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# Causal clauses as source of sentential complementation: cross-linguistic evidence and methodological issues

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**Abstract:** In many languages, causal clause markers can also function as – or are formally identical to – complement markers (e.g., Bulgarian *če*, Twi *se*, or Latin *quod*). This isomorphism is often explained as the result of independent developments from a common source (interrogatives, relativizers, etc.). By contrast, it is also frequently accepted that in some cases the aforementioned identity originates in a type of structural change by which causal clauses are eventually reanalysed as factive complements. However, the nature of the proposed CAUSE > COMPLEMENT development, involving both semantic adjustments and syntactic integration, is not yet fully understood, and it remains unclear how recurrent this phenomenon might be from a cross-linguistic perspective. This article aims to shed light on these questions by analysing diachronic and cross-linguistic data and assessing some of the evidence given for the development of complementation from causal adverbial clauses. The observations reveal significant documentation gaps for postulated models of the emergence of complement clauses and highlight methodological issues that qualify previous explanations about the diachronic relationship between causal and complement clauses.

**Keywords:** complementation; causal clause; syntactic change; reanalysis; grammaticalization

## 1 Background

Complement clause markers can show synchronic identity with causal adverbializers.<sup>1</sup> One example is Modern Hebrew *ki*, a subordinator whose versatility can even result in “ambiguity” (Zuckermann 2006: 81).<sup>2</sup>

- (1) Modern Hebrew
- |                    |           |             |                 |           |           |
|--------------------|-----------|-------------|-----------------|-----------|-----------|
| <i>hevánti</i>     | <i>ki</i> | <i>kvar</i> | <i>hisbíru</i>  | <i>et</i> | <i>ze</i> |
| understand.PST.1SG | <i>ki</i> | already     | explain.PST.3PL | ACC       | DEM       |
- ‘I understood **that** it has already been explained.’/‘I understood **because** it has already been explained.’ (Zuckermann 2006: 81)

While causal-complement isomorphism often has an explanation in common developments from sources such as interrogatives or relativizers (see, e.g., Givón 2015: 250; Kehayov and Boye 2016: 870), Hebrew complementizer *ki* has been argued to derive “from *kī* ‘because’” (Zuckermann 2006: 81). A similar CAUSE > COMPLEMENT development has been suggested for other languages. However, important questions about this type of language change remain unanswered:

- How does the CAUSE > COMPLEMENT process operate? What evidence can we find?
- How recurrent is this process assumed to be in cross-linguistic perspective?

1 The terms “complementation” and “complement” will refer to sentential complementation and complement clause, respectively.

2 Examples follow the Leipzig Glossing Rules. Abbreviations used: 1/2/3 first/second/third person; ACC accusative; AUX auxiliary; BH Biblical Hebrew; CAU causative; COMP complementizer; DEM demonstrative; DU dual; LOC locative; NEG negative; NOML nominalizer; OAKK Old Akkadian; OB Old Babylonian; PL plural; PST past; Q question marker; SG singular; SUBR subordinative marker.

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Dixon and Aikhenvald (2006) cross-linguistic analysis of complementation includes 12 case studies, two of which explicitly assume a CAUSE > COMPLEMENT diachronic process (Deutscher 2006; Zuckermann 2006). This may lead us to expect it to be a recurrent phenomenon. By contrast, CAUSE > COMPLEMENT does not feature in cross-linguistic works such as Kuteva et al. (2019) or Boye and Kehayov (2016) and is only sporadically assumed in Schmidtke-Bode (2014). This tacitly points to a different expectation.<sup>3</sup>

- Two scenarios of CAUSE > COMPLEMENT reanalysis or grammaticalization are often cited in the literature:
- (1) Givón (1991) suggests some possible routes explaining the emergence of complementation in Hebrew. One of them, the “*because-factive*” analogical pathway, hypothesizes a morphological transfer from original relative clauses to complements through “*because-adverb-clauses*”. This is explained in the context of factive/presuppositional predicates (e.g., *be happy, regret*). In this scenario, the state or event coded in the complement (e.g., *He’s happy that she’s here*) is also the cause of the state or event coded by the matrix clause (e.g., *He’s happy because she’s here*) (Givón 1991: 296). A similar explanation has been proposed for the rise of the Modern Greek complementizer *που* (*pu*) (Nicholas 1998) and Latin *quod* (Deutscher 2000: 62). From there, complementation has been argued to spread to other types of complement-taking predicates.
  - (2) Deutscher (2000) on the other hand, argues that the Akkadian historical record documents the emergence of complementation through the direct reinterpretation of causal clauses in the “bridging” context of speech-related verbs:

*He [spoke to/wrote to/said to/informed] the governor kīma (=because/that) the barley was not collected.* (Deutscher 2000: 42)

This scenario also relies on factive predicates, but it assumes that the complement-taking predicates involved in the reanalysis are speech-related verbs, rather than emotional predicates. Furthermore, it does not presume the process to follow from a morphological transfer from original relative clauses.

The cross-linguistic study of the diachronic relationship between causal and complement clauses is severely limited by the pervasive lack of diachronic data (cf. Schmidtke-Bode 2014: 243–244), often limiting historical syntax studies to interlanguage historical comparative analysis (Ferraresi and Goldbach 2008: 24). The available diachronic record is usually insufficient to provide information about aspects like prosodic integration, differences between oral and written registers (cf. Diessel and Hetterle 2011) or pragmatic nuances that could be relevant for the categorization of clauses as embedded arguments or adjuncts (Lehmann 1988).

Nevertheless, historical records can provide informative data about the characteristics and evolution of causal and complement structures (Cristofaro 2003, 2014), particularly if we can control for aspects like the relative frequency and distribution of attested complement-taking predicates (Schmidtke-Bode 2014: Ch. 7) or the characteristics of the textual evidence and their sociolinguistic environment.

In Section 2, I will present a collection of claims and suggestions for CAUSE > COMPLEMENT processes found in the literature, focusing on ancient Indo-European languages (2.1), Semitic languages (2.2), other examples (2.3), and emotional predicates (2.4). Some relevant observations will be then discussed in Section 3. The conclusions in Section 4 summarize the diachronic and cross-linguistic evidence for CAUSE > COMPLEMENT claims and its challenges.

## 2 Cross-linguistic observations

References to CAUSE > COMPLEMENT processes were sought in a varied array of publications, many of which appear as bibliographical references in wide cross-linguistic works such as Dixon and Aikhenvald (2006), Kuteva et al. (2019), Noonan (2007), and especially Schmidtke-Bode (2014), a study based on a large dataset of

<sup>3</sup> Interestingly, Kehayov and Boye (2016: 874) conclude (for European languages): “although ... semantically neutral complementizers are very often identical in form with adverbializers of purpose and reason, such adverbializers are missing from the list of their diachronic sources”.

**Table 1:** References to possible CAUSE > COMPLEMENTATION developments.

Language	Causal/complement marker	Key references
Latin (Indo-European)	<i>quod, quia, quoniam</i>	<i>quod</i> : Deutscher (2000: 62–63); <i>quia</i> : Hofmann and Szantyr (1972: 584–588), and many others; <i>quoniam</i> : Sznajder (2019: 174–196)
Hittite (Indo-European)	<i>kuit</i>	Deutscher (2000: 62–63)
Modern Greek (Indo-European)	που ( <i>pu</i> )	Nicholas (1998: 460)
Akkadian (Semitic)	<i>kī/kīma</i>	Deutscher (2000: Ch. 4)
Hebrew (Semitic)	<i>’asher/she, kī</i>	Givón (1991: 301); specifically <i>kī</i> : Zuckermann (2006: 81)
Ugaritic (Semitic)	<i>kī</i>	Deutscher (2000: 63–64)
Ancient Aramaic (Semitic)	<i>kī</i>	Deutscher (2000: 63–64)
Hausa (Chadic)	<i>dà</i>	Schmidtke-Bode (2014: 262)
Moksha Mordvin (Uralic)	<i>mes</i>	Kholodilova (2018: 664–665)
Jamiltepec Mixtec (Otomanguean)	<i>vátyí/tyí</i>	Johnson (1988: 36); Schmidtke-Bode (2014: 179)
Epena Pedee (Chocoan)	<i>pérã</i>	Schmidtke-Bode (2014: 178–179)

complementation patterns. These claims or suggestions, which are summarized in Table 1, cover many geographical areas and linguistic genealogies. The clustering of Semitic and Indo-European cases correlates with the wealth of studies and diachronic data on these languages.

## 2.1 Ancient Indo-European

The common evolution of Indo-European relatives into later polyfunctional subordinate markers (such as Latin *quod* and *quia*, Hittite *kuit*, Greek ὡς [*hōs*] and ὅτι [*hótī*]) has been extensively studied. However, there are still details regarding the early stages of the languages that remain to be fully understood (Cuzzolin 2013: 56), including the role of causal markers as source of complementizers.

Deutscher (2000) draws a parallelism between the purported emergence of the Akkadian complementizer *kīma* and both Hittite *kuit* and Latin *quod*. Noting that early uses of *quod* as complementizer appear in emotional predicates, a development is suggested that begins in “contexts where a *clear causal* element is present, and from there extends to verbs such as ‘know’, where this causal undertone is no longer plausible” (Deutscher 2000: 63; my emphasis). Hoffner and Melchert’s (2008: 415) grammar of Hittite does not articulate a CAUSE > COMPLEMENT development but does present *kuit* as being causal in Old Hittite and appearing only later as complementizer, which can lead to similar conclusions.

Against this view, a direct development of complementizer *kuit* from (cor)relative constructions is widely accepted (Justus 1980; Lühr 2008). This idea is supported by the fact that the causal status of *kuit* clauses in the oldest recorded stages of Hittite is not well established (Luraghi and Inglese 2018: 261): detailed analyses show that causal *kuit* “did not yet exist” in Old Hittite (Goedegebuure 2017: 9), being rather an element introducing epexegetical clauses (i.e., clauses providing further explanation) in respect to the preceding context (Inglese 2016: 111–112). The CAUSE > COMPLEMENT process therefore lacks convincing diachronic evidence in Hittite.

The general subordinating use of Latin *quod* is also believed to have a correlative diptych structure as source (Cuzzolin 2013: 55). The first attested examples of *quod* as a complementizer occur mostly with emotional predicates, but as early as the time of Plautus we find them with verbs of knowing (Plautus, *Asinaria*, 52). The RELATIVE > CAUSE > EMOTIONAL COMPLEMENT inference is problematic: similar to Hittite *kuit*, early *quod* “[as conjunction] is neither unambiguously nor explicitly causal” (Baños 2011: 206), and its different functions can be traced back to a common (cor)relative source. This contrasts with *quia*, which is undoubtedly causal and commonly found in Early Latin. If an incipient CAUSE > COMPLEMENT development in early stages of Latin

was to be assumed from contexts with a *clear* causal overtone, one would expect *quia* clauses to participate in the change. Furthermore, early *quod* clauses in emotional predicate environments occur in competition with the more frequent (and unequivocally non-causal) accusative-and-infinitive complements (Pinkster 2021: 161), a situation that mirrors the later competition and the eventual spread of *quod* clauses in non-factive environments (*dicere quod*). This second development of *quod* complementation is believed to stem directly from (cor)relative constructions (Crespo 1997: 339; Cuzzolin 2013: 57; Hofmann and Szantyr 1972: 574; Palmer 1988: 334) or from the earlier *quod* clauses in factive/emotional predicate contexts, already considered complements rather than causal adjuncts (Danckaert 2022). In any case, the evidence neither supports “a clear causal element” for earlier *quod* complements nor for the later finite complementation of non-factive complement-taking predicates, and a grammaticalization or reanalysis from an unexplicit and not yet fully fledged CAUSE function seems more problematic than from a well-established relative one.

Latin *quia* has a different story (Cuzzolin 2013). As mentioned before, in Early and Classical Latin *quia* is “an unambiguous and exclusively causal conjunction” (Baños 2011: 206). A possible complementizer function in emotional predicate environments is regarded as “exceptional” (Baños 2011: 219) and it normally receives a causal interpretation; its role as complementizer develops later, converging with the functional distribution of *quod* in Late Latin. Eventually, *quia* is also the source of some Romance complementizers like Romanian *ca* (*să*) (Coteanu et al. 1998: 123) and southern Italian *ca* or *ka* (Vincent 2020). However, while *quia* does indeed move from marking causal clauses to marking complements too, the process does not rely clearly on reanalysis or grammaticalization based on internal ambiguity between causal and factual readings in specific contexts. The convergence with an already polyfunctional causal/complement marker *quod* seems a more plausible explanation, although the role of contact with other languages should also be considered.<sup>4</sup> According to Cuzzolin (2013: 51), sociolinguistic cues suggest that the development of complementizer *quia* was the result of Greek influence. Calboli (2009: 140–142), in turn, proposes that the replacement of accusative-and-infinitive by *quod* clauses could have also been affected by contact with Greek, where polyfunctional causal/complement markers already existed. It should be noted that, although Greek  $\omega\varsigma$  (*hōs*) bears close similarities with *quod*, Cristofaro (1998: 72) and Monteil (1963: 358–360) hypothesize a RELATIVE > COMPLEMENT > CAUSE path in which the causal tone is acquired precisely in constructions introduced by factive emotional predicates where causal readings of source complements become possible.

In conclusion, the common evolution of Indo-European relatives into later complementizers *quod*, *kuit*, and  $\omega\varsigma$  (*hōs*) does not evidence a sequentially intermediate causal stage, which can rather be seen as a parallel development from the common relative source.

## 2.2 Semitic

Although the diachronic record for the Semitic group is long, the complementizer meaning of the common Semitic *k*- markers in Table 1 is attested from the beginnings of their respective extant records. The only exception would be Akkadian, where the existence of causal *kīma* (cognate with Hebrew *kī*) is assumed to be attested in Old Akkadian (Oakk, ca. 2500–2000 BCE) whilst complementizer *kīma* allegedly emerged, and was documented, later in the Old Babylonian period (OB, ca. 2000–1500 BCE). According to Deutscher (2000: 116), this process developed as “speech-related verbs formed the bridging context in the process of semantic bleaching of the conjunction *kīma* from a causal adverbial to a factive complementizer”. However, the analysis of primary extant data does not support these assumptions (see Hernáiz 2024 for a detailed study of the data).

First, due to the small size of the Oakk (and the earliest OB) record, the assumed lack of attested complementizers cannot be significant. Whilst Deutscher (2000: 104) argues that only asyndetic parataxis (i.e., without conjunctions) is documented in Oakk for ‘know’ – the most frequent complement-taking predicate in all stages of Akkadian – the argument fails to note that this structure, in turn, is only attested on one occasion in that Oakk

<sup>4</sup> The late development of *quoniam* as complement marker in Biblical Latin can be also consider the result of convergence with *quia* (Sznajder 2019).

corpus. Indeed, the existence of *kīma* complementation in OAKk has been more recently confirmed by new evidence, seen in (2), dismissing the argument of the anteriority of causal *kīma*.

- (2) Old Akkadian  
*u anāku kīma ša'pē-ya yukall-u īda'*  
 but I COMP foot.DU-my 3SG.hold-SUBR 1SG.know  
 'But I know that he will hold my feet'  
 (Arbøll and Westenholz 2019: 157, from Kraus 2018: 3)

Furthermore, causal *kīma* is not undoubtedly attested in OAKk and it is rare in the well-documented OB period (Stola 1972; Streck 2002). Considering also that the distribution of complementizer *kīma* in a large OB corpus (see Hernáiz 2020) shows only sporadic occurrences with utterance predicates (in sharp contrast to its frequency with other complement-taking predicates), an ambiguous causal-complement bridging scenario for that period becomes unconvincing. Hernáiz (2024) shows that complementizer *kīma* is more likely to be derived from comparative manner expressions.

Thus, on the one hand, there are early examples of the complementizer use of *kīma* in Akkadian and no signs that a causal use could have predated it. On the other hand, in later OB *kīma* appears to be relatively rare both as causal marker and in speech-related complements. This makes the pathway CAUSE > COMPLEMENT doubtful in the Akkadian case; at the very least, the evidence supporting it is clearly insufficient.

The lack of documented evidence for CAUSE > COMPLEMENT in Akkadian invalidates derived assumptions about pre-documented developments of cognate *k*- complementizers in Biblical Hebrew (BH), Early Aramaic, and Ugaritic (cf. Streck 2002: 142–143). Regarding BH, although Givón (1991) hypothesizes a possible causal origin of the “because-factive blend” for both pre-biblical Hebrew *kī* complements and later *'asher/she* complements, Givón (2015: 276) reverses this scenario suggesting the opposite COMPLEMENT > CAUSE transfer for *'asher/she*, which resembles the development assumed for Ancient Greek *ὅς* (*hōs*) mentioned previously.<sup>5</sup>

### 2.3 Other languages

The purported emergence of complementation in Akkadian has also been regarded as a documented model for hypotheses about languages that lack diachronic data, such as Jamiltepec Mixtec or Epena Pedee. For the latter, Schmidtke-Bode (2014: 178–179) speculates about a possible incipient complementation pattern, suggested by (3):

- (3) Epena Pedee  
*[éperã pá-da pérã] pía ba-hi-ʔe-khá?*  
 person AUX-PST CAU good be-PST-NEG-Q  
 'Was it not good that he had become a person?'  
 (Harms 1994: 206; as glossed in Schmidtke-Bode 2014: 178)

Whilst the reference to a comparable CAUSE > COMPLEMENT process in Akkadian is no longer possible, the complement reading of (3) suggested by Harms's translation is also questionable. Mauricio Pardo Rojas (pers. comm.) considers that the *pérã* clause in (3) has indeed a causal meaning obscured by its English translation.<sup>6</sup> Since (3) is the only potential instance of *pérã* complements in Harms (1994), the CAUSE > COMPLEMENT process remains difficult to be established.

For Hausa, Schmidtke-Bode (2014: 262), building upon Abdoulaye (2008, 2009, 2011), suggests that *dà* “may have entered complementation with emotional predicates”. Abdoulaye (2008, 2009, 2011), however, focuses on the emergence of relative constructions from causal structures but does not explain whether complements developed “directly” from the causal or the *newer* relative structures. It is therefore unclear whether this could be an

<sup>5</sup> Compare COMPLEMENT > adverbial clause marker developments in Heine and Kuteva (2007: 252–254). For COMPLEMENT > CAUSE processes from ‘say’, see Güldemann (2008), Lord (1993), or Saxena (1988).

<sup>6</sup> Pardo suggests a non-overt subject (as in the affirmative counterpart ‘It was good [the situation], because he had become a person’). Schmidtke-Bode (2014: 178, 288) also flags up this possibility.

instance of an “indirect” CAUSE > RELATIVE > COMPLEMENT process. Newman’s (2000: 98) references to complementizer *dà*, for example, assume indeed that a relativizer is its source.

## 2.4 Emotional predicates

We have seen that emotional predicates have been recurrently invoked as having a pivotal role in claims for the development of complements from causal constructions in Hausa, Hebrew, and Latin. To these, we can add the following references:

- Modern Greek *που* (*pu*): “After emotives, the *pu*-complement is causal in nature, and presumably resulted from a reanalysis of causal-*pu*” (Nicholas 1998: 460, cited also in Hendery 2012: 110).
- Moksha Mordvin *mes* (‘why’): As complementizer, it is almost exclusively limited to emotional or evaluation predicates and “thank you” constructions (Kholodilova 2018: 664).

Examples of references to emotional predicates in descriptions of languages with polyfunctional cause/complement markers but no explicitly articulated CAUSE > COMPLEMENT claims are:

- Ge’ez *’asma* (‘because, that is, namely’; Leslau 2006: 43) occurs less frequently than *kama* as a complementizer but is used “after verbs expressing feelings” for indicative verbal predicates (Tropper and Hasselbach-Andee 2021: 344).
- The Amharic causal marker *sälä* is also considered to be a complementizer in Leslau’s (1995) grammar, represented by a single example ambiguously translated: “‘I’m sorry that you are ill’ (lit. ‘I grieve because you are ill’)” (Leslau 1995: 743–744).
- For Late Medieval and Early Modern Greek, Holton et al. (2019: 1919) point out that, with emotional verbs, typical causal conjunctions (*διότι* [*dióti*], *γιατί* [*giatí*], etc.) “come close to introducing complements, cf. *I am angry because/that ...*”.
- Goddard (1985: 42) illustrates the causal meaning of Yankunyjtjara’s *-nytja-la* (-NOML-LOC) almost exclusively in emotional predicate contexts.
- For Lezgian’s converb *luhun* ‘say’, Haspelmath (1993: 368) notes: “Unlike other complements marked by *luhun*, these [emotional] complements have fact meaning. The explanation for this use is probably to be found in the function of *luhun* to express causal subordinate clauses.”

The relation between these observations and potential diachronic CAUSE > COMPLEMENT developments will be discussed in the next section.

## 3 Discussion

Despite the different potential interpretations of the diachronic data, purported CAUSE > COMPLEMENT processes for Latin *quod* clauses and Hittite *kuit* clauses have served as reinforcing parallels for Akkadian (Deutscher 2000: 62). Akkadian, in turn, has suggested similar developments in related Ugaritic, Ancient Aramaic, and Hebrew *k-* markers (Deutscher 2000: 63–64), and provided a model for modern languages like Epena Pedee. At the same time, the analogical *because*-to-factive evolution of Hebrew *’asher/she* clauses hypothesized in Givón (1991) has been enhanced by an assumed equivalent development for pre-biblical *kī* clauses (Givón 1991: 298). Although Givón (2015) changes his view on this and suggests the opposite COMPLEMENT > CAUSE trajectory, the evolution of Modern Greek *που* (*pu*) in Nicholas (1998) is modelled after the earlier hypotheses in Givón (1991). Since the evidence for CAUSE > COMPLEMENT processes in all these cases is insufficient, we find that many of the claims or suggestions in Table 1 might have been influenced by a circular flow of inadequate mutual corroborations.

Obviously, the observations questioning the validity of specific claims or suggestions in Table 1 do not imply the general impossibility of CAUSE > COMPLEMENT, a process that might very well explain the polyfunctionality



of the Moksha Mordvin marker *mes* or the Jamiltepec Mixtec *váyí/tyí* (perhaps to be extended, on comparative grounds, to Coatzacoapan Mixtec causal/complementizer *tsí*; cf. Small 1990: 294).

Nevertheless, two considerations are in order. First, the diachronic extension of causal constructions into the domain of complementation is not necessarily only the output of independent reanalyses based on semantic cause-factive analogies. Latin *quia* clauses illustrate how a causal-to-complement evolution could be potentially driven by factors like convergence with other polyfunctional markers in the speakers' repertoires (which, in turn, might themselves not be the product of CAUSE > COMPLEMENT processes). The Late Latin use of *quoniam* as a complementizer is also due to an increasing convergence with *quia* (Sznajder 2019: 174), and according to Givón (2015), BH *'asher/she* mirrored the polyfunctionality of *ki*.<sup>7</sup>

The second consideration refers to the recurrent allusion to CAUSE > COMPLEMENT analogical bridges provided by the semantic ambiguity of emotional predicate environments. This explanation is absent for OB Akkadian, where verbs denoting abstract mental state are scarcely attested (Deutscher 2000: 96) or simply do not occur with finite complementation (like 'fear'). Instead, a similar bridging context was assumed for OB speech-related verbs (Deutscher 2000). The arguments against this in Section 2.2 and Hernáiz (2024) highlight the potential problem of relying on apparent cause/complement ambiguity, especially for historical doculects with insufficient documentation and no possible access to informants. As De Smet (2009) points out, surface ambiguity can transpire in retrospect as a consequence of a specific language development, rather than being its cause.

The frequent allusion to emotional predicates observed in the literature can also be explained without invoking CAUSE > COMPLEMENT or COMPLEMENT > CAUSE reanalyses: if complement and causal functions had *independent* developmental paths and the causal one resulted from sources such as temporal or relative markers (cf. Kortmann 1997), it could be the case that grammars tend to showcase causal uses in emotional contexts because they provide more canonical examples for this causal reading. For example, the causal meaning of Yankunytjatjara's polyfunctional "circumstantial ending" in Goddard (1985) might appear mentioned almost exclusively in contexts of emotional predicates because these entail less ambiguous causal/temporal/simultaneous interpretations. Similar explanations whereby emotional predicates provide semantic *meeting points* rather than *bridging contexts* between cause and complement meanings could be considered for other references in Section 2: Greek *που* (*pu*) is traditionally considered causal only in contexts of emotional predicates (Nicholas 1998: 69) but is considered temporal in clauses with the matrix predicate 'remember' (Nicholas 1998: 460). In Hausa, causal *dà* could also derive from temporal meanings (Abdoulaye 2009: 20), and Ugaritic "causal clauses, particularly, are often difficult to distinguish from temporal/circumstantial clauses" (Bordreuil and Pardee 2009: 69).

A subsequent "language-internal" extension of complementation from potentially original emotional predicate environments to other non-factive complement-taking predicates also remains uncertain for cases mentioned in Section 2. The description of complementation for Moksha Mordvin, Modern Greek (*που*), and Amharic remains mostly limited to emotional predicates. For Latin, even if *quod/quia* complements had appeared first in emotional predicate environments, their selection by other complement-taking predicates seems to rely substantially on the effects of language contact and convergence with other polyfunctional markers (*quia*) or be an independent development from (cor)relative structures (*quod*; cf. Cuzzolin 2013). Regarding independent developments, Lezgian *luhun* offers an insight that illustrates further the possibility of parallel or intertwined sources for complementation: if one conjecturally wanted to assume an original CAUSE > COMPLEMENT process in emotional predicate environments (based on the shared semantic properties mentioned in Section 2.4), a subsequent extension of complementation from emotional predicates to utterance complement-taking predicates would be rejected, as the latter surely grammaticalized directly from quotative uses (Haspelmath 1993: 367).<sup>8</sup>

The causal-complement ambiguity in contexts of emotional predicates can be problematic for cross-linguistic comparisons relying on grammar descriptions. Schmidtke-Bode's study (2014: 275) has shown the peculiarity of emotional predicates in cross-linguistic clustering of complement-taking predicate classes, and potential difficulties in distinguishing causal and complement functions in emotional contexts are often expressed in language

<sup>7</sup> Cf. Nicholas (1998: 179) on the development of polyfunctional ὁπού (*hópu*) (the antecedent of *που* [*pu*]) by analogy with ὅστις (*hóstis*).

<sup>8</sup> Note, that the cause-complement affinity is explained as "*luhun* 'say' (> complementizer) > *luhuz* 'because'" in Kuteva et al. (2019: 375).

descriptions (e.g., Harrison 2019: 287; Kholodilova 2018: 664; Pinkster 2021: 61). Different interpretations can also be found for the same phenomenon: Geez *'asma*-clauses in emotional predicate constructions are considered causal adverbial in Dillmann and Bezold (2005: 542) but complements in Tropper and Hasselbach-Andee (2021: 344). Similar ambiguity applies to the description of Greek  $\pi\omicron\upsilon$  clauses in emotional contexts (Nicholas 1998: 69 and 460). Even for English, there can be different views for examples like (4): while the clause introduced by *that* is usually recognized as a complement (Dixon 2006: 11; Noonan 2007: 127), Payne (1997: 317) considers it a reason clause (not constituting a logical argument).

- (4) English  
*We're sorry that you feel that way.*  
 (Payne 1997: 317)

The potential cross-linguistic inconsistency in describing emotional predicate constructions is not completely resolved in Dixon (2006: 20), where one of the four main criteria defining complements assumes that they “must be in O (or E) function for one or more of a set of prototypical complement-taking verbs”. Crucially, Dixon (2006) does not consider emotional predicates to be prototypical complement-taking predicates, which questions whether some cases in Table 1 in which complements are only (or mainly) realized in emotional contexts would be analysed as complements at all. Conversely, similar clauses in complement-taking environments can be considered complements in some language descriptions but disregarded as such in others.<sup>9</sup>

Interestingly, Schmidtke-Bode (2014: 22) shows that the syntactic notion of “argument”, used for categorizing clauses as complements, is less straightforward for emotional predicates. Even though specific mechanisms to code semantic or syntactic nuances can indeed exist in languages with isomorphic cause/complement markers (for example, different complementizers in Ancient Greek [Cristofaro 2008: 588–589]; valence-increasing morphemes in Mokilese [Harrison 2019: 288]), the semantic nuances that differentiate *be happy that* and *be happy because* constructions in languages like English might not necessarily be expressed or overtly coded in languages with identical markers for cause and complement, potentially obscuring further the distinction between complements and causal adverbial clauses in emotional contexts.

When it comes to diachronic studies, our data lacks reliable prosodic information, and we cannot ask informants about semantic and syntactic nuances in emotional contexts. Furthermore, the analysis of morphosyntactic integration might not always be useful, as one of the ways in which complementation might originate is through clauses with low integration with the matrix clause (Lühr 2008: 22). Whilst it could be argued that a later occurrence of complement patterns with other complement-taking predicates could prove an earlier complement status with emotional predicates, the diachronic data is often inadequate to discard alternative multicausal or interdependent developments. The causal/complement status of clauses in emotional predicate constructions might then remain ambiguous for the modern researcher, increasing the possibility of translation or anachronistic biases.

## 4 Conclusions

The goal of this paper was to collect and assess diachronic and cross-linguistic evidence for CAUSE > COMPLEMENT claims in the literature. Fourteen cause/complement constructions were found for which this process had been suggested with varying degrees of confidence.

Causal clauses may be the source of complements in Jamiltepec Mixtec and Moksha Mordvin, but more information is required to substantiate the process and reject alternative explanations. The diachronic evidence analysed for other languages, however, is mostly unconvincing.

<sup>9</sup> Note that while Kholodilova's (2018) description of Moksha Mordvin complementation include ‘thank you’ alongside complement-taking emotional predicates, Danish *tak fordi du spørger* (lit. ‘thanks for.that/because you ask’) is not usually regarded as bearing a complement resulting from a CAUSE > COMPLEMENT reanalysis (I thank Nigel Vincent for the Danish example).



Except for Latin *quia/quoniam* and derivatives, the limited size and representativeness of the earliest language records is insufficient to demonstrate the anteriority and the explicit source role of CAUSE in polyfunctional causal/complement constructions. Alternative explanations based on the cross-linguistically well-described RELATIVE > COMPLEMENT path (see, e.g., Hendery 2012; Schmidtke-Bode 2014: 248–251) have been convincingly invoked for Hittite *kuit* complements and Latin *quod* complements (Lühr 2008, among others) and for Hebrew *’asher/she* clauses (Cristofaro 1998; Givón 2015; Rubin 2005).

A significant observation is that the assessment of the Akkadian textual record, which had been confidently postulated as one of the best documented examples for the process concerned, suggests in fact a non-causal MANNER > COMPLEMENT development for *kīma* clauses (Hernáiz 2024), which opens up the possibility that this path may also be shared by cognate Semitic *k-* complementizers.

Most of the CAUSE > COMPLEMENT hypotheses analysed imply some sort of independent reanalysis based on semantic cause/factive analogies in ambiguous contexts. However, the development of complements formally identical to pre-existing causal constructions might also be driven, to some extent, by convergence with other polyfunctional cause/complement markers in the speakers’ repertoires (including those introduced via contact with other languages), as appears to be central in the evolution of Latin *quia* and *quoniam* clauses.

The study also finds that one particular CAUSE > COMPLEMENT scenario recurs in the literature: the reanalysis of causal adverbial clauses into complement arguments of emotional predicates. An opposite COMPLEMENT > CAUSE process has been alternatively suggested as responsible for this type of semantic overlap (Givón 2015 for BH; Cristofaro 1998 for Ancient Greek).<sup>10</sup> However, the more prominently causal nuance in emotional contexts of otherwise more ambiguous or loosely causal constructions might sometimes influence the perceived overlap with complements. Nevertheless, the analysis of these scenarios is often challenging, particularly for extinct languages, and a potential inconsistent categorization of these structures as either adverbial or complements in individual language descriptions should be addressed in cross-linguistic generalizations.

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<sup>10</sup> For Modern Greek *που*, note that Holton et al. (2019: 1918) show that Early Modern Greek *πού* (*pu*; already a complementizer) only typically appears in causal constructions in combination with *έσ(τ)οντας* (*és[t]ontas*; originally a gerund of the verb ‘be’): ‘it being the case that [X happens/happened]’ > ‘since’.

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