted by the postverbal NP.

In other instances, the action may involve the production of a sound, speech, light, or a gaze. There is again an understood entity: the emitted, sound, speech, light or gaze which moves into ‘contact’ with the entity denoted by the postverbal NP, impinging on it in an abstract sense. In (62) the understood entity, the sound of the alarm, makes ‘contact’ with the entity denoted by the postverbal NP, the sleeper.

(62) He had set an alarm, which rang at five thirty the following morning, shrilling them both awake. (R. Pilcher, *Voices in Summer*, St. Martin’s, 1984, p. 116)

More generally, there is abstract ‘contact’ between the understood entity and the entity that changes state, and the entity that changes state is in some sense a recipient with respect to the event denoted by the verb. Concomitantly, the verbs involved are verbs of substance, light, or sound emission, manner of speaking, or looking.

In instances of both types, there is ‘contact’ with the entity denoted by the postverbal NP. However, the understood entity does not constitute an ‘intervening causer’ since it does not have any internal energy source of its own (Wolff et al. 2010). Thus, such resultatives satisfy the tightness condition, including meeting previously proposed direct causation conditions, despite the nonselected NP.

8.3 Back to Causation

This study has explored the two types of transitive resultative constructions in order to shed light on the nature of the tightness condition on concealed causatives. It confirms that
something like the notions of direct causation found in the literature are indeed important to the well-formedness of resultative constructions. Intervening causers disrupt tightness. Direct manipulation of event participants falls under tightness, playing an important part in the well-formedness of both selected and nonselected NP resultatives, but so do some other contiguity relations between event participants. The case studies also show that more abstract links that seem to generalize these notions also matter, such as the ‘impingement’ or abstract ‘contact’ relevant to certain resultatives with *awake* as their result XP.

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