

Resultatives and Constraints on Concealed Causatives

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Abstract A well-formed transitive resultative construction must show a relation of direct causation between its causing and caused subevents; that is, resultatives conform to the same well-formedness condition as lexical causatives. Yet the best formulation of this condition is the subject of continued discussion. This paper revisits this question in the context of transitive resultatives. They are ideal for this investigation as their verb provides explicit information about the causing subevent, 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 result phrase using naturally occurring examples. The last case study investigates why resultatives with certain verb–AP combinations disallow a particular interpretation. Together these case studies support the prototypical understanding of direct causation 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.

- (1) The waitress comes back, **wiping the silverware dry** with a cloth napkin before laying it out. (Jaffe, Michael Grant. 1996. *Dance real slow*, 24. New York: Farrar Straus Giroux)
- (2) Last night, the dog **poked me awake** every hour to go outside. (Dunford, Gary. 1994. Charity's for the birds. *The Toronto Sun*, November 27, 6)

This paper aims to better characterize the type of causation implicated in this construction and in so doing to illuminate the linguistic representation of causation more generally. 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

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a causative paraphrase.¹ 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 events² suggests that resultatives should receive an analysis which involves explicit reference to causation even though the construction itself does not show any overt causative element. As Bittner (1999:1) puts it, ‘the causal relation appears to come from nowhere’.

This paper aims to clarify the nature of this causative relation and does not try to explain its source. 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. That is, a causer manipulates the shared participant, whose state then changes. One hypothesis is that such a shared participant is a necessary component of the causative relation between subevents. However, a consideration of a wider range of transitive resultatives suggests that this may not be the best way to characterize this relation. Certain resultatives, although equally amenable to a causative paraphrase, are not characterized by such an obvious link between the causing and caused events. Consider (3), which could be paraphrased as ‘The roosters’ crowing caused me to awake’.

- (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 ... (Robbins Tom. 1986. True adventure: crowned king of the cannibals. *The New York Times*, March 16, Sect. 6, Part 2, 8)

Here the causing event — the crowing — describes an action which does not involve physical manipulation of any entity, not even the entity that attains the result state. In fact, this action need not even be directed at a particular entity: the roosters could simply be crowing for their own reasons. This interpretive property has a syntactic reflex. Constructions such as (3) 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.

¹For discussion of the subtypes of resultative constructions see Levin and Rappaport Hovav (1995:34–41); see also Rappaport Hovav and Levin (2001:793–794) for a list. Specifically, transitive resultative constructions contrast with intransitive resultative constructions, which lack a postverbal NP; their result phrase is predicated directly of the (surface) subject, as in *The cookies burned black*. They are ignored here as they are not usually taken to be causative (e.g., Goldberg and Jackendoff 2004, Levin and Rappaport Hovav 1999:204–207, Rappaport Hovav and Levin 2001:784). This assumption receives support from the unavailability of causative paraphrases for such constructions. 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 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’. Further, intransitive resultatives bear a syntactic resemblance to anticausative constructions, and some researchers analyze anticausative constructions as causative in nature (e.g., Alexiadou et al. 2015, Chierchia 2004, Koontz-Garboden 2009, Levin and Rappaport Hovav 1995, Reinhart 2002:241–242, but see Rappaport Hovav 2014, Rappaport Hovav and Levin 2012). Thus, the causative status of intransitive resultatives may merit further scrutiny.

²I assume a ‘biclausal’ or ‘bieventive’ analysis of causation as argued for by Dowty (1979:91–96), Parsons (1990), and Shibatani (1976a, 1976b), among others. 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., Talmy 1976). See also Sect. 2.

For instance, in (3) the rooster does not ‘crow me’; that is, **The rooster crowed me*. Thus, (3) contrasts with (1) and (2), where the NP is selected by the verb (e.g., *The waitress wiped the silverware*; *The dog poked me*).

The selected vs. nonselected NP resultative subtypes are recognized here because they prove useful for organizing the data as it bears on the goals of this paper.³ Many formal accounts analyze all resultatives as having nonselected postverbal NPs; see den Dikken and E. Hoekstra (1994), T. Hoekstra (1988, 1992a, 1992b, 1992c), and McIntyre (2004:542–547) for syntactic arguments and Grône (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.

As this suggests, nonselected NP resultatives have received considerable attention with respect to the best syntactic analysis of the construction; in contrast, they have not received sustained attention in the context of a theory of causation, with Kratzer (2005) being an exception. Yet precisely because they have a causative interpretation despite the nonselected NP, they seem particularly worthy of interest. As this paper shows, an examination of the well-formedness conditions on both selected and nonselected NP resultatives, 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. The major question to be considered in the remainder of the paper is: What is the best way to characterize the causative relation between their causing and caused events?

Through several case studies I show that across both selected and nonselected NP resultatives, the action described by the verb — that is, the causing event — is an (often usual) way of bringing about the state described by the result phrase — the caused event. Thus, I focus on the relation between these events, and consider the contribution of the postverbal NP in this context. In a selected NP resultative, the entity denoted by the postverbal NP qualifies as a ‘basic’ participant in the causing event. For example, the silverware is a clear participant in the causing event — the wiping — in (1). In a nonselected NP resultative, the causing event still impinges on the entity denoted by the postverbal NP, although as I discuss it can be difficult to decide whether it truly qualifies as a participant in the causing event. Its exact role, if any, in this event depends on the nature of the action that brings about the relevant result state. For instance, the writer in (3) is not a participant in the causing event — the crowing — in the strong, manipulated sense that the silverware is in the selected NP resultative (1); nevertheless, he is impinged on by this event and perhaps could

³ I use the selected vs. nonselected NP resultative distinction since it makes useful cuts in the data; however, a reviewer asks whether the line between resultatives of these two types is always clear. This question is motivated by parallels the reviewer notes between nonselected NP resultatives with the verb–AP combination *pour–full* and the locative alternation. In its basic use *pour* takes what will be the contents of a container as its object (e.g., *pour tea into the mug*), but it may take the container as postverbal NP in a resultative (e.g., *pour the mug full*); see Sect. 4. Although not usually so described, the object of a locative alternation verb can be characterized as contents (e.g., *pack the clothes*) or container (e.g., *pack the suitcase*) (Waltereit 1999:239–240). Given this, when *pour* takes a container postverbal NP in a resultative, perhaps the NP is not truly nonselected. The reviewer’s suggestion, however, seems to build on the assumption that the objects in both locative alternation variants are selected, an assumption denied in many analyses (Beavers 2017, Mateu 2010).

even be considered a participant in a rather weak sense. Much of this paper is devoted to identifying the nature of this impingement, as it is critical for understanding the type of causation characteristic of resultatives. This goal, however, can be met without fully resolving whether the referent of the nonselected NP is a participant in the causing event; I leave this issue for future work.

This paper probes these issues using naturally occurring data that illuminate the complex interplay among the verb, the result phrase, and the postverbal NP — whether selected or not — in controlling the well-formedness of a resultative. These data are drawn from a collection of just under 1250 naturally occurring transitive resultatives with adjective-headed result phrases, as in examples (1)-(3).⁴ The data are predominantly taken from newspapers and fiction written since the mid-1980s; some recent examples from web searches have been added to explore particular verb-AP combinations further. There is a 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 possible options — claims which are important in their own right. However, I refrain from giving counts, and any quantitative assessments in this paper should at best be taken to be suggestive of patterns that may exist.

Section 2 sets the stage by introducing notions of causation, particularly direct causation, as they pertain to resultatives. Section 3 begins to examine the constraints on the causative relation between the causing and caused events in a resultative — what I refer to as the tightness condition on resultatives. It introduces two key observations: the choice of result phrase constrains the choice of verb describing the causing event and in most resultatives this verb is a manner verb. Relatedly, it points out that the causing event is often a usual means of bringing about the result state. Sect. 4 further probes the nature of the causing event-caused event relation in nonselected NP resultatives. Sections 5 and 6 present case studies of resultatives whose result APs are headed by the adjectives *dry* and *awake*, respectively, to illuminate the tightness condition. They explore whether properties of the types of actions required to bring about each of these result states play out in the form of the resultative (i.e. selected vs. nonselected NP). Section 7 further clarifies the tightness condition by examining why some resultatives cannot receive certain, apparently plausible nonselected NP interpretations. 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 A First Look at the Relation Between the Subevents

Both selected and nonselected NP resultatives are deserving of interest in the study of causation because their constituent subevents are taken to show the kind of tight semantic integra-

⁴Examples are drawn from a larger collection which includes intransitive resultatives with result APs and both transitive and intransitive resultatives with result PPs (e.g., *Robinson roared him into silence*), as well as examples of the *way* construction (e.g., *She swam her way to good health*). These are all ignored here. See Gröne (2014) for interesting recent discussion of the semantics of transitive resultatives with result PPs; such resultatives too can be classified into selected and nonselected NP types.

tion characteristic of the subevents of so-called ‘lexical causatives’ (Rappaport Hovav and Levin 2001:783). 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’, ‘The dog caused me to awake’). Yet, like resultatives, they lack an overt causative element; they too are what Bittner (1999) calls ‘concealed causatives’. In contrast to resultatives, lexical causatives leave the causing event implicit and 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. What makes resultatives particularly relevant to illuminating the form of causation that falls under ‘concealed causation’ is that resultatives, unlike lexical causatives, include explicit information about the causing event (via the verb), as well as about the caused event (via the result phrase). 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, air-drying it). Similarly, in *The dog poked me awake*, we know that the dog woke me by nudging me (and not, say, barking). Thus, resultatives provide more information about what causing event–caused event pairs qualify for a tight linguistic expression.

The relation between the subevents in both lexical causatives and resultatives is taken to instantiate a special type of causation, whose hallmark is a fairly tight relation between the two subevents. This tightness is sometimes described as enabling the two subevents to form a single, but complex event. This event structure is posited in part because of a syntactic reflex: syntactically, lexical causatives show evidence of 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); however, like lexical causatives and unlike resultatives, they too are silent about the causing event.

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

The literature repeatedly notes 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 1965:28, Shibatani 1976b:28–31), as in (5).⁵

- (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))

⁵Counterfactuality is often said to be a necessary ingredient of causation (Dowty 1979:99–110, Lewis 1973). In fact, Levin and Rappaport Hovav state such a condition on resultatives: ‘The result subevent would not have happened if the causing subevent had not happened and all else had remained the same’ (1999:212, (29c)). However, 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. Moreover, even rather loosely related events can be counterfactually related, so this observation too suggests that it is necessary to look beyond counterfactuality.

Similarly, certain situations that can be described by periphrastic causatives cannot be described by the corresponding resultatives. For example, the intended sense of *The dog caused me to awake by scratching at the bedroom door* is not captured by *The dog scratched me awake*; rather, the resultative is only appropriate if the dog actually scratches the sleeper.

The difference between lexical and periphrastic causatives is often described in terms of whether the relation between the two events necessarily involves what is commonly referred to as ‘direct causation’ — as lexical causatives are said to do — or may also allow for ‘indirect causation’ — as in periphrastic causatives (e.g., Bittner 1999, Fodor 1970, McCawley 1978, Pinker 1989:66, Shibatani 1976b:31–39, Smith 1970, Wolff 2003). Resultatives again are said to pattern with lexical causatives (e.g., Bittner 1999, Carrier and Randall 1993:124–125, Dowty 1979:220, Goldberg 1995:194–195, Kratzer 2005:196–197, Levin and Rappaport Hovav 1999:211–212, Pustejovsky 1991:64–65, Rappaport Hovav and Levin 1998, 2001:783).⁶ Bittner (1999:2), in fact, introduces the hypothesis in (6) in her work on concealed 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 narrowly as ‘manipulative’ causation, reflecting the intuition that in many such causatives the causer physically manipulates the causee. Indeed, the prototypical form of causation associated with concealed causatives is manipulative causation. Other researchers propose a range of overlapping characterizations of the type of causation characteristic of concealed causatives; see Wolff (2003:4, Table 1) for a compendium. Although these characterizations are less specific than Shibatani’s manipulative causation, they subsume it. In (6), Bittner defines direct causation in terms of a lack of intermediate causes, a definition which is elaborated by Kratzer (2005:196–198) within an event-cause-event model of causation.⁷ Rappaport Hovav and Levin (2001), building on Levin and 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.⁸

- (7) There is no intervening event between the causing subevent and the result subevent;

⁶ Neeleman and 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’. However, Martin (2018) 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.

⁷ Despite rejecting a notion of direct causation, Neeleman and 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)).

⁸ The other well-formedness conditions on resultatives proposed by Rappaport Hovav and Levin (2001:783, (45)) 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.

that is, causation is direct. (Rappaport Hovav and Levin 2001:783, (45d))

Rappaport Hovav and Levin are working in an event-cause-event model of causation, so the assumption implicit in (7) is that an intervening event introduces an intermediate cause.

Definitions of direct causation within an approach that models causation as a relation between individuals explicitly mention intervening causers, as in the much cited definition of direct causation in (8) from Wolff (2003).

- (8) 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 granularity⁹ 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)

This definition assumes an individual-act-on-individual model of causation. On this model (Croft 1991:167–174), 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. Since events have participants, even when adopting the event-cause-event model of causation, it is possible to refer to event participants. Concomitantly, an individual-act on-individual representation could be extracted from an event-cause-event representation. Therefore, for convenience I may sometimes refer to the participants in the events rather than the events themselves in this paper.

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 6), there is some kind 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 capture the intuitions behind the term ‘direct causation’; these include the lack of an intervening cause and in prototypical instances the presence of physical manipulation of the causee by the causer. However, to remain open about the best characterization of the relation and to avoid any presuppositions that might accompany the term ‘direct causation’, I refer to a tightness condition, particularly as this paper’s central aim is to investigate its nature further. As I show, in most instances the tightness condition as 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.

Existing characterizations of direct causation, such as those cited here, make reference to notions such as ‘intermediate’ or ‘intervening event’, ‘intervening causer’, or ‘interme-

⁹See Wolff (2003:33–34) for discussion of granularity in the context of direct causation and Croft (1991:162–165) for more general discussion of the granularity of event descriptions.

diate entity'. All these notions involve the part of the causal chain where the causing event and caused event come together, which I refer to as the 'middle' of the causal chain. This portion of the causal chain is critical to understanding the tightness condition; however, since lexical causatives leave the causing event implicit, they do not provide an optimal domain for exploring it. In contrast, transitive resultatives explicitly express the causing event; thus, they provide a laboratory for exploring the properties that the causing event must have so that the relation between it and the caused event meets the tightness condition. The goal is to characterize this relation in a way that encompasses both selected and nonselected NP resultatives, while shedding light on why the postverbal NP is understood as selected or not.

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, represented by the result phrase, is understood to be brought about by the causing event, represented by the verb. Thus, the causing event must be one that can lead to the result state, while conforming to the tightness condition. As a given result state constrains the set of causing events that can bring it about, looking in the corpus at the set of verbs representing the causing event for a given result phrase should provide information about the nature of the tightness condition.

A survey of the corpus shows that a preponderance of the attested result states are physically instantiated, as in (9), although there are exceptions, including the mental states listed in (10).

(9) awake, bare, barkless, black, blank, bloody, clean, clear, closed, coarse, dark, dry, empty, flat, full, free, hoarse, . . .

(10) alert, calm, clueless, crazy, helpless, loopy, speechless, witless, . . .

Unattested in the corpus are adjectives naming individual-level states, supporting observations in the literature (Hoekstra 1992a:162, Levin and Rappaport Hovav 1995:55).¹⁰

When a resultative has a result phrase that names a physically instantiated state, the causing event must describe an action that can bring about such a state. Such actions must necessarily involve physical manipulation of the entity that changes state; such states cannot be achieved by action at a distance (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

¹⁰Previous work notes several other 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*); see also Goldberg (1995:195–197). 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).

surface contact, impact, or force exertion. These actions are usually, although not always, performed by a volitional, animate agent. Since resultatives with a physically instantiated result phrase typically have an agent, they instantiate what Croft (1991:168), who as noted in Sect. 2 adopts the individual-act-on-individual model of causation, considers the most unmarked type of causation: a volitional agent physically manipulates an entity to bring about a physically instantiated state in it. Such scenarios also instantiate what are considered prototypical instances of direct causation.

The verbs in resultatives whose result phrases describe a mental state of an animate entity such as (11) are more diverse; they may describe physical actions, which can provoke these states, as in (11a), as well as acts of communication, which can too, as in (11b).

- (11) a. He cracked the window and let the cool, dry desert air **slap him alert**. (Dunlap, Susan. 1998. *No immunity*, 214. New York: Delacorte)
- b. Well, the conclusion was that my mistress **grumbled herself calm**. (Brontë, Emily. 1965 [1847]. *Wuthering heights*, 78. London: Penguin)

I focus on resultatives whose result phrases describe physically instantiated states, but the paper's conclusions can be extended to result phrases 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 and Rappaport Hovav 1991, 2012, 2013, Rappaport Hovav and Levin 1998, 2010). Result verbs lexically specify a change in a scalar valued property of an entity (Hay, Kennedy, and Levin 1999, Kennedy and 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 phrases of resultatives. 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 a way of carrying out an action, such as a gait (e.g., *walk, amble, prance*) or a way of making contact with a surface (e.g., *pound, sweep, wipe*). Some of these actions are regularly intentionally performed to bring about one or more result states. In fact, some involve tools designed precisely to bring about a particular state (e.g., *crank, mop, towel*). Thus, wiping is used to clean surfaces such as tables or counters, while mopping is used to clean floors. A manner verb does not entail its intended result, if there is one (Talmy 2000:265–267); in contrast, the result cannot be denied with a result verb. Compare (12) and (13).

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

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

A small number of resultatives have a result verb. Such resultatives have result phrases that further specify the result lexicalized in the verb, as in the verb–result AP combination *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 phrase is typically found with a manner verb, and specifically a manner verb which describes an action used to bring about the relevant result state.¹¹ This observation holds equally of selected and nonselected NP resultatives. Just as wiping is performed to dry silverware, as in the selected NP resultative (1), repeated as (14), so is pouring performed to fill a container, as in the nonselected NP resultative (15).

- (14) The waitress comes back, **wiping the silverware dry** with a cloth napkin before laying it out. (Jaffe, Michael Grant. 1996. *Dance real slow*, 24. New York: Farrar Straus Giroux)
- (15) Audrey flipped a mug into the air, caught it by its handle, and **poured it full**. (Greenlaw, Linda. 2008. *Fisherman's bend*, 219. New York: Hyperion)

Although in (14) and (15) the causing event is performed intentionally, what matters is that the causing event is a way of bringing about the result state. If this is the case, the causing event need not be performed intentionally. Consider the nonselected NP *crow-awake* example (3), repeated as (16), as well as a second example with the same result phrase, (17). In (16) the subject — the sound emitter — is animate, but is not making noise in order to wake someone; in (17) the emitter is inanimate and, thus, lacks intention.

- (16) 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 ... (Robbins Tom. 1986. True adventure: crowned king of the cannibals. *The New York Times*, March 16, Sect. 6, Part 2, p. 8)
- (17) At exactly midnight, the phone beside Helma's bed **jangled her awake**. (Dereske, Jo. 2001. *Miss Zukas shelves the evidence*, 47. New York: Avon)

These examples exploit our knowledge that a loud noise often wakes a sleeper. What all the examples have in common — (14) and (15) as well as (16) and (17) — is that the causing event is a typical way of bringing about the result state.¹²

The observed relation between a manner verb and a result phrase — that is, that the action lexicalized by the verb is a typical way to bring about the relevant result seems to be the reason for taking the relation between the causing and caused subevents in a resultative to qualify as tight in a way that allows its expression via a concealed causative.¹³ The

¹¹Further support for the link between certain manners and results comes from an observation in Alexiadou et al. (2017). They point out that manner verbs in French show actuality entailments involving usually associated results when they take inanimate cause subjects.

¹²Even though in some instances the verb–result phrase association may be ‘one off’, it must be understood to qualify as ‘tight’ given the discourse context in the sense elaborated in the remainder of this paper. Such examples might qualify as instances of what Martin (2018) calls ‘ex post facto’ causation.

¹³As Malka Rappaport Hovav (p.c.) points out, taking the causing event to usually bring about the caused event is not the same as taking the two events to be ‘close’ in a causal chain; however, these notions might often fall together.

general idea appears in the literature on resultatives. 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 and Wunderlich (1998:15) make a comparable point about nonselected NP resultatives. Iwata (2014:253–259) 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 the force dynamic terms often employed in an individual-act-on-individual model of causation. Finally, Kratzer (2005:198–199) proposes that in order for a resultative to be well-formed, instances of the event where the relevant result is achieved must be in the extension of the resultative’s verb. Most likely, this move works because the result state is usually expected to come about when the causing event, the event represented by the verb, occurs.

This section has provided a general overview of how the choice of result phrase constrains the choice of verb in a resultative: the verb must describe an action that can bring the relevant result about. This perspective turns out to be particularly useful for understanding how nonselected NP as well as selected NP resultatives can meet the tightness condition. It suggests that case studies of particular result phrases found in resultatives of both types can be fruitfully used to probe what properties of the causing event lead to the different status of the postverbal NP. Sections 5 and 6 present such case studies.

4 More on Nonselected NP Resultatives

This section further sets the stage for the case studies by examining how the association between the causing event and the result state plays out in nonselected NP resultatives, that is, those resultatives whose postverbal NP is not understood as the object of the verb describing the causing event. A priori this property might suggest such resultatives involve a weaker link between the causing and caused events since the postverbal NP, by virtue of being nonselected, is not a participant in the causing event in the strong sense that a selected postverbal NP is. Thus, this section zooms in on the relation between the causing and caused events — the middle of the causal chain — in nonselected NP resultatives with respect to the participants in these events. The major focus is on understood, but unexpressed participants in both the causing and caused events, including whether the entity denoted by the nonselected NP may be involved in the causing event as such a participant. These considerations are also relevant to understanding how the causing and caused events are able to meet the tightness condition when the postverbal NP is not selected.

The criterion used to determine whether the postverbal NP in a transitive resultative is selected or not is whether it can be understood as the object of the verb when the verb is used outside of the resultative. In a selected NP resultative, as in the (a) sentences in (18) and (19), it can, as shown in the (b) sentences. Such constructions necessarily are found with transitive verbs.

- (18) a. Last night, the dog **poked me awake** every hour to go outside. (Dunford, Gary. 1994. Charity’s for the birds. *The Toronto Sun*, November 27, p. 6)

- b. The dog poked me.
- (19) a. She snipped off the end of the cotton and **patted the mend flat**. (Curzon, Clare. 1990. *Three-core lead*, 69. New York: Doubleday)
- b. She patted the mend.

In nonselected NP resultatives, as in the (a) sentences in (20)–(22), the postverbal NP is not understood to be the object of the verb, as shown in the (b) sentences.

- (20) a. He had set an alarm, which rang at five thirty the following morning, **shrilling them both awake**. (Pilcher, Rosamunde. 1984. *Voices in summer*, 116. New York: St. Martin's)
- b. *The alarm shrilled them.
- (21) a. 'Before you go, **crank me flat**.' (Roberts, Lillian M. 1998. *Almost human*, 17. New York: Ballantine)
- b. *You cranked me.
- c. You cranked the hospital bed.
- (22) a. Maxey stood up to get a glass and **pour it full of milk**. (Cail, Carol. 1995. *Unsafe keeping*, 146. New York: St. Martin's.)
- b. *Maxey poured the glass.
- c. Maxey poured the milk.

The verb may be an intransitive verb, as in (20), as well as the earlier example (3); that is, a verb that does not typically select an object.¹⁴ Alternatively, it may be a transitive verb as in (21) and (22); see the (c) sentences. In such resultatives, the verb's object though unexpressed, is still understood, as many have noted (Carrier and Randall 1993:125–126, Kaufmann and Wunderlich 1998:5, Levin and Rappaport Hovav 1995:37–39). In (21a), the addressee is cranking something; here, its identity — a hospital bed — is inferrable from context. In (22a), we assume that the liquid being poured 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 and Levin (1998, 2010), two-argument manner verbs need not express their non-subject (perhaps, more accurately, non-agent or more broadly

¹⁴In 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 (20): *The alarm clock shrilled a shrill* seems quite odd, although perhaps *The alarm clock 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'.

non-effector (Van Valin and Wilkins 1997)) argument. This property is just the prerequisite needed to give rise to a nonselected NP resultative, and Rappaport Hovav and 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 and Randall 1993, Goldberg and Jackendoff 2004:548, Levin and Rappaport Hovav 1995). However, the restatement in terms of manner verbs is superior because some manner verbs that seem not to allow unexpressed objects in isolation have such objects in nonselected NP resultatives.¹⁵ An example is the verb *crank*, which sounds odd in an unexpressed object use (**Pat cranked*), yet is attested in the nonselected NP resultative (21a). It appears that the recoverability conditions on unexpressed objects with transitive manner verbs are more easily met in resultatives.

Although unexpressed objects are ‘intermediate entities’ in the causal chain, the acceptability of resultatives such as (21a) and (22a) means that such objects do not count as the ‘intervening causers’ or ‘intermediate causes’ mentioned by Bittner (1999) and Wolff (2003). In this respect, they are like instruments, which also do not count as ‘intervening causers’ according to Wolff (2003), who takes them to qualify as enabling conditions, rather than true causers which could ‘disrupt’ the causal chain, i.e. lead to the ill-formedness of a concealed causative description.¹⁶ A key question is what types of intermediate entity can be present, while allowing the causing and caused events to maintain a tight relation.

Some researchers also note an implicit relation between the postverbal NP and the causing event, perhaps mediated by the participant denoted by the unexpressed object, if one is available (Kaufmann and Wunderlich 1998:32). They suggest that although the postverbal NP is not selected by the verb in the causing event, the entity it denotes is nevertheless sometimes a participant in this event. For instance, Jackendoff (1990:226–227) proposes that the postverbal NP bears an ‘oblique’ relation to the verb describing the causing event; along similar lines, Sato (1987:83) proposes that it bears a location or goal relation to the verb. Thus, (24) shows that the container that coffee — the unexpressed participant in (15), repeated as (23) — is poured into may be expressed in a locative PP complement of *pour*.

(23) Audrey flipped a mug into the air, caught it by its handle, and **poured it full**. (Greenlaw, Linda. 2008. *Fisherman’s bend*, 219. New York: Hyperion)

(24) Audrey poured coffee into the mug.

However, the postverbal NP does not always bear such a clear relation to the verb in

¹⁵Unexpressed 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.

¹⁶The 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, McKercher 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.

the causing event. Consider (20a), repeated in (25a); here it does not seem possible to accommodate the nonselected NP in a sentence with the verb, as shown in (25b).

- (25) a. He had set an alarm, which rang at five thirty the following morning, **shrilling them both awake**. (Pilcher, Rosamunde. 1984. *Voices in summer*, 116. New York: St. Martin's)
- b. ?? The alarm shrills at/to them.

In other instances this option might seem to exist, but on closer scrutiny it may not capture the precise sense of the resultative. Consider (3), repeated in (26a): as noted in Sect. 1, roosters could crow someone awake at dawn without explicitly crowing at them.¹⁷

- (26) 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 . . . (Robbins Tom. 1986. True adventure: crowned king of the cannibals. *The New York Times*, March 16, Sect. 6, Part 2, p. 8)
- b. The roosters crowed at me that dawn a few months ago.

Finally, in (21a), repeated as (27), the cranking event involves the addressee, as agent, and the bed, as the manipulated entity; it would seem odd to say that the speaker is a participant in this event. Yet the cranking happens precisely because the speaker is in the bed and will be affected by an action on it.

- (27) 'Before you go, **crank me flat**.' (Roberts, Lillian M. 1998. *Almost human*, 17. New York: Ballantine)

Thus, elaborating on what was noted in Sect. 1, although in nonselected NP resultatives the causing event clearly impinges on the entity denoted by the postverbal NP, in certain instances it is at best a participant in the causing event in a weak sense, while in others it is not strictly speaking a participant at all. These observations underscore the importance of further investigating the conditions that govern the well-formedness of nonselected NP resultatives. The case studies in the following two sections are intended to do this, and they return to the issues and examples discussed in this section. As discussed in Sect. 3, since the result state influences the possible causing events, they are organized around particular result phrases — adjective phrases headed by *dry* and *awake* — and not particular verbs.

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

Resultatives whose result AP is headed by the adjective *dry* — henceforth, the result AP *dry* — provide a good domain for examining the factors governing the well-formedness

¹⁷Jackendoff (1990:227) suggests that *crow at* does capture the sense of resultatives such as (26a), but I do not find that to be the case.

of both selected and nonselected NP resultatives and particularly 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 in the corpus this result AP, unlike many others, is prevalent in resultatives of both types, 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, such as a bottle or bowl; thus, it must be 3-dimensional and have an interior. By a surface, I mean an entity that is conceived of as 2-dimensional, such as a table or plate; however, 2-dimensionality 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 may be conceived of as a surface; for instance, when being wiped with a sponge or scrubbed with a brush.

Section 5.1 examines resultatives where the result AP *dry* is predicated of a surface. Sect. 5.2 turns to those where this result AP is predicated of a container. The data reveal that *dry* has slightly different senses when predicated of surfaces and containers. I show that relatedly the manners of causing the type of dryness holding of surfaces vs. containers give rise to differential preferences for selected vs. nonselected NP resultatives. Sect. 5.3 extends the observations to the result APs *empty* and *full*. Sect. 5.4 considers the larger implications of the case study in the context of the tightness condition.

5.1 The Result AP Is Predicated of a Surface

When predicated of a surface, *dry* indicates that the surface has no liquid on it, as in *a dry floor/counter*. This sense of *dry* is found in resultatives where it is predicated of a surface.

- (28) a. The waitress comes back, **wiping the silverware dry** with a cloth napkin before laying it out. (Jaffe, Michael Grant. 1996. *Dance real slow*, 24. New York: Farrar Straus Giroux)
- b. He took the towel from her hands and **patted her face dry**. (Meyers, Annette. 1997. *The groaning board*, 266. New York: Doubleday)

This state is 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 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 resultatives with this sense of *dry* lexicalize such actions, as in (29). (Some of these actions can also be carried out on a dry surface (e.g., *pat*, *rub*, *wipe*.)

- (29) 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 such resultatives, then, the causing and caused events share a participant. Further, they involve direct causation in the strong sense. The entity that changes state is directly manipulated in the causing event, and the only intermediary entity is the instrument, if any, used in the causing event to facilitate bringing about the result state, such as the napkin in (28a) or the towel in (28), but such entities do not qualify as causers; see note 16.

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.¹⁸ This sense is found in resultatives where the result AP *dry* is predicated of a container which is fulfilling its function, such as a teapot or kettle.

- (30) a. Having ... **drunk the teapot dry** ... (Dark, Eleanor. 1986 [1959]. *Lantana Lane*, 94. London: Virago)
- b. One of them [=tea kettles] must've **whistled itself dry** ... (Conant, Susan J. 1995. *Ruffly speaking*, 76. New York: Doubleday)

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. Actions of two types can bring about this state, and the relevant type 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 (31).

- (31) boil, drain, drink, pump, slurp, suck, ...

¹⁸McIntyre (2004:546) notes that *dry* has the 'empty' sense in nonselected NP resultatives, but does not mention that this sense is predicated of containers, nor discuss how this property plays into the licensing of nonselected NP resultatives. He writes that *dry* in this sense cannot appear after a copula, but such uses are actually found, as in *After three years of drought, the well is dry*. Even *The cellar/boiler is dry*, which he finds unacceptable, are well-attested on the web.

Nevertheless, the verb *dry* is almost exclusively used in descriptions of changes involving the dryness that holds of surfaces. For instance, *Pat dried the tub* is unambiguous and can only mean that the tub's surface was dried and not that the tub no longer has water in it. Web searches reveal only very few examples with the intended meaning (e.g., along the lines of *A supernatural occurrence had dried the well*). Given this, it is unsurprising that attested nonselected NP uses of *dry* are not paraphrasable with the verb *dry*. For example, although 'She dried her face' can paraphrase the selected NP resultative (28), 'We dried the teapot' does not paraphrase the nonselected NP resultative (30a). However, this is not a general property of nonselected NP resultatives. Both the *pour-full* example (23) and the *crow-awake* example (26a) can be given such paraphrases, as in 'Audrey filled the mug' and 'The rooster woke me'. This issue deserves further investigation.

In such examples the liquid (e.g., tea in (30a)) is the understood object of the verb lexicalizing the action denoted in the causing event; the NP denoting the container (e.g., the teapot in (30a)) is not the object of this verb and, thus, qualifies as a nonselected NP. However, the container and the liquid being removed from it are spatially contiguous so that removing the liquid — the manner — brings about the state of dryness in the container — the result. Thus, there is a strong association between the causing and caused event. It is by virtue of this relation that these resultatives, despite their nonselected NP, meet the tightness condition. As in some examples discussed in Sect. 4, the causing event brings about the result state although the container is not a clear participant in the causing event: drinking, for instance, involves a drinker and a liquid.

Instances of the second type involve a body part such as the lungs or vocal tract, or even the body itself, which can also be construed as a container.

- (32) a. Davina and I erupted from the knife-sharp grass, **shrieking our lungs dry** ... (Meyers, Margaret. 1995. *Swimming in the Congo*, 29. Minneapolis: Milkweed)
- b. After the funeral yesterday she thought she'd **cried herself dry**. (Sefton, Maggie. 2005. *Knit one, kill two*, 7. New York: Berkley)

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).

- (33) boil, cry, shriek, sweat, talk, whistle, ...

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, cry a mournful cry*), even though the verb is often taken to be intransitive.¹⁹ In (32a) the nonselected NP is a body part, but in other instances, including (32b), 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 (30b), repeated as (34): here 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.

- (34) One of them [=tea kettles] must've **whistled itself dry** ... (Conant, Susan J. 1995. *Ruffly speaking*, 76. New York: Doubleday)

¹⁹Dan Lassiter (p.c.) suggests that perhaps (32a) is actually a surface construal because the interpretation involves a ‘subjective feeling of dryness around the sides of the lungs’.

In each instance, the action, typically when done excessively, leads to the relevant result. And, again, there is a relation of spatial contiguity between the container and the understood substance whose removal from the container leads to its dryness.

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

Since states of containers can be altered by affecting their contents, we predict that result phrases 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.²⁰ They are indeed found in resultatives comparable to those with container *dry*, as in (22), repeated as (35), and (36).

- (35) Maxey stood up to get a glass and **pour it full of milk**. (Cail, Carol. 1995. *Unsafe keeping*, 146. New York: St. Martin's.)
- (36) Tom wagged the bottle at me, and **swigged it empty** when I declined. (Boneham, Sheila Webster. 2013. *The money bird*, 11. Woodbury, MN: Midnight Ink)

The adjectives *full* and *empty*, unlike *dry*, may hold of solids as well as liquids. Thus, a wider set of actions can be performed on containers to achieve these states. Some directly affect the container, giving rise to selected NP resultatives with *full* and *empty*. For instance, the corpus includes several examples of '*shake NP empty*', among them (37). 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.

- (37) She knelt before him and taking one of his hands in hers, **shook the bag empty**. (Patterson, Pat. 2002. *Spirit path*, 94. Lincoln, NE: iUniverse)

Also among the selected NP resultatives with *full* are several 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 AP provides additional information relevant to resolving any vagueness or imprecision in the interpretation of *full* (Kennedy 2007, Lasersohn 2009).

- (38) 'Don't **fill the bags too full**.' (MacPherson, Rett. 1997. *Family skeletons*, 64. New York: St. Martin's)
- (39) I filled a serving bowl with cat food, set it on the floor, along with the biggest pot I owned, **filled full of water**. (Thornton, Betsy. 2001. *High lonesome road*, 166. New York: Thomas Dunne)

²⁰Kaufmann and Wunderlich (1998:32) note the importance of the container–contents relation in discussing a German nonselected NP resultative whose result AP is the German counterpart of *full*.

5.4 The Importance of Contiguity to the Well-Formedness of Resultatives

A resultative is used to convey a change in the result state of the postverbal NP. The *dry* case study shows that the nature of this NP affects the type of action needed to effect the relevant result state. Certain states in an entity, such as dryness can be brought about by acting directly on that entity or by acting on an entity that is 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.²¹ Thus, due to the different ways that dryness is brought about in surfaces and containers, NPs denoting surfaces and containers are found in different types of resultatives.²²

The sensitivity of resultatives to whether *dry* is predicated 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 (Apresjan 1973:7, Ostler and Atkins 1992:90). Further, spatial relational terms comparable to the English preposition *in*, which are used to refer to a figure contained in a ground, are present in even small inventories of such terms (Levinson et al. 2003). Further, this spatial 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).

The importance of contiguity between contents and container to ensuring that the tightness condition between the causing and caused subevents is satisfied in certain nonselected NP resultatives is brought out by an observation made by Kratzer. She (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 notes 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.²³ Kratzer uses this contrast to refine

²¹A 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; see also note 3. 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 object (Levin and Rappaport Hovav 1991, Rappaport Hovav and Levin 1998). This question relates to possible verb meanings, and I leave it aside.

²²Having isolated the conditions which determine whether a resultative with the adjective *dry* predicated of a container will have a selected vs. nonselected NP, we can now predict the conditions which would 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 entity contiguous to the surface, then we might expect a nonselected NP resultative. I have not found such resultatives.

²³As Dan Lassiter (p.c.) points out, the unavailable interpretation is not a typical resultative interpretation because the teapot remains empty rather than becomes empty. If this is a worry, then consider the following

her formal definition of direct causation, including the definition of a causal chain. What she does not notice is that in the unavailable interpretation the unexpressed NP — the water in the well — does not denote the contents of the teapot, so there is no contiguity relation. The generality of Kratzer’s observation can be demonstrated using (35), repeated here.

- (40) Maxey stood up to get a glass and **pour it full of milk**. (Cail, Carol. 1995. *Unsafe keeping*, 146. New York: St. Martin’s.)

In this sentence, we understand the liquid that is poured to be the liquid that fills the glass. This sentence cannot receive an interpretation where Maxey pours some liquid onto the floor, while the glass somehow gets full of milk. Such a scenario too would lack contiguity.

If contiguity can contribute to meeting the tightness condition, we might ask whether the contiguity relation could play out in the other direction in resultatives; that is, could manipulating a container affect its contents? This possibility would manifest itself in a nonselected NP resultative whose verb describes an action on a container while its result state holds of the contents of this container, denoted by the postverbal NP. In fact, the *crank-flat* example (27), repeated as (41), is precisely such an example.

- (41) ‘Before you go, **crank me flat**.’ (Roberts, Lillian M. 1998. *Almost human*, 17. New York: Ballantine)

Here, the action is directed at the bed — the container — but it is the person in the bed — the contents — whose state change is relevant.

The contiguity relation, then, is essential to the well-formedness of certain nonselected NP resultatives; that is, it allows the tightness condition to be met. The reason most likely is that due to contiguity, manipulating the contents of a container is in some sense manipulating the container or, alternately, manipulating the container is in some sense manipulating its contents. Thus, there is a tight relation between the causing and caused subevents, so that ‘direct causation’ as it is prototypically 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 AP *awake*, another result phrase prevalent in both selected and nonselected NP resultatives. 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 the relevant action — is someone other than the sleeper, but in some instances a sleeper might wake him/herself. There are several ways in which

scenario, which also cannot be described by the resultative: people drink all the water in the well, so no water is left causing people to drink all the water in the teapot.

the state of wakefulness 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. Third, a sleeper might wake him/herself through an involuntary bodily process or through a deliberate activity intended to restore wakefulness; here the sleeper is the causer. Considering these scenarios in the context of the case study of *dry* leads to predictions about whether each one would be expected to be expressed using a selected or nonselected NP resultative. These predictions are introduced and 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, who then awakes, the scenario should be expressed by a selected NP resultative as the causing and caused events share a participant. Attested selected NP resultatives with the result AP *awake* indeed conform to the prediction; they involve causers waking the sleeper through some sort of physical contact or manipulation, as in (42). Thus, their causing events usually involve impact or force exertion verbs, as in (43), as they lexicalize such actions.

- (42) a. Last night, the dog **poked me awake** every hour to go outside. (Dunford, Gary. 1994. Charity's for the birds. *The Toronto Sun*, November 27, p. 6)
- b. ... the moment he was deeply asleep Vinck was **tugging him awake** ... (Clavell, James. 1980. *Shogun*, 652. New York: Atheneum)
- (43) bump, hug, jerk, kiss, poke, slap, tickle, tug, ...

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 a 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 AP *awake* involve a causer, either animate or inanimate, emitting a sound or speech.

- (44) a. When the roosters that scratch in the yard of Brastagi's best hotel **crowded me awake** that dawn a few months ago, I knew it was destined to be a memorable day ... (Robbins Tom. 1986. True adventure: crowned king of the cannibals. *The New York Times*, March 16, Sect. 6, Part 2, p. 8)

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

Such resultatives involve sound emission verbs (e.g., *crow*, *jangle*) and manner of speaking verbs (e.g., *scream*, *shout*) — verbs of the types that lexicalize these actions, as in (45).

(45) bark, buzz, clang, crow, jangle, scream, shout, shrill, ...

Furthermore, the attested verbs tend to be those members of the relevant classes that involve loud or high-pitched sounds, precisely the types of sound most likely to wake someone.

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*, *scream a fierce animal scream*). As the verb's object is not the sleeper, in such resultatives, then, the sleeper is expressed 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. In (44b) the understood entity, the speaker's words, make 'contact' with the entity denoted by the postverbal NP, the sleeper. However, it may seem odd to call the sleeper a 'recipient' of the sound: 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, as in (44a). 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 (44b), or may not, as in (44a), be the case in a given resultative. The sleeper, then, seems to qualify as a participant in the causing event at best only in a weak sense, a point raised in Sect. 4.

The 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.²⁴ The corpus includes a few resultatives with the result AP *awake* with the looking verb *stare*.

- (46) Even Charlotte had been unable to **stare her awake** as she usually did. (McGown, Jill. 2004. *Unlucky for some*, 203. New York: Ballantine)

In such examples a causer directs his or her gaze at a sleeper, who senses the gaze and awakes. Further, web searches reveals a few resultatives with the result AP *awake* with light emission verbs (e.g., *flash*, *shine*), as in (47).

- (47) My Bonamassa warning light has just **flashed me awake** ...
(<http://theafterword.co.uk/eyes-wide-open-aynsley-lister/>; accessed April 10, 2019)

²⁴I thank Cleo Condoravdi (p.c.) for asking about this extension.

They describe scenarios in which emitted light impinges on and wakes a sleeper, as in (47). Such examples are much less frequent than comparable resultatives with sound emission verbs probably because sound is more effective than light as a means of waking a sleeper. These scenarios are analogous to those discussed involving sound emission and speaking events, and it is not surprising that they too are described with nonselected NP resultatives.

A third prediction involves a scenario where the sleeper is both the causer and the one that awakes. In such a scenario a sleeper wakes him/herself through a bodily process or other activity, which although not explicitly directed at the sleeper, nevertheless disrupts sleep. In fact, the relevant actions mostly involve a single event participant. Thus, although the causer and the sleeper refer to the same person, they constitute distinct event participants. Such scenarios, too, would be expected to be expressed via nonselected NP resultatives. Indeed, a small number of such nonselected NP resultatives are attested.

- (48) a. Estelle hugged him, but . . . he squirmed down, standing by her knees as he **blinked himself awake**. (Havill, Steven F. 2008. *The fourth time is murder*, 221. New York: St. Martin's)
- b. Yarborough was 'a biblio-holic' and history buff who '**read himself awake** each morning'. (Gonzalez, John. 1996 Hundreds mourn Yarborough. *The Fort Worth Star-Telegram*, January 31, Texas Section, p. 17)

The hallmark of these resultatives is a reflexive pronoun as the postverbal NP, which indicates the coreference relation between the causer and sleeper.²⁵

In some of the attested examples sleepers wake themselves through a bodily process, as in (48a); 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 (48b). Concomitantly, the examples involve verbs describing bodily processes whose occurrence may cause a sleeper to wake up, as in (49a), as well as other activities, including screaming or shouting, that someone might involuntarily engage in when sleeping — say, due to a nightmare — that bring back a state of wakefulness, as in (49b).

- (49) a. blink, cough, puff, snort, stretch, . . .
- b. read, scream, shout, . . .

As with the second prediction, almost all the relevant verbs are intransitive, and to the extent they allow an object, it is a cognate object (e.g., *blink a little blink*, *cough a loud cough*) or denotes a sound or speech (e.g., the content of the communication, *shout an answer*).

²⁵Nonselected NP resultatives with reflexive pronouns as the postverbal NP have received special attention because some early researchers took the pronouns simply to have a syntactic function: they allow a result phrase to be predicated of the subject, allowing the Direct Object Restriction — the generalization that result phrases must be predicated of (underlying) objects (Simpson 1983:145, Levin and Rappaport Hovav 1995) — to be satisfied. However, on most accounts, including the one outlined here, the reflexive pronoun and the subject are taken to instantiate distinct event participants, even though their referents are the same.

Again, the sleeper is not the object of these verbs; rather, there is often an understood entity — the sound or cognate object — which impinges on the sleeper, just as it does in examples falling under the second prediction.

To conclude this section, both selected and nonselected NP resultatives with the result AP *awake* maintain tight relations between the causing and caused events, either via direct physical manipulation of the holder of the result state or some other more abstract type of impingement on this entity.

7 The Significance of Unavailable Interpretations of Resultative Constructions

In perusing the verb–AP combinations in the corpus, it becomes evident that there are certain scenarios that they are not used to describe. Specifically, certain verb–AP combinations are found with a selected NP resultative interpretation, but are not attested with certain potential 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 causers, 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 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 a few combinations which are found in both. One such combination is *rub–raw*. This combination receives a selected NP interpretation in (50) and a nonselected NP interpretation in (51).

- (50) The salt [in the ocean water] **rubbed their feet raw**. (Alvarez, Lizette. 2014. For Cubans in Miami, the gulf to their homeland narrows. *The New York Times*, December 21, p. 21)
- (51) ... the author had **rubbed her hands raw** while scrubbing the hems of her older sisters' long dresses ... (Hill, Marion Moore. 2008. *Death books a return*, 238. Corona del Mar, CA: Pemberley Press)

In (50), the water directly rubs some people's feet causing their rawness. In (51) the author is scrubbing — and, thus, rubbing — the dresses with her hands, 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 resultatives of the form '*kick NP open/closed/shut*' all

receive a selected NP interpretation.²⁶ That is, (52) is understood as ‘Sam makes contact with the door with his foot, causing it to open’. On this interpretation a causer directly comes into contact with the entity denoted by the postverbal NP using a body part.

(52) Sam kicked the door open.

Resultatives of the form ‘kick NP *open/closed/shut*’ are never attested with a nonselected NP interpretation. For instance, (52) 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.²⁷

I propose that the relevant interpretation of (52) 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 causer 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 16) — 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.²⁸

- (53) a. What the ball did was break the window.
b. What Cameron/the wind/the crane did was break the window.

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

- (54) a. The ball broke the window.
b. Cameron/the wind/the crane broke the window.

²⁶I am assuming that there is a transitive use of *kick*, as in *The horse kicked the groom*, as well as an intransitive use, as in *The horse kicked* (e.g., moved its leg in a particular fashion) and that the examples relevant in this section involve transitive *kick*.

²⁷The resultative *shoot NP 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 (52) 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 (52).

²⁸DeLancey (1984:203) uses the example *The axe broke the window* to show that a facilitating instrument is 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.

As a second example, consider (55), 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 (55): ‘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.

(55) Tracy pushed the door open.

Once again, the missing interpretation involves an intervening causer. 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 (56).

- (56) a. What the red button did was open the door.
b. The red button opened the door.

It is worth noting that the missing interpretations discussed in this section are qualitatively different from the missing interpretation of Kratzer’s (2005:196) example *They drank the teapot empty*, discussed in Sect. 5.3. Kratzer’s example lacks an interpretation not because the unexpressed argument is an intervening causer, 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 conclusions from non-occurring data and intuitions about unavailable interpretations, but I believe that these lacunae are real. Interestingly, the missing interpretations involve an intervening causer. The absence of resultatives with such interpretations, then, supports proposals that the tightness condition includes a no-intervening-cause condition. Including such a condition 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

In the introduction I asked: What is the best way to characterize the causative relation between the causing and caused events described by a resultative? Returning to this question, a goal of this paper was homing in on the relation between the subevents in selected and nonselected NP resultatives in order to gain insight into the tightness condition on concealed causatives, and, thus, into the nature of causation as it matters to language. A related question under consideration was: How are the causing and caused events able to be integrated into a resultative when the postverbal NP is not selected by the verb representing the causing event? This question arises because the relation between the causing and caused events might seem to be looser precisely because of the lack of selection. I now review what the case studies revealed before presenting some more general 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 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 — or facilitating — instrument) and, thus, no ‘intervening causer’ (let alone, an ‘intervening event’ introduced by this causer): the causer directly affects the entity denoted by the postverbal NP, bringing about the result state. Thus, in such resultatives the tightness between the subevents falls under the most prototypical understanding of direct causation as manipulation of a physical object by a causer 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. This may happen in several ways, 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 (57) the understood entity, tea, is contained in the entity denoted by the postverbal NP, while in (58) the understood entity, the bed, contains the entity denoted by the postverbal NP.

(57) Having ... **drunk the teapot dry** ... (Dark, Eleanor. 1986 [1959]. *Lantana Lane*, 94. London: Virago)

(58) ‘Before you go, **crank me flat.**’ (Roberts, Lillian M. 1998. *Almost human*, 17. New York: Ballantine)

Such actions typically involve physical manipulation of this understood entity, and, concomitantly, the verb denotes such an action. Due to their contiguity, when the causer acts on the understood entity, the causer also acts 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, and, concomitantly, the verbs involved are verbs of substance, light, or sound emission, manner of speaking, or looking. There is again an understood entity: the emitted sound, speech, light, or gaze which impinges on the entity denoted by the postverbal NP.

(59) He had set an alarm, which rang at five thirty the following morning, **shrilling them both awake.** (Pilcher, Rosamunde. 1984. *Voices in summer*, 116. New York:

St. Martin's)

More generally, there is abstract 'contact' between the understood entity and the entity that changes state. However, despite this impingement it is not always clear whether the entity denoted by the postverbal NP truly qualifies as a participant in the causing event.

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' (or introduce an intervening event) since it does not have any internal energy source of its own (Wolff et al. 2010). Thus, despite the nonselected NP such resultatives satisfy the tightness condition, including meeting previously proposed direct causation conditions.

8.3 Back to Causation

This study has explored transitive resultatives 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 both selected and nonselected NP resultatives. Intervening causers disrupt tightness. Physical manipulation of event participants falls under tightness, as do some other contiguity relations between event participants; these are relevant to certain resultatives with the result APs *dry*, *empty*, *flat*, and *full*. The case studies further show that more abstract relations that seem to be generalizations of these notions matter as well, such as the 'impingement' or abstract 'contact' relevant to certain resultatives with the result AP *awake*.

However, these generalizations are largely based on case studies of transitive resultatives whose result APs are headed by *awake* or *dry*. Thus, it is imperative to carry out studies of a wider range of result phrases to confirm the generalizability of these points. Preliminary case studies of another half-dozen common result APs suggest that they are. However, the observed relations may in part reflect the focus both here and in these additional studies on resultatives whose result phrases describe physically instantiated states. Although the paper's conclusions should extend to result phrases that describe purely mental states, other more abstract relations may be at play. Further, resultatives with PP result phrases were set aside to limit the scope of the investigation. The insights that emerged from this study of resultatives with AP result phrases should carry over to resultatives with PP result phrases, and this expectation too awaits future confirmation.

Despite these limitations, this paper shows that an in-depth examination of the make-up of transitive resultatives has much to tell us about the nature of the causative relations between events that are linguistically privileged, and, for this reason, most likely also relevant to non-linguistic forms of reasoning. Future fine-grained studies that address this study's limitations should illuminate the nature of causation even further.

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References

- Alexiadou, Artemis, Elena Anagnostopoulou, and Florian Schäfer. 2015. *External arguments in transitivity alternations*. Oxford: Oxford University Press.
- Alexiadou, Artemis, Fabienne Martin, and Florian Schäfer. 2017. Optionally causative manner verbs: when implied results get entailed. Handout. Roots V. Queen Mary University of London/University College London.
- Apresjan, Jurij D. 1973. Regular polysemy. *Linguistics* 142:5–32.
- Beavers, John. 2017. The spray/load alternation. In *The Wiley Blackwell companion to syntax*, eds. Martin Everaert and Henk C. van Riemsdijk. 2nd edn. Oxford: Blackwell. <https://doi.org/10.1002/9781118358733.wbsyncom066>.
- Bittner, Maria. 1999. Concealed causatives. *Natural Language Semantics* 7:1–78.
- Brisson, Christine. 1994. The licensing of unexpressed objects in English verbs. In *Papers from the 30th Regional Meeting of the Chicago Linguistic Society (CLS)*. Part 1: *The main session*, 90–102. Chicago: Chicago Linguistic Society.
- Carrier, Jill, and Janet H. Randall. 1993. Lexical mapping. In *Knowledge and language*. Vol. II: *Lexical and conceptual structure*, eds. Eric Reuland and Werner Abraham, 119–142. Dordrecht: Kluwer.
- Chierchia, Gennaro. 2004. A semantics for unaccusatives and its syntactic consequences. In *The unaccusativity puzzle: explorations of the syntax-lexicon interface*, eds. Artemis Alexiadou, Elena Anagnostopoulou, and Martin Everaert, 22–59. Oxford: Oxford University Press.
- Croft, William A. 1991. *Syntactic categories and grammatical relations*. Chicago: University of Chicago Press.
- Cruse, D.A. 1973. Some thoughts on agentivity. *Journal of Linguistics* 9:11–23.
- DeLancey, Scott. 1984. Notes on agentivity and causation. *Studies in Language* 8:181–213.
- den Dikken, Marcel, and Eric Hoekstra. 1994. No cause for a small clause? (Non-)arguments for the structure of resultatives. *Groninger Arbeiter zur Germanistischen Linguistik* 37:89–105.
- Dowty, David R. 1979. *Word meaning and Montague Grammar*. Dordrecht: Reidel.
- Feist, Michele I. 2004. Talking about space: a cross-linguistic perspective. In *Proceedings of the Twenty-Sixth Annual Conference of the Cognitive Science Society*, eds. Kenneth D. Forbus, Dedre Gentner, and Terry Regier, 375–380. Mahwah, NJ: Lawrence Erlbaum.
- Feist, Michele I. 2008. Space between languages. *Cognitive Science* 32:1177–1199.
- Fodor, Jerry A. 1970. Three reasons for not deriving *kill* from *cause to die*. *Linguistic Inquiry* 1:429–438.
- Goldberg, Adele E. 1991. It can't go up the chimney down: paths and the English resultative. In *Proceedings of the 17th Annual Meeting of the Berkeley Linguistics Society (BLS)*, 368–378. Berkeley: Berkeley Linguistics Society.
- Goldberg, Adele E. 1995. *Constructions: a Construction Grammar approach to argument structure*. Chicago: University of Chicago Press, IL.
- Goldberg, Adele E., and Ray Jackendoff. 2004. The English resultative as a family of constructions. *Language* 80:532–568.
- Grône, Maryse. 2014. *Les résultatives de l'anglais: une étude de leur syntaxe et de leur productivité à l'aune de la sémantique lexicale et de la pragmatique*. Ph.D. thesis, Uni-

- versité Paris Diderot—Paris 7.
- Hall [Partee], Barbara. 1965. *Subject and object in English*. Ph.D. thesis, MIT, Cambridge, MA.
- Hay, Jennifer, Christopher Kennedy, and Beth Levin. 1999. Scalar structure underlies telicity in ‘degree achievements’. In *Proceedings of Semantics and Linguistic Theory (SALT) 9*, 127–144. Ithaca, NY: Cornell Linguistics Circle Publications.
- Hoekstra, Teun. 1988. Small clause results. *Lingua* 74:101–139.
- Hoekstra, Teun. 1992a. Aspect and theta theory. *Thematic structure: its role in grammar*, ed. Ignacio M. Roca, 145–174. Berlin: Mouton de Gruyter.
- Hoekstra, Teun. 1992b. Small clause theory. *Belgian Journal of Linguistics* 7:125–151.
- Hoekstra, Teun. 1992c. Subjects inside out. *Revue Québécoise de Linguistique* 22:45–75.
- Iwata, Seizi. 2014. Aspect and force dynamics: which is more essential to resultatives? *English Linguistics* 31:234–263.
- Jackendoff, Ray S. 1990. *Semantic structures*. Cambridge, MA: MIT Press.
- Kaufmann, Ingrid, and Dieter Wunderlich. 1998. Cross-linguistic patterns of resultatives. Ms. University of Düsseldorf.
- Kearns, Kate. 2000. *Semantics*. New York: St. Martin’s.
- Kennedy, Christopher. 2007. Vagueness and grammar: the semantics of relative and absolute gradable predicates. *Linguistics and Philosophy* 30:1–45.
- Kennedy, Christopher, and Beth Levin. 2008. Measure of change: the adjectival core of verbs of variable telicity. In *Adjectives and adverbs in semantics and discourse*, eds. Louise McNally and Christopher Kennedy, 156–182. Oxford: Oxford University Press.
- Koontz-Garboden, Andrew. 2009. Anticausativization. *Natural Language and Linguistic Theory* 27:77–138.
- Kratzer, Angelika. 2005. Building resultatives. In *Event arguments: foundations and Applications*, eds. C. Maienborn and A. Wöllstein, 177–212. Tübingen: Niemeyer.
- Lasnik, Peter. 1999. Pragmatic halos. *Language* 75:522–551.
- Levin, Beth. 1993. *English verb classes and alternations: a preliminary investigation*. University of Chicago Press, Chicago, IL.
- Levin, Beth. 1999. Objecthood: an event structure perspective. In *Proceedings of the 35th Annual Meeting of the Chicago Linguistic Society (CLS)*. Part 1: *The main session*, 223–247. Chicago: Chicago Linguistic Society.
- Levin, Beth. 2015. The puzzle of nonselected NP resultatives. Handout. Linguistics Colloquium, University of California, Berkeley.
- Levin, Beth, and Malka Rappaport Hovav. 1991. Wiping the slate clean: a lexical semantic exploration. *Cognition* 41:123–151.
- Levin, Beth, and Malka Rappaport Hovav. 1995. *Unaccusativity: at the syntax-lexical semantics interface*. Cambridge, MA: MIT Press.
- Levin, Beth, and Malka Rappaport Hovav. 1999. Two structures for compositionally derived events. *Proceedings of SALT 9*:199–223.
- Levin, Beth, and Malka Rappaport Hovav. 2013. Lexicalized meaning and manner/result complementarity. In *Studies in the composition and decomposition of event predicates*, eds. Boban Arsenijević, Berit Gehrke, and Rafael Marín, 49–70. Dordrecht: Springer.
- Levin, Beth, and Malka Rappaport Hovav. 2014. Manner and result: a view from *clean*. In *Language description informed by theory*, eds. Rob Pensalfini, Myfany Turpin, and

- Diana Guillemin, 337–357. Amsterdam: John Benjamins.
- Levinson, Stephen, Sérgio Meira, and The Language and Cognition Group. 2003. ‘Natural concepts’ in the spatial topological domain — adpositional meanings in crosslinguistic perspective: an exercise in semantic typology. *Language* 79:485–516.
- Lewis, David. 1973. Causation. *The Journal of Philosophy* 70:556–567.
- Marantz, Alec P. 1984. *On the nature of grammatical relations*. Cambridge, MA: MIT Press.
- Martin, Fabienne. 2018. Time in probabilistic causation: direct vs. indirect uses of lexical causative verbs. In *Proceedings of Sinn und Bedeutung (SuB) 22*. Vol. 2, eds. Uli Sauerland and Stephanie Solt, 107–124. <https://semanticsarchive.net/sub2018>.
- Mateu, Jaume. 2010. On the I-syntax of manner and causation. In *Argument structure and syntactic relations: A cross-linguistic perspective*, eds. Maia Duguine, Susana Huidobro, Nerea Madariaga, 89–112. Amsterdam: John Benjamins.
- McCawley, James D. 1968. Lexical insertion in a transformational grammar without deep structure. In *Proceedings of the 4th Annual Meeting of the Chicago Linguistic Society (CLS)*, 71–80. Chicago: Chicago Linguistic Society.
- McCawley, James D. 1971. Prelexical syntax. In *Report of the 22nd Annual Roundtable Meeting on Linguistics and Language Studies*, ed. Richard J. O’Brien, 19–33. Washington DC: Georgetown University Press.
- McCawley, James D. 1978. Conversational implicature and the lexicon. *Syntax and semantics 9: pragmatics*, ed. P. Cole, 245–259. New York: Academic Press.
- McIntyre, Andrew. 2004. Event paths, conflation, argument structure, and VP shells. *Linguistics* 42:523–571.
- McKercher, David A. 2001. The polysemy of *with* in first language acquisition. Ph.D. thesis, Stanford University, Stanford, CA.
- Neeleman, Ad, and Hans van de Koot. 2012. The linguistic expression of causation. In *The Theta System: argument structure at the interface*, eds. Martin Everaert, Marijana Marelj, and Tal Siloni, 20–51. Oxford: Oxford University Press.
- Ono, Naoyuki. 1992. Instruments: a case study of the interface between syntax and lexical semantics. *English Linguistics* 9:196–222.
- Ostler, Nicholas D.M., and Beryl T.S. Atkins. 1992. Predictable meaning shift: some linguistic properties of lexical implication rules. In *Lexical semantics and knowledge representation*, eds. James Pustejovsky and Sabine Bergler, 87–100. Berlin: Springer.
- Parsons, Terence. 1990. *Events in the semantics of English*. Cambridge, MA: MIT Press.
- Pinker, Steven. 1989. *Learnability and cognition: the acquisition of argument structure*. Cambridge, MA: MIT Press.
- Pustejovsky, James. 1991. The syntax of event structure. *Cognition* 41:47–81.
- Rappaport Hovav, Malka. 2008. Lexicalized meaning and the internal temporal structure of events. In *Crosslinguistic and theoretical approaches to the semantics of aspect*, ed. Susan Rothstein, 13–42. Amsterdam: John Benjamins.
- Rappaport Hovav, Malka. 2014. Lexical content and context: the causative alternation in English revisited. *Lingua* 141:8–29.
- Rappaport Hovav, Malka, and Beth Levin. 1998. Building verb meanings. In *The projection of arguments: lexical and compositional factors*, eds. Miriam Butt and Wilhelm Geuder, 97–134. Stanford, CA: CSLI Publications.

- Rappaport Hovav, Malka, and Beth Levin. 2001. An event structure account of English resultatives. *Language* 77:766–797.
- Rappaport Hovav, Malka, and Beth Levin. 2010. Reflections on manner/result complementarity. In *Syntax, lexical semantics, and event structure*, eds. Malka Rappaport Hovav, Edit Doron, and Ivy Sichel, 21–38. Oxford: Oxford University Press.
- Rappaport Hovav, Malka, and Beth Levin. 2012. Lexicon uniformity and verbal polysemy. In *The Theta System: argument structure at the interface*, eds. Martin Everaert, Marijana Marelj, and Tal Siloni, 150–176. Oxford: Oxford University Press.
- Reinhart, Tanya. 2002. The Theta System — an overview. *Theoretical Linguistics* 28:229–290.
- Sato, Hiroaki. 1987. Resultative attributes and GB principles. *English Linguistics* 4:91–106.
- Shibatani, Masayoshi. 1976a. Causativization. In *Syntax and semantics 5: Japanese generative grammar*, ed. Masayoshi Shibatani, 239–292. New York: Academic Press.
- Shibatani, Masayoshi. 1976b. The grammar of causative constructions: a conspectus. In *Syntax and semantics 6: the grammar of causative constructions*, ed. Masayoshi Shibatani, 1–40. New York: Academic Press.
- Simpson, Jane. 1983. Resultatives. In *Papers in Lexical-Functional Grammar*, eds. Lorraine Levin, Malka Rappaport, and Annie Zaenen, 143–157. Bloomington: Indiana University Linguistics Club.
- Smith, Carlota S. 1970. Jespersen’s ‘move and change’ class and causative verbs in English. In *Linguistic and literary studies in honor of Archibald A. Hill*. Vol. 2, *Descriptive linguistics*, eds. Mohammed Ali Jazayery, Edgar C. Polomé, and Werner Winter, 101–109. The Hague: Mouton.
- Talmy, Leonard. 1976. Semantic causative types. In *Syntax and semantics 6: the grammar of causative constructions*, ed. Masayoshi Shibatani, 43–116. New York: Academic Press.
- Talmy, Leonard. 2000. *Towards a cognitive semantics*. Vol. I, *Concept structuring systems*. Cambridge, MA: MIT Press.
- Tenny, Carol L. 1987. *Grammaticalizing aspect and affectedness*. Ph.D. thesis, MIT, Cambridge, MA.
- Tenny, Carol L. 1994. *Aspectual roles and the syntax-semantics interface*. Dordrecht: Kluwer.
- Van Valin, Robert D., and David P. Wilkins. 1996. The case for ‘effector’: case roles, agents, and agency revisited. In *Grammatical constructions*, eds. Masayoshi Shibatani and Sandra A. Thompson, 289–322. Oxford: Clarendon Press.
- Waltereit, Richard. 1999. Grammatical constraints on metonymy: on the role of the direct object. In *Metonymy in language and thought*, eds. Klaus-Uwe Panther and Günter Radden, 233–255. Amsterdam: John Benjamins.
- Wechsler, Stephen. 1997. Resultative predicates and control. In *Texas Linguistic Forum 38: the syntax and semantics of predication*, 307–321. Austin: Department of Linguistics, University of Texas.
- Wechsler, Stephen. 2005. Resultatives under the ‘event-argument homomorphism’ model of telicity. In *The syntax of aspect*, eds. Nomi Erteschik-Shir and Tova Rapoport, 255–273. Oxford: Oxford University Press.

- Wechsler, Stephen. 2012. Resultatives and the problem of exceptions. In *Issues in English linguistics*, eds. Ik-Hwan Lee et al., 119–131. Seoul: Hankookmunhwasa.
- Wojcik, Richard. 1976. Where do instrumental NPs come from? In *Syntax and semantics 6: the grammar of causative constructions*, eds. Masayoshi Shibatani, 165–180. New York: Academic Press.
- Wolff, Phillip. 2003. Direct causation in the linguistic coding and individuation of causal events. *Cognition* 88:1–48.
- Wolff, Phillip, Ga-hyun Jeon, Bianca Klettke, and Yu Li. 2010. Force creation and possible causers across languages. In *Words and the mind: how words capture human experience*, eds. Barbara Malt and Phillip Wolff, 93–111. Oxford: Oxford University Press.