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Heritage Grammars as Checkpoints in Acquisition: A Dependent Case Theoretic Account

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This paper investigates split ergativity in Turkish-dominant heritage speakers of Kurmanji. We show that the Dependent Case Theory (Marantz 1991; Baker 2015) accounts for the variation in case patterns across the baseline and heritage varieties. We develop a model of checkpoint-based acquisition that allows the emergence of the heritage patterns in Kurmanji as natural outcomes of acquisition paths where upward and downward dependent case rules are learnt independently. This sheds light into the shift from split ergativity towards accusativity across Kurmanji dialects including the heritage variety.

1 Introduction

This paper investigates split ergativity in heritage Kurmanji spoken in Turkey in comparison with its baseline variant. Kurmanji is a split ergative language, varying between accusative and ergative alignments across different tenses. Heritage Kurmanji, on the other hand, displays a shift towards accusativity while still retaining some of the properties of split ergativity. The fundamental questions we seek to answer are as follows: 1) What case mechanism accounts for the variation in case patterns observed across the baseline and heritage variants of Kurmanji?, 2) How do the case patterns in heritage Kurmanji emerge?, and 3) What is the role of contact with Turkish, a language with accusative alignment, in the observed shift towards accusativity?

In an attempt to answer these questions, we identify the range of attested case patterns across Turkish as well as the heritage and baseline varieties of Kurmanji. We show that the Dependent Case Theory (Marantz 1991; Baker & Vinokurova 2010; Baker 2015; Baker & Bobaljik 2017; Anagnostopoulou & Sevdali 2020) accounts for all the variation in the case patterns. Using the case patterns as the targets of acquisition and the baseline dialects as the input, we develop a theory of learning that predicts a range of *learning paths*. We show that heritage dialects are *checkpoints* on some of these learning paths and they emerge naturally during the acquisition process, which is supported by monolingual acquisition data. We conclude that the heritage case patterns are the result of *divergent attainment* of the target forms and they emerge naturally as *acquisition checkpoints*. Following Putnam & Sánchez (2013), we speculate that the heritage patterns are not due to reduced input but due to reduced *intake* and the role of L2 contact might be reducing the intake, specifically production. Putnam & Sánchez (2013) define *intake* as the manipulation of input which involves interpreting, extracting, and storing the formal features of language from input.

The organization of the paper is as follows: Section 2 briefly introduces some key terminology and our assumptions about heritage languages. Section 3 presents the baseline and heritage Kurmanji facts along with some details about our methodology and data sources. Section 4 provides an account of the case patterns observed across the baseline and heritage variants in Kurmanji. Section 5 concludes the paper.

2 Heritage Languages

Recent years have seen a surge in research on heritage languages (Montrul 2002; Rothman 2009; Benmamoun et al. 2013; Montrul 2016; Scontras et al. 2015; Aalberse et al. 2019; Polinsky & Scontras 2019: a.o.). As a natural corollary of being an emergent subfield, research on heritage languages has not converged on a shared definition of what a heritage language is. In addition to the lack of a uniform definition of heritage languages, the field covers a wide range of terminology from both the generative linguistics literature as well as the language acquisition literature. The goal of this brief section is to clarify our assumptions regarding the definition of heritage languages and some relevant terminology.

Heritage languages are usually defined as the "weaker" language in unbalanced bilingualism (or multilingualism) situations where one of the languages is less dominant than the other(s) (Polinsky & Scontras 2019). While the strength of a language is not a measurable property, there are some distinctive features of heritage languages. In this paper, we adopt the definition provided by Rothman (2009).

(1)   Heritage Language
        "A language qualifies as a heritage language if it is a language spoken at home or otherwise readily available to young children, and crucially this language is not a dominant language of the larger (national) society… an individual qualifies as a heritage speaker if and only if he or she has some command of the heritage language acquired naturalistically…" (Rothman 2009: 156)

We adopt the definition in (1) because it provides the best characterization of our heritage speaker consultants for Kurmanji. Our consultants are Kurmanji-Turkish bilinguals who were born and raised in Turkey where the dominant national language as well as the language of education is Turkish. Our consultants acquired Kurmanji naturalistically and use of their heritage language is limited to communication with some of their immediate family members and neighboring peers.

Heritage languages are native languages (Kupisch & Rothman 2018) and heritage speakers of a given language are a subset of the native speakers of that language (Rothman & Treffers-Daller 2014). Although heritage speakers are native speakers of their language, their grammars often have features that distinguish them from the baseline grammar (i.e. the grammar of the primary caregivers or the input language). Following Scontras et al. (2015), we adopt the term *divergent attainment* to refer to the differences observed between the heritage and baseline speakers. We treat heritage grammars as I-languages (in the sense of Chomsky (1986)) and analyze their structure using the same methodological tools as we analyze the baseline grammars.

3 Kurmanji

In this section, we present case patterns from three Kurmanji varieties. The first variety, which we call Dialect A (Kurmanji$_A$), has a standard split ergative pattern with an accusative alignment (DIR-OBL) in the non-past environments and an ergative alignment (OBL-DIR) in the past tense environments.[1] The second variety, which we call Dialect B (Kurmanji$_B$), has an accusative alignment in the non-past environments (DIR-OBL) and a tripartite alignment in the past tense (OBL-OBL). According to the classification provided by Öpengin & Haig (2014), Kurmanji$_A$ is

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[1] DIR stands for direct case and OBL stands for oblique case. These are the traditionally used case names in the Iranian literature. From a typological point of view, the ergativity in Kurmanji does not present an atypical picture. It only concerns the morphological case alignment (and has no deeper syntactic consequences unlike what has been argued for apparently rare systems like Dyirbal (Dixon 1972)). See Haig (1998), Gündoğdu (2011), Atlamaz (2012), Akkuş (2020) among others for detailed analysis of ergativity in Kurmanji.

from the Southwestern dialect region whereas Kurmanji$_B$ is from the Northern dialect region. The Kurmanji$_A$ data we report comes from Adıyaman and the Kurmanji$_B$ data is from Muş. The shortest driving distance between the two towns is around 410 kilometers. In addition to the regional distance, the two varieties show a range of lexical, phonological, and morphological differences that has lead Öpengin & Haig (2014) to classify them as distinct dialects. For our purposes, we constrain our attention to the case marking differences between the two varieties.[2]

The third variety is the heritage variety, which we call the Dialect H (Kurmanji$_H$). Crucially, the heritage variety we report developed in the Dialect A environment but shows the case patterns of Dialect B. **Table 1** provides a summary of the case patterns across three varieties.

Dialect	non-past	past
Kurmanji$_A$	DIR − OBL	**OBL − DIR**
Kurmanji$_B$	DIR − OBL	**OBL − OBL**
Kurmanji$_H$	DIR − OBL	**OBL − OBL**

Table 1: Case patterns in Kurmanji varieties.

In the following, we first discuss our methodology and then turn to the details of the case patterns across the three varieties.

3.1 Methodology

In this section, we discuss our methodology, presenting details of our data sources, data collection procedure, and the reasons behind the choices we make. We also point out some limitations and how they might be alleviated in future studies.

One of our major goals is to account for the divergence observed in the case patterns among the heritage Kurmanji speakers. To that end, we compare the case patterns of the heritage speakers (Kurmanji$_H$) with the case patterns of their parents and immediate family members (Kurmanji$_A$ speakers). Following Polinsky & Kagan (2007), we take the baseline language for a heritage speaker to be the language that they were exposed to as a child. We also discuss Kurmanji$_B$ patterns as our heritage speakers converge on the case patterns of Kurmanji$_B$ despite being exposed to Kurmanji$_A$. The data for Kurmanji$_H$ and Kurmanji$_A$ come from our own fieldwork mainly through

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[2] Patterns of Dialect A have been associated with the "Standard Dialect" by (Dorleijn 1996; Thackston 2006: a.o.). However, we intentionally abstain from picking one of the dialects as the standard to avoid any potential bias against (or in favor of) one of the dialects. We believe this is important on at least two grounds. First, treating one of the dialects as the standard could have negative implications for the other varieties and their speakers. Second, picking one of the dialects as the standard could potentially cloud our judgment about how the dialects, specifically the heritage varieties, arise from a theoretical point of view.

translation and acceptability judgments. The data for Kurmanji$_B$ is from Gündoğdu (2011), who reports data through fieldwork elicited from native speaker consultants.[3]

Another source of data that we make use of in this study is the monolingual acquisition data from Erzurum reported in Mahalingappa (2009), which helps us delineate the role of contact with Turkish in the shift towards accusativity in Kurmanji$_H$. We call the data from Erzurum Kurmanji$_C$ to indicate its source and case patterns. We do not make any assumptions about its dialectal status with respect to dialects A and B.

In the following, we provide relevant information about our consultants and the linguistic settings in which they grew up. The heritage variety of Kurmanji we report developed in an environment where the baseline dialect is Kurmanji$_A$. Our heritage consultants are two Turkish-Kurmanji bilingual cousins from Adıyaman, Turkey. They grew up in slightly different language settings but they converge on the same case patterns shifting towards accusativity. As part of describing the linguistic profiles of our heritage Kurmanji consultants, we also provide details regarding the baseline speakers from whom they received primary input.

3.1.1 Heritage Consultant 1

Consultant 1 is a 34 year-old Turkish-Kurmanji bilingual from Adıyaman. They grew up in a community where grandparents are monolingual Kurmanji speakers while the parents are Turkish-Kurmanji bilinguals. The parents' contact with Turkish was late (around age 7). The communication between parents would switch between Turkish and Kurmanji but the communication between the parents and Consultant 1 was mostly in Turkish. The parents decided to raise Consultant 1 as a monolingual Turkish speaker, however our consultant was able to pick up Kurmanji as they lived with the extended family including monolingual grandparents. Growing up, Consultant 1 would speak with their parents, siblings, neighbors, peers, and their relatives in Turkish unless they were in conversation with a monolingual Kurmanji speaker. The language they spoke at school was also Turkish. Consultant 1 considers their Kurmanji to be "weaker" while they report full proficiency in Turkish.[4]

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[3] Songül Gündoğdu, via personal communication, reports that her consultant in her 2011 work, used the OBL-OBL pattern productively and dominantly and when asked, her consultant said that they don't use the OBL-DIR pattern. In later work, Gündoğdu (2017) reports an extended survey of variation in the ergativity patterns of the Kurmanji$_B$ dialect (i.e. Muş Kurmanji). In her extensive study, Gündoğdu (2017: 51) reports "only a few examples of canonical ergative construction" (i.e. the OBL-DIR) pattern and mentions that the 'most common pattern is the double oblique construction" (Gündoğdu 2017: 51). She also reports a few instances of a completely accusative pattern DIR-OBL in past tense clauses. Gündoğdu's work in 2017 is like Dorleijn (1996) in that both works report production data with a lot of variation. However, the fact that the most common pattern in the Kurmanji$_B$ dialect is OBL-OBL, we assume that the speakers must have acquired a grammar that generates these patterns. The rare instances of OBL-DIR or DIR-OBL could be due to individual variation, production errors, or competing grammars within an individual (for example, along the lines of Yang (2011)).

[4] Standard age to start school in Turkey was 7 when our consultants were growing up.

3.1.2 Heritage Consultant 2

Consultant 2 is a 35 year-old Turkish-Kurmanji bilingual from Adıyaman as well. Their grandparents were monolingual Kurmanji speakers. Their mother is a monolingual Kurmanji speaker while the father is a late Kurmanji-Turkish bilingual. The communication between the parents is in Kurmanji. Unlike Consultant 1, the parents of Consultant 2 communicate with them predominantly in Kurmanji, with the father sometimes using Turkish as well. Growing up, Consultant 2 would speak with their parents mostly in Kurmanji while the communication among siblings and peers was mostly in Turkish with some code switching. The language they spoke at school was Turkish. Like Consultant 1, they consider their Kurmanji to be "weaker" than their Turkish.

3.1.3 Baseline Speakers

The baseline speakers are the parents of our heritage speaker consultants as well as their maternal grandmother.[5] All the baseline speakers were born and raised in Adıyaman and they speak the Kurmanji$_A$ dialect. We confirmed that all the speakers use the Kurmanji$_A$ case patterns described in Section 3.2 (also reported by Atlamaz & Baker (2018)).

3.1.4 Data Collection

We collected the data through natural elicitation, translation, and informal acceptability judgment interviews. The translation task consists of 80 Turkish sentences with the distribution in **Table 2** (for the full set of items, please see Appendix B).

	Transitive	**Intransitive**
Present	20	20
Past	20	20

Table 2: Distribution of variables in the translation task.

The items were presented to the speakers in a randomized order in two sessions. The same translation task was given to both the baseline and heritage speakers. We could not employ the translation task with the mother of our Heritage Consultant 2 and the grandmother as they are both monolingual Kurmanji speakers. Our goal in the translation task was twofold: i) observing the case patterns produced by our consultants, and ii) observing the lexical items and their pronunciations as used by the consultants. We used the translations by our consultants as a guide when forming our acceptability judgment task.

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[5] Our consultants share the same maternal grandmother.

The acceptability judgment (AJT) task consists of 70 Kurmanji sentences with varying verbs, alignments, and tenses (see Appendix B for the full list of sentences). The number of sentences per alignment in the AJT is given in **Table 3**.

Alignment	Present	Past	Subjunctive
DIR	4	4	–
OBL	4	4	–
DIR-OBL	4	4	2
OBL-DIR	5	10	2
OBL-OBL	5	10	2
DIR-DIR	4	4	2

Table 3: Distribution of variables in the acceptability judgment task.

10 randomly selected sentences from the translation data (generated by the consultants) were used in the acceptability judgment task. Other sentences are novel consisting of various permutations of arguments. The items were presented to the speakers in a randomized order in four sessions. We asked the consultants to rate these sentences as acceptable or unacceptable. The same acceptability judgment items were presented to both the baseline and heritage speakers. We could not employ the acceptability judgment task with the grandmother due to her age. Instead, we did natural elicitation through daily conversations to observe her case patterns and we did not find any divergence from the patterns produced by the other baseline speakers.

All the data elicitation was carried out by one of the authors who is also a bilingual Turkish-Kurmanji speaker. The translations and the judgments were elicited orally as none of the consultants (baseline or heritage) read or write in Kurmanji. Our heritage consultants consistently used the OBL-OBL alignment in past tense clauses in their translations and found the OBL-DIR pattern unacceptable.[6]

3.1.5 Rationale for the methodology and limitations

Our main goal in this paper is to develop a theory of grammar and learning that accounts for the variation in case patterns and their emergence within the Generative Framework. Following Chomsky (1986), we assume that a grammar is a state of an individual's I-language at a given time and acceptability judgment tasks can help describe the grammars internalized

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[6] In fact, both of our consultants were quite surprised when we pointed out to them that they produce different case patterns in past tense clauses than their parents. We mentioned this only after the data collection was completed to avoid any kind of bias or interference.

by individuals (Chomsky 1961; Newmeyer 2013; Den Dikken et al. 2007). To that end, we use informal acceptability judgment interviews to elicit data from our baseline and heritage consultants, acknowledging that this method has certain limitations.

A major limitation of the informal acceptability judgment interviews with only two consultants is that it is impossible to generalize our findings to the Kurmanji Heritage community.[7] However, our focus is not the E-language of the Kurmanji heritage community and we do not intend to describe the case patterns of "the" Heritage Kurmanji grammar. Our goal is to describe and account for the variation observed in the case patterns of two individual heritage Kurmanji speakers (which is still significant as they must be accounted for by any theory of case and acquisition). As pointed out by Den Dikken et al. (2007), we assume that generalizations over a group can be made if the individuals share the same linguistic knowledge leading to a description of the E-language. Yet, our focus is on the I-language and we believe that informal acceptability judgments (along with the translation data) serve our purposes. Establishing the generalizability of our observations to the heritage community requires formal acceptability judgment tasks that have been used in the heritage language context by Cuza & Frank (2010); Montrul (2010b); Montrul et al. (2012).[8]

Another major limitation of acceptability judgments, especially with heritage speakers, is that they may not be suitable for all types of data. For example, Linzen & Oseki (2018) distinguish between *judgments on strings* (is this sentence acceptable?) and *judgments on interpretation* (can this sentence have this particular meaning?). Sprouse et al. (2013) make a similar distinction between *standard acceptability judgments* (equivalent to Linzen and Oseki's *judgments on strings*), *coreference judgments*, and *interpretation judgments*. In our acceptability judgment sessions, we observed that our heritage consultants had no problem expressing their judgments on case patterns (judgment on strings) but they could not provide clear judgments about interpretation, such as sloppy versus strict identity under ellipsis.

A final note is due on the nature of the data from various sources. $Kurmanji_A$ and $Kurmanji_H$ data are collected through a combination of production, translation, and acceptability judgments. $Kurmanji_B$ and the monolingual acquisition data in the $Kurmanji_C$ context are production data. They cannot be directly compared. However, they can still be used to make inferences regarding the variation observed across Kurmanji speakers. We use the acceptability judgments to confirm that the heritage speakers ($Kurmanji_H$) diverge from the baseline ($Kurmanji_A$). Then, we build a theory of case acquisition, which predicts a range of case patterns and developmental paths. We

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[7] We thank anonymous reviewers who pointed this out and asked us to clarify our assumptions.

[8] See Sprouse et al. (2013) for a comparison of formal and informal acceptability judgment tasks who report a 95% convergence in their findings. However, see also Linzen & Oseki (2018) who show that the convergence is observed a lot more in English thanks to more established peer review processes and decreases significantly in other languages like Hebrew and Japanese.

use the monolingual acquisition data and the data from Kurmanji$_B$ to show that the predictions of our theory are attested. This is based on the assumption that productive and dominant use of a particular form must be the output of an acquired grammar. Thus, we do not directly compare acceptability judgment data with production data.[9]

In the next sections, we describe the details of the case patterns across the three varieties of Kurmanji and illustrate them with the relevant examples. Kurmanji$_A$ and Kurmanji$_H$ data are samples from the data we collected through translation and informal acceptability judgment interviews whereas the Kurmanji$_B$ data comes from Gündoğdu (2011).

3.2 Kurmanji$_A$

Kurmanji$_A$ is a tense based split ergative language with an accusative alignment in non-past clauses and an ergative alignment in past tense clauses (Dorleijn 1996; Thackston 2006; Atlamaz & Baker 2018). Morphologically, Kurmanji has a two-case system traditionally called direct (DIR) and oblique (OBL). Subjects of intransitive clauses are always in direct (DIR) form regardless of whether they are internal or external arguments indicating that ergative in Kurmanji is not inherent case associated with a thematic role. As for transitive clauses, in non-past clauses, subjects are in direct form (i.e. morphologically unmarked) while objects are marked with the oblique case. The sentences in (2) show the case patterns for finite present tense clauses. The sentences in (3) show that the embedded subjunctive clauses, which are devoid of tense information, also have a DIR-OBL alignment regardless of the tense of the matrix clause under which they are embedded.

(2)   Kurmanji$_A$: Accusative Alignment – Non-Past Clauses
      a.   Ez   dı-kev-ım.
           I.**DIR** IMPF-fall-1SG
           'I fall.'

      b.   Ez   dı-rv-ım.
           I.**DIR** IMPF-run-1SG
           'I run.'

      c.   Ez   te   dı-wun-ım.
           I.**DIR** you.**OBL** IMPF-see-1SG
           'I see you.

      d.   Tı   mı   dı-wun-i.
           you.**DIR** I.**OBL** IMPF-see-2SG
           'You see me.

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[9] We do however admit that the nature of our work is exploratory and a more systematic data collection effort should be carried out in future studies.

(3) a. Ez dı-xaz-ım   kı ez   nen   bı-x-ım.
         I.**DIR** IMPF-want-1SG that I.**DIR** bread.**OBL** SBJV-eat-1SG
         'I want that I eat bread.'

     b. Mı xast   kı ez   nen   bı-x-ım.
         I.**OBL** want.PAST that I.**DIR** bread.**OBL** SBJV-eat-1SG
         'I wanted that I eat bread.'

In past tense clauses, subjects of intransitives and objects of transitives are in direct form whereas the subjects of transitive clauses are in oblique form. The sentences in (4) illustrate the case patterns in the past tense.

(4) Kurmanji*A*: Ergative Alignment – Past Tense Clauses
     a. Ez   ket-ım.
         I.**DIR** fall.PAST-1SG
         'I fell.'

     b. Ez   rvi-m.
         I.**DIR** run.PAST-1SG
         'I ran.'

     c. Mı   tı   di-yi.
         I.**OBL** you.**DIR** see.PAST-2SG
         'I saw you.

     d. Te   ez   di-m.
         you.**OBL** I.**DIR** see.PAST-1SG
         'You saw me.

Table 4 provides a summary of the split ergativity patterns in Kurmanji*A*.

valence	arg. count	present	past
unaccusative	1	DIR	DIR
unergative	1	DIR	DIR
transitive	2	**DIR – OBL**	**OBL – DIR**

Table 4: Case patterns in Kurmanji*A*.

Notice also that agreement tracks the arguments in the DIR form in both tenses. This seems to be the case across all the varieties. Following Bobaljik (2008), we simply assume that agreement tracks case and ignore the agreement facts but nothing hinges on this assumption. See Atlamaz & Baker (2018); Atlamaz (2019) for further complications on agreement with oblique nouns in Kurmanji.

3.3 Kurmanji*B*

In terms of case patterns, Kurmanji*B* differs from Kurmanji*A* in the past tense (Gündoğdu 2011). Instead of an OBL-DIR pattern in past tense transitive clauses we observe a double oblique pattern (OBL-OBL), which we treat as a tripartite case system. The sentences in (5) illustrate DIR-OBL alignment in finite present tense clauses whereas the ones in (6) illustrate the DIR-OBL alignment in embedded subjunctive clauses that are devoid of tense information.

(5) Kurmanji*B*: Accusative Alignment – Non-past Clauses

    a.   Ez   di-kev-im.
         I.**DIR** IMPF-fall-1SG
         'I fall.'   (Adapted from Gündoğdu (2011: 115))

    b.   Ez   di-rev-im.
         I.**DIR** IMPF-run-1SG
         'I run.'   (Adapted from Gündoğdu (2011: 36))

    c.   Tu   mın di-bîn-î.
         you.**DIR** I.**OBL** IMPF-see-2SG
         'You see me.'   (Adapted from Gündoğdu (2011: 81))

    d.   Ez   te   di-bîn-im.
         I.**DIR** you.**OBL** IMPF-see-1SG
         'I see you.'   (Gündoğdu 2011: 81)

(6) a.   Ez ji wî   ra di-bej-im   ku ez   pırtûk-e bi-xvin-im.
         I.DIR P he.OBL P IMPF-say-1SG that I.**DIR** book-**OBL** SBJV-read-1SG
         'I tell him that I [want to] read the book.'   (Adapted from Gündoğdu (2011))

    b.   Mın ji wî   ra got   ku ez   pırtûk-e bi-xvin-im.
         I.OBL P he.OBL P say.PAST that I.**DIR** book-**OBL** SBJV-read-1SG
         'I told him that I [want to] read the book.'   (Adapted from Gündoğdu (2011))

In past tense clauses, subjects of intransitives are in direct form whereas the subjects of transitive clauses and objects of transitives are in oblique form. (7) illustrates case patterns in past tense clauses.

(7) Kurmanji*B*: Tri-partite Alignment (OBL-OBL) – Past Tense Clauses

    a.   Ez   ket-im.
         I.**DIR** fall.PAST-1SG
         'I fell.'   (Gündoğdu 2011: 56)

    b.   Ez   revî-m.
         I.**DIR** run.PAST-PL
         'I ran.'   (Adapted from Gündoğdu (2011: 115))

c. Te   mın   dît.
   you.**OBL** me.**OBL** see.PAST
   'You saw me.'   (Adapted from Gündoğdu (2011: 81))

d. Mın   te   dît.
   I.**OBL** you.**OBL** see.PAST
   'I saw you.'   (Gündoğdu (2011: 81))

Table 5 provides a summary of the split ergativity patterns in Kurmanji$_B$.

valence	arg. count	non-past	past
unaccusative	1	DIR	DIR
unergative	1	DIR	DIR
transitive	2	**DIR – OBL**	**OBL – OBL**

Table 5: Case patterns in Kurmanji$_B$.

3.3.1 Heritage Kurmanji Case Patterns

The grandparents and parents of both consultants speak Kurmanji$_A$ with DIR-OBL alignment in non-past clauses and OBL-DIR alignment in past tense clauses as shown in (2)–(4). However, our consultants display the Kurmanji$_B$ patterns with DIR-OBL alignment in non-past transitive clauses shown in (8c)–(8f) and OBL-OBL alignment in past tense transitive clauses shown in (9c)–(9d). The case patterns in intransitive clauses are the same as in Kurmanji$_A$ as shown in (8a)–(8b) and (9a)–(9b).

(8)   Kurmanji$_H$: Accusative Alignment – Non-Past Clauses
       a. Ez   dı-kev-ım.
          I.**DIR** IMPF-fall-1SG
          'I fall.'

       b. Ez   dı-rv-ım.
          I.**DIR** IMPF-run-1SG
          'I run.'

       c. Ez   te   dı-wun-ım.
          I.**DIR** you.**OBL** IMPF-see-1SG
          'I see you.

       d. Tı   mı   dı-wun-i.
          you.**DIR** I.**OBL** IMPF-see-2SG
          'You see me.

       e. Ez   dı-xaz-ım   kı   ez   te   bı-wun-ım.
          I.DIR IMPF-want-1SG that I.**DIR** you.**OBL** SUBJN-see-1SG
          'I want that I see you.'

    f.   Mı   xast   kı   ez   te   bı-wun-ım.
       I.OBL want.PAST that I.**DIR** you.**OBL** SUBJN-see-1SG
       'I wanted that I see you.'

(9)   Kurmanji$_H$: Tri-partite Alignment (OBL-OBL) – Past Tense Clauses

    a.   Ez   ket-ım.
       I.**DIR** fall.PAST-1SG
       'I fell.'

    b.   Ez   rvi-m.
       I.**DIR** run.PAST-1SG
       'I ran.'

    c.   Mı   te   di.
       I.**OBL** you.**OBL** see.PAST
       'I saw you.

    d.   Te   mı   di.
       you.**OBL** I.**OBL** see.PAST
       'You saw me.

Our heritage consultants find the ergative patterns (OBL-DIR) in (4c)–(4d) unacceptable. This is in sharp contrast with Kurmanji$_A$ speakers who find them acceptable but not the double oblique alignment examples (OBL-OBL) in (9c)–(9d). **Table 6** summarizes the acceptability judgments of the Kurmanji$_A$ and Kurmanji$_H$ consultants.

Alignment	Kurmanji$_A$	Kurmanji$_H$	Examples
OBL-DIR	✓	*	(4c)–(4d)
OBL-OBL	*	✓	(9c)–(9d)

Table 6: Acceptability judgments of Kurmanji$_A$ and Kurmanji$_H$ speakers (past tense).

    Case patterns across all the Kurmanji dialects are uniformly *accusative* in non-past clauses. In past tense clauses, Kurmanji$_A$ displays an *ergative* pattern while Kurmanji$_B$ and Kurmanji$_H$ display a *double oblique* pattern. **Table 7** summarizes the case patterns across all of the three dialects.

3.4 Shift Towards Accusativity

The double oblique pattern in various dialects of Kurmanji has been analyzed as an instance of diachronic shift towards an accusative system (Dorleijn 1996; Haig 2004; Gündoğdu 2017). This has been considered as the first step towards a fully accusative system as the objects in these dialects are treated consistently as accusative across all tenses, while the subjects still retain properties of a split ergative system.

	Kurmanji$_A$	Kurmanji$_B$	Kurmanji$_H$
non-past			
unaccusative	DIR	DIR	DIR
unergative	DIR	DIR	DIR
transitive	DIR-OBL	DIR-OBL	DIR-OBL
past			
unaccusative	DIR	DIR	DIR
unergative	DIR	DIR	DIR
transitive	**OBL-DIR**	**OBL-OBL**	**OBL-OBL**

Table 7: Case patterns across three Kurmanji dialects.

One of the major questions regarding the language changes of this type has been about the source of the change. Is this shift due to some language contact with a neighboring language or is it a result of some language-internal change? Both have been proposed for Kurmanji and both make sense (see Gündoğdu (2017) for an overview.). The Kurmanji dialects we report are in close contact with Turkish, a purely accusative system. Plus, the heritage speakers are Turkish-Kurmanji speakers with stronger self-reported proficiencies in Turkish in a Turkish dominant setting. All of this could suggest that Turkish-Kurmanji bilinguals are somehow "copying" the accusative pattern from Turkish to Kurmanji. However, this line of reasoning fails to capture the fact that Kurmanji is a split ergative language and it already has the accusative alignment in all the non-past clauses.

Heritage languages provide us with a unique opportunity to observe and analyze these types of shift in a synchronic manner. The heritage dialect we report emerged in a setting where the primary linguistic data comes from Kurmanji$_A$ but the speakers converge on the Kurmanji$_B$ case patterns despite no contact with Kurmanji$_B$ speakers.[10] Clearly, language contact with Turkish has an impact on the emergence of the heritage patterns as the Kurmanji input they receive is consistently split ergative (the same as the one their parents received from their own parents) but they diverge from it. However, this impact cannot be merely "copying" the Turkish patterns as discussed above.

The facts described above require a theory of case that can account for all the variation observed across the Kurmanji dialects and a theory of learning that allows for the acquisition of various case patterns. In the following, we show that the Dependent Case Theory (Marantz 1991; Baker 2015) accounts for all the variation. We also propose a theory of staged learning that allows us to describe the acquisition of case patterns as outcomes of various learning paths made available

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[10] Due to lack of standardization and lack of mass media, speakers of one dialect are rarely in contact with speakers of another dialect. In many cases, Turkish is used as the medium of conversation. In the case of our consultants, they did not have any known contact with Kurmanji$_B$ speakers as they were growing up.

by the Dependent Case Theory. We show that these acquisition paths have several well-defined checkpoints and each dialect is associated with a particular checkpoint on an acquisition path.

4 Account

In this section, we first show that the Dependent Case Theory (DCT) can account for the various case patterns observed across Kurmanji dialects as well as Turkish. Next, we posit a learning problem for learning the dependent case rules and propose a model that predicts a set of learning paths on which case patterns naturally emerge as checkpoints.

4.1 A DCT account of case patterns

Dependent Case Theory is a configurational case theory first proposed by Marantz (1991) to account for accusative and ergative case assignment. It was later extended by Baker (2015) to account for tripartite case systems. The dependent case rules formulated by Baker (2015) are given below.

(10) *Dependent Case Rules*
    a. ↑: If NP1 c-commands NP2, assign NP1 **ergative**.   *upward dependent case*
    b. ↓: If NP1 c-commands NP2, assign NP2 **accusative**.   *downward dependent case*

The dependent case rules in (10) cover all the case patterns observed across the Kurmanji dialects as well as Turkish. Let us start with the intransitive clauses, both unergative and unaccusative. DCT predicts no case on the arguments of intransitive verbs as there is no case competitor. This is realized as the absence of any overt case marking on the arguments, traditionally called DIR case in Kurmanji and NOM in Turkish. Following Kornfilt & Preminger (2015), we adopt the view that *nominative, absolutive,* and *direct* are simply overt realizations of the absence of case.[11] **Table 8** displays the predictions of the DCT for intransitive sentences across Turkish and all the relevant Kurmanji dialects. 'Ø' indicates the absence of any surface or deep form rather than implying a null morpheme.

valence	argument	case	Turkish	Kurmanji$_A$	Kurmanji$_B$	Kurmanji$_H$
unaccusative	internal	NA	Ø	Ø	Ø	Ø
unergative	external	NA	Ø	Ø	Ø	Ø

Table 8: Absence of dependent case with intransitive verbs.

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[11] Nothing hinges on this assumption. What is crucial is that these NPs are not assigned Dependent Case. Our analysis is compatible with any view that distinguishes NOM/DIR/ABS from the dependent cases ERG/ACC. We acknowledge the existence of marked nominative (e.g. Harar Oromo) and marked absolutive (e.g. Nias) languages. Yet, we simply assume that in Kurmanji and Turkish, nominative and direct nominals are caseless.

For transitive clauses, the Dependent Case Theory predicts four distinct case patterns corresponding to the accusative, ergative, tripartite, and unmarked alignments shown in **Table 9**. While the *downward dependent case rule* assigns what is traditionally called the ACCUSATIVE case, the *upward dependent case rule* assigns the ERGATIVE case. In languages where both rules are actively employed, we end up with a tripartite system. Finally, the lack of dependent case leads to a possibly unmarked system with no dependent case on either argument. This covers the logical space of dependent case theory with intransitive and monotransitive clauses.

Alignment	Case Pattern	Direction	Dependent Case Rule
Accusative	NOM-ACC/DIR-OBL	↓	downward dependent case
Ergative	ERG-ABS/OBL-DIR	↑	upward dependent case
Tripartite	ERG-ACC/OBL-OBL	↑↓	both rules apply
Unmarked	NOM-NOM/DIR-DIR		neither rule applies

Table 9: Dependent case patterns with transitive verbs.

In the following, we present the learning problem and show how the predictions of the DCT combined with a learning framework where the dependent case rules are learnt on distinct stages accounts for all the variation observed across the languages and dialects under discussion. But before that, one terminological clarification is due.

Throughout the paper, we use traditional case names such as *absolute, direct, nominative, accusative, ergative, oblique, etc.* only descriptively. We merely follow the traditional descriptions used in the literature. We use these conventions in our glossing as well. However, the crucial concepts for our analysis are the alignment patterns, *accusative*, *ergative*, and *tripartite*. We cover all these alignments with the *downward dependent case* and the *upward dependent case*. Languages vary in how these cases are realized and so do the traditional names associated with them. For example, *downward dependent case* is realized by the *-(y)I* suffix in Turkish, which is the dedicated accusative morpheme, while Kurmanji uses what has been traditionally called the oblique form. In Kurmanji, the upward dependent case is also realized through the oblique form.[12] While the surface forms matter as they are the primary input to the acquisition mechanism, their names do not matter for our discussion.

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[12] There are languages where downward dependent case and upward dependent case are not syncretic, i.e. are realized through distinct forms. For example, Georgian is a split ergative language where downward dependent case/accusative is realized by the morpheme *-s* and upward dependent case is realized by the morpheme *-ma*, setting aside pronouns (Harris 1982).

4.2 The Learning Problem

The Dependent Case Theory is capable of accounting for all the variation observed in the case patterns of Kurmanji dialects and Turkish. In other words, the DCT has the descriptive adequacy to be a plausible theory of case.[13] Descriptive adequacy is a necessary condition for any theory to be entertained seriously but it is not a sufficient condition. In addition to descriptive adequacy, a grammar posited by a theory must be *learnable* and allow room for *predictable divergences* from the input forms (e.g. overgeneralization errors, partial learning, etc.) (Pinker 1984). In this paper, we do not focus on the learnability problem, which deals with whether a particular grammar can be learnt from a particular set of input forms. Instead, we focus on the *predictable divergences* from the input forms within the tenets of the Dependent Case Theory. Even though we do not focus on the learnability problem, we need to make some assumptions regarding how the dependent case rules are learnt. These assumptions coupled with the DCT reveal that the observed dialectal variation is a natural outcome of the DCT (including the heritage patterns). In the following, we first position our proposal within generative approaches to language acquisition. Then, we provide the details of our account by defining the learning targets and then listing our assumptions regarding how these targets are learnt.

We propose a checkpoint based learning mechanism in the spirit of the Principles & Parameters framework (Chomsky 1981), where universal principles determine the parameter space and language acquisition is considered to be a process of setting the parameters of a grammar based on input data. In this sense, our proposal follows the line of acquisition research pursued in Hyams (1983; 1986), Wexler & Manzini (1987), Gibson & Wexler (1994), Yang (2000; 2004; 2011), Fodor & Sakas (2005), Fodor et al. (2007) among many others. We do, however, differ from some of them in the nature of parameters and where they come from. Much of the acquisition research within the Principles & Parameters framework assumes that the Universal Grammar determines the parameter space, where the parameters have binary values and they are set depending on the input. This parametric view has recently been challenged mainly because it predicts a massive amount of variation even with a relatively small number of parameters. The size of the parameter space is not only a problem for massive variation, most of which is never attested, but is also computationally intractable. See Newmeyer (2013) for a discussion.[14]

Following Arregi & Nevins (2012), we assume a highly modular architecture of grammar where each component of the grammar is dedicated to a particular task and has its own constraints.

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[13] The DCT is not the only possible theory with descriptive adequacy. The same facts could be accounted for by a myriad of other theories with the same level of descriptive adequacy. A plausible contender would be the Inherent Case view (Legate 2008; Woolford 2006; Akkuş 2020: a.o.). We do not entertain these alternatives as our main goal does not involve a comparison of various case theories. Instead, we focus on the predictions of the Dependent Case Theory in the context of heritage languages and emergent case patterns.

[14] See also Roberts (2019) for a hierarchical organization of parameters from a theoretical point of view to constrain the number of possible grammars and see Fodor et al. (2007) for a similar effort from a learning point of view.

One such module is the Case Module which is constrained by the principles of the Dependent Case Theory. We assume that knowing the case system of a language involves inducing a set of rules from a finite amount of data.[15] We further assume that the Dependent Case Theory limits the space of possible hypotheses by providing a set of possible rule types. To make the problem more explicit, we assume the following learning targets.

(11) Learning Targets
    a. *downward dependent case rule*
    b. *upward dependent case rule*

The precise characterization of the learning targets (i.e. dependent case rules) are slightly different for each language we discuss and they are provided in the relevant subsections below. Dependent Case Theory defines the logical space of target abstract rules to be learnt. We define the learning task as setting the direction parameters (upward, downward) of the dependent case rules for the right context.

(12) Learning Task
    Set the context sensitive direction parameters.

Now that we have defined the learning targets and the learning task, we are in a position to articulate our assumptions regarding how these targets are learnt. We assume that the direction parameters of the dependent case rules are induced from the input data. Learning involves the following major operations:

(13) a. Form Hypothesis
    b. Check Productivity
    c. Revise Hypothesis
    d. Accept / Reject

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[15] Obviously, this is not an easy problem and any explanation requires some non-trivial assumptions regarding the learning target, learning device, learning procedure, processing requirements, input data, among many other factors involving the learner and the context. Solving this problem goes well beyond the scope of the current paper. Our goal is a lot more modest as we intend to present a well-defined set of learning targets (i.e. dependent case rules) and entertain a few relatively straightforward set of assumptions with precise predictions and evaluate them in the light of the Turkish and Kurmanji data. We believe that our main contribution is the framing of the problem and our proposal is at least a self-contained contender with some solid theoretical foundations in the Generative tradition. Some of the assumptions we make here (e.g. the Principles and Parameters) can be translated to more contemporary Minimalist assumptions without any significant loss or gain. As far as we can tell, it would simply amount to a notational variant at best. A significantly different approach would replace the dependent case rules with a different symbolic abstract case system as the acquisition target (e.g. Inherent Case). A completely different view would jettison the abstract symbolic representations altogether and resort to contemporary probabilistic language models involving neural nets. We do not rule these out as possible accounts of the same patterns. Nevertheless, we won't pursue them here as they fall outside the scope of the current paper.

Hypotheses are formed based on positive evidence from the data. Such hypotheses based on positive evidence are *Plausible Hypotheses*. The set of plausible hypotheses PH is a subset of the set of all the logically possible hypotheses H permitted by the Dependent Case Theory. Consider the hypothetical alignment pattern in (14).

(14)   Input Alignment (Hypothetical)
    a.   Unaccusative Subect = nominative
    b.   Unergative Subject = nominative
    c.   Transitive Subject = nominative
    d.   Transitive Object = accusative

Given the hypothetical input alignment in (14), the set of logically possible hypotheses are as in (15) and the set of plausible hypotheses are given in (16).

(15)   Set of Logically Possible Dependent Case Hypotheses
$$H = \left\{ \begin{array}{l} h1 = NP1\ \textit{c-commands}\ NP2 \rightarrow NP2 = ACC \\ h2 = NP1\ \textit{c-commands}\ NP2 \rightarrow NP1 = ERG \end{array} \right\}$$

(16)   Set of Plausible Dependent Case Hypotheses
$$PH = \{\ h1 = NP1;\ \textit{c-commands};\ NP2 \rightarrow NP2 = ACC\ \}$$

The plausibility restriction shrinks the hypothesis space to include the ones that are constructable from the input data and exclude the ones that are not.[16] Once a hypothesis is formed, it needs to be checked for productivity. Productive hypotheses will be accepted while the unproductive ones will be rejected.[17]

We assume that generalization of the hypothesized rules simply follows from their underspecified nature. For example, *h1* in (16) applies across all tenses, aspects, persons, etc. resulting in a consistently accusative system (as opposed to a tense/aspect based split). We further assume that learning is incremental and accepted hypotheses can be further revised in scenarios where they lead to errors (Widrow & Hoff 1960; Rescorla 1972; Fodor & Sakas 2005; Divjak et al. 2021).

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[16] Pointing out that children often go beyond the available input and do so in ways predicted by linguistic theory (Crain & Thornton 1998), an anonymous reviewer asks whether the plausibility assumption would make it difficult for the child to go beyond the input. We should emphasize that the plausibility assumption does not at all prevent the learner from going beyond the input. Rather, it merely *reduces* the number of hypotheses that may be entertained by the learner. In essence, the plausibility restriction describes the fact that the learner forms hypotheses *based* on positive evidence (Guasti 2016). To give a simple concrete example, we think that children acquiring Turkish in a monolingual setting would not entertain the Upward Dependent case rule as a hypothesis as there is no basis for it in the data: Turkish simply does not have ergative case.

[17] We do not adopt a particular view on productivity thresholds. As far as we are concerned, something like the Tolerance Principle (Yang 2005) or other should work.

Now that we have laid out our main assumptions regarding how abstract rules are learnt from input data, we turn to some specific assumptions regarding how the dependent case rules are learnt. In the previous section, we outlined the set of learning targets as the context specific dependent case rules. To achieve adult-like competence in case patterns, a learner must learn the dependent case direction parameters (*upward/downward*) as well as the correct context specifications (e.g. tense/aspect) associated with each dependent case rule. Our key assumption is that the direction parameters (i.e. *downward* and *upward*) and the context specifications can be learnt simultaneously or sequentially. When the learning is sequential, context specifications will have to follow the direction parameters as the reverse order would be neither a plausible hypothesis nor dependent case per se. We show that the heritage case patterns observed in Kurmanji emerge when the dependent case rules and their context specifications are learnt sequentially. Now that we have the main assumptions in place, we can start looking at the details more closely. For this, we start with Turkish, a relatively straightforward system.

4.3 Learning Turkish Case Patterns

Turkish has a consistently accusative alignment. The grammar described in (17) accounts for the facts in transitive clauses regardless of tense, aspect, or finiteness. We assume that a grammar is a state of an individual's I-language at a given time. To achieve adult-like competence, a learner needs to reach the Final Attainment State in (17) within the tenets of the Dependent Case Theory.

(17) **Final Attainment State in Turkish** (L_{Tn})

NP_1 c-commands $NP_2 \rightarrow NP_2 =$ ACC

Given that the logical space of rules to be learnt are restricted to one of the *downward* and *upward* case rules and the fact that Turkish is a consistently accusative language with no ergativity, a learner should be able to learn the *downward* dependent case rule given in (17), which is the only plausible hypothesis. Thanks to underspecification, a rule induced from input like in (18) readily applies to cases like (19).[18]

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[18] Distribution of *accusative* case in Turkish is a bit more complex than what is given in (17). Non-specific NPs usually do not receive accusative case as in (i). This has led to the claim that the accusative case in Turkish marks specificity (Enç 1991). (ii) shows that this claim is too strong as non-specific NPs can also receive the accusative marker.

(i) **Turkish: Past** (NOM-ACC)

    a.   Ali   kitap oku-du.

         ali.NOM book see.PAST

         'Ali read a book.'

(ii) **Turkish: Past** (NOM-ACC)

    a.   Bir kitab-ı   anla-mak   için defalarca   oku-mak gerekir.

         one book-ACC understand-INF for time-and-again read-INF needed

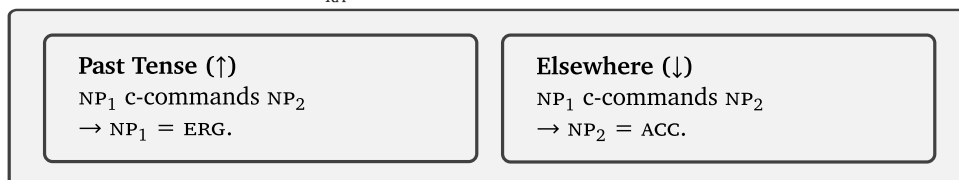   'Understanding a book requires reading it time and again.'

(18) **Turkish: Present** (NOM-ACC)

    a. Ali   Ayşe-yi   gör-üyor.
         ali.NOM ayşe-ACC see-PRES.IMPF
         'Ali sees Ayşe.'

    b. Ali   Ayşe-yi   bil-iyor.
         ali.NOM ayşe-ACC bil-PRES.IMPF
         'Ali knows Ayşe.'

(19) **Turkish: Past** (NOM-ACC)

    a. Ali   Ayşe-yi   gör-dü.
         ali.NOM ayşe-ACC see-PAST
         'Ali saw Ayşe.'

4.4 Split Ergativity: Kurmanji

Kurmanji$_A$ is a split ergative language with an ergative alignment in the past tense and an accusative alignment elsewhere (present tense and subjunctive). The final attainment state L$_{KAn}$ given in (20) generates the correct case forms for Kurmanji$_A$. Following, Atlamaz & Baker (2018), we assume that the split ergativity in Kurmanji can be captured by the DCT and we assume the grammar in (20).

(20) **Final Attainment State** (L$_{KA^n}$)

Past Tense (↑)	**Elsewhere (↓)**
NP$_1$ c-commands NP$_2$	NP$_1$ c-commands NP$_2$
→ NP$_1$ = ERG.	→ NP$_2$ = ACC.

In order to produce the right case forms, a learner needs to attain the grammar in (20). This amounts to learning two dependent case rules (*upward* and *downward*) and the context specifications associated with each rule (*past* and *non-past/elsewhere*).

4.5 Learning Paths and Checkpoints

Primary linguistic data (PLD) is random but the speakers of a language usually converge on the same target patterns given "sufficient" data and time. Likewise, it has been shown that children

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Following Öztürk (2009), we assume that the bare object NPs in Turkish are pseudo-incorporated and they do not enter into the dependent case calculus. Our goal in this section is not to give a full account of the accusative case marking in Turkish. Our goal is to simply show that in a language with a consistently accusative alignment, learning amounts to learning the *downward dependent case rule*. This paves the way for the more complex split ergative alignment patterns in Kurmanji, which we discuss in the next section. See Enç (1991); Göksel & Kerslake (2004); Öztürk (2009) among many others regarding further details on accusative case in Turkish.

usually follow similar acquisition paths even though the individual trajectories might show some differences.[19] We assume that the acquisition paths for learning the case patterns are guided by the dependent case theory. For a split ergative system like Kurmanji$_A$, we assume that a single case grammar parameterized across tenses is learnt. What needs to be learnt is given in (21):

(21)   Learning Task for Kurmanji$_A$ (split ergativity)
   a. Learn the downward dependent case rule   (ACCUSATIVE)
   b. Learn the upward dependent case rule   (ERGATIVE)
   c. Learn the context for the downward dependent case rule   (ELSEWHERE)
   d. Learn the context for the upward dependent case rule   (PAST)

The key assumption is that the dependent case rules and context specifications can be learnt simultaneously or sequentially. The learning task in (21) combined with our assumption that the rules can be learnt sequentially leads to a variety of *learning paths* with various *checkpoints* for each learned rule or context specification. A *checkpoint* is defined as an accepted hypothesis state. When a hypothesis is accepted, a checkpoint is created and the hypothesis is maintained as a rule until it is further revised.[20] In the following, we show how various distinct paths converge on the same target split ergative patterns, predicting individual differences among learners during the learning process. We show that some of the checkpoints on these acquisition paths correspond to the heritage case patterns (accusative in non-past clauses and double oblique in past tense clauses). We also present data to show that some of these paths are attested in monolingual acquisition data as well. This leads to the conclusion that the heritage case patterns in Kurmanji emerge naturally as checkpoints on the acquisition paths which weakens the hypothesis that the shift towards accusativity is due to contact with an accusative language. Instead, we speculate that the impact of language contact is more indirect and a result of reduced intake, specifically reduced production which reduces the amount of hypothesis testing.

 The assumption that the items in the Kurmanji-specific learning task in (21) can be learnt simultaneously or sequentially leads to a set of paths that can be grouped as 2, 3, and 4-checkpoint

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[19] See Dressler (2012) for an overview of U-shaped development in the acquisition of irregular inflectional morphology or Ketrez & Aksu-Koç (2021) for a discussion of individuals who have different paces but follow similar acquisition paths among many others.

[20] Following the Generative tradition, we consider rules as abstract representations constituting a learner's competence. Whether a rule is used or not is not only dependent on its representation though. A rule might not be used due to performance or memory issues (among others). A learnt rule might undergo attrition (Montrul 2010a; O'Grady et al. 2011; Polinsky 2011) or the Activation Thresholds associated with the rule might change Paradis (2007). The model we develop in this paper focuses on the properties of generative grammars and how they might lead to divergences from the input patterns in a systematic way. We do not intend to model the fluctuations observed in speakers' production. Distinguishing competence divergences from performance divergences is not a trivial task and we do not claim to propose a novel method. For heritage speakers, we rely on translation and acceptability judgment tasks standardly employed in the Generative tradition. For the monolingual acquisition data elicited naturally, we focus on the systematic patterns observed consistently within and across individuals.

paths. We start with the 2-checkpoint paths and quickly discard them as they do not render the observed heritage patterns and then move on to show that some of the 3 and 4-checkpoint paths render the observed patterns.

4.6 2-checkpoint paths

Let us first define the plausible hypotheses for Kurmanji before we show the logically possible 2-checkpoint paths that converge on the Kurmanji$_A$ grammar. **Table 10** lists the hypotheses. The arrows stand for the direction parameters for the dependent case rules and the subscript ($_C$) indicates that the hypothesis contains the correct context specification for that dependent case rule.

hypothesis	description
↓	NP$_1$ c-commands NP$_2$ → NP$_2$ = ACC
↑	NP$_1$ c-commands NP$_2$ → NP$_1$ = ERG
↓$_C$	NP$_1$ c-commands NP$_2$ & T = [-PAST] → NP$_2$ = ACC
↑$_C$	NP$_1$ c-commands NP$_2$ & T = [PAST] → NP$_1$ = ERG

Table 10: Kurmanji-specific hypotheses.

In a 2-checkpoint path, each of the dependent case rules (*down* or *up*) must be learnt simultaneously with their context specifications. Otherwise, the grammar does not converge on Kurmanji$_A$. **Table 11** shows the logically possible 2-checkpoint paths that converge on the L$_{KAn}$ described in (20) for Kurmanji$_A$. The *checkpoint* column indicates the checkpoint number in the learning path. The columns *non-past* and *past* indicate the predicted case alignments in transitive clauses at each checkpoint.

	checkpoint	accepted	non-past	past
Path 1	1	↓$_C$	DIR–OBL	DIR–DIR
	2	↑$_C$	DIR–OBL	OBL–DIR
Path 2	1	↑$_C$	DIR–DIR	OBL–DIR
	2	↓$_C$	DIR–OBL	OBL–DIR

Table 11: 2-checkpoint paths.

In Path 1, first the downward dependent case rule (accusative) is learnt for non-past clauses and then the upward dependent case rule (ergative) is learnt for past tense clauses. In Path 2, the order is reversed. Both of the paths converge on the Kurmanji$_A$ grammar yielding the expected case patterns, DIR-OBL in non-past and OBL-DIR in past. While the final checkpoints are important

as they indicate the convergence point, the previous checkpoints are equally important as they indicate the intermediate stages a learner could go through. Unless the transition from checkpoint 1 to checkpoint 2 is immediate, the paths predict a stage where the learners produce outputs that are not in the input. We call such case patterns that are not in the input but predicted at a particular checkpoint **divergent**. The divergent patterns in the 2-checkpoint paths are given in **Table 12**.

	checkpoint	accepted	non-past	past
Path 1	1	$\downarrow_C$		DIR–DIR
Path 2	1	$\uparrow_C$	DIR–DIR	

Table 12: 2-checkpoint paths.

The 2-checkpoint paths predict unmarked alignment with DIR-DIR forms at the intermediate checkpoints. Path 1 Checkpoint 1 predicts DIR-DIR in past tense clauses only whereas Path 2 Checkpoint 1 predicts DIR-DIR in non-past tense clauses only. The monolingual acquisition data presented in Mahalingappa (2009) has 0 instances of DIR-DIR in the 104 past tense clauses. On the other hand, out of the 130 present tense clauses 20 have the DIR-DIR form.[21] Our heritage consultants do not accept past tense clauses with DIR-DIR alignment either.

(22) *Ez   tı   di(-m).
      I.DIR you.DIR see.PAST(-1SG).
      'I saw you.'   Kurmanji$_H$

The fact that DIR-DIR is observed only in present tense clauses but not in past tense clauses does not follow from the Dependent Case Theory and requires an explanation either in terms of the lack of empirical coverage or some principled way of constraining the paths generating DIR-DIR alignments. In the following sections, we repeatedly observe that the DCT combined with our checkpoint-based learning hypothesis predicts certain paths and checkpoints whose predicted forms are not attested in any of the dialects discussed in this paper including the monolingual acquisition data and the heritage patterns. To address this we pursue a procedure that aims to capture the general tendencies across the dialects by constraining the learning paths to a proper subset of all the logical possibilities. Within this constrained space, our learning paths still

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[21] The monolingual acquisition data was elicited by Mahalingappa (2009) in a naturalistic manner. The data comes from 6 children ranging between 2;6 to 3;6. Only two of the children used the DIR-DIR pattern in present tense clauses. Of those two children, one of them used a DIR-DIR pattern only once, which is too little data to make any meaningful conclusions. The second child however produced 19 instances of DIR-DIR alignment, which could indicate that this child is following a learning path where DIR-DIR is produced at a particular checkpoint.

predict certain alignments we do not observe in the dialects we discuss including the monolingual acquisition paths. In such cases, we survey some of the other dialectal variation data discussed by Dorleijn (1996) to show that some such patterns exist at least in some Kurmanji dialect. Even though we prefer to constrain the learning paths in a principled way to increase the predictive power of our theory, we do not rule out the possibility that some of the paths we exclude might be followed by some learners or some dialects for which we do not have data.

To close the discussion on the 2-checkpoint paths, the DIR-DIR pattern in past tense clauses predicted by Path 1 does not occur in the dialects we focus on. However, Dorleijn (1996: 121–122) reports presence of DIR-DIR alignment in past tense clauses in her survey of various dialects. Thus, we do not rule out Path 1 on the basis of the lack of empirical coverage in our own data. Some Kurmanji speakers might be following Paths 1 or 2.[22]

Although we do not rule out the Paths 1 and 2 for some Kurmanji speakers, we do rule them out for our heritage speakers and all of the monolingual children reported by Mahalingappa (2009). While these paths were available to them, they can't have gone through these paths since the 2-checkpoint paths fail to predict the double oblique pattern (OBL-OBL) observed in Heritage Kurmanji, Kurmanji$_B$ and the monolingual acquisition data from Kurmanji$_C$.[23] Producing the divergent OBL-OBL forms necessitates learning paths where the direction parameter of the downward dependent case and its context restriction are learnt sequentially. In the next section, we enumerate the 3-checkpoint paths and show how some of the paths contain both the Kurmanji$_A$ patterns as well as the Kurmanji$_B$, Kurmanji$_H$ and some of the monolingual acquisition patterns from Kurmanji$_C$.

4.7 3-checkpoint paths

3-checkpoint paths (**Table 13**) differ from 2-checkpoint paths in that one of the dependent case rules is learned in two sequential steps. First, a context-free version of the rule is learnt. Then, its context specification is learnt at a subsequent checkpoint. Crucially, only one of the rules is learnt in two sequential steps while the other rule is learnt in a single step along with its context specification.

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[22] We concede that referring to a few examples observed in some dialects whose exact details are unknown to us is not the best approach to make any meaningful generalizations. The few examples reported by Dorleijn (1996) might involve production errors, case form neutralization, a development of differential object marking in those dialects, among many other possibilities. Whether such instances should be considered as productive instances of certain checkpoints or whether they are mere exceptions is unknown to us. We make a judgment call to mention them in favor of including as much variation as possible to show the permissiveness of our learning paths theory to capture a wide range of variation within the tenets of the dependent case. We believe that our learning paths can be constrained in a principled way once all the empirical coverage is sufficiently covered.

[23] We label this Kurmanji dialect spoken in Erzurum as Kurmanji$_C$. Although it has the same basic case patterns as Kurmanji$_A$, there is also interesting inter-generational variation in case alignment patterns within this speech community. See also footnote 32.

	checkpoint	accepted	non-past	past
Path 3	1	↓	DIR–OBL	DIR–OBL
	2	↑$_C$	DIR–OBL	OBL–OBL
	3	↓$_C$	DIR–OBL	OBL–DIR
Path 4	1	↑	OBL–DIR	OBL–DIR
	2	↓$_C$	OBL–OBL	OBL–DIR
	3	↑$_C$	DIR–OBL	OBL–DIR
Path 5	1	↓$_C$	DIR–OBL	DIR–DIR
	2	↑	OBL–OBL	OBL–DIR
	3	↑$_C$	DIR–OBL	OBL–DIR
Path 6	1	↑$_C$	DIR–DIR	OBL–DIR
	2	↓	DIR–OBL	OBL–OBL
	3	↓$_C$	DIR–OBL	OBL–DIR

Table 13: 3-checkpoint paths.

There are only four logically possible learning paths consisting of 3-checkpoints. While all of those paths converge on the Kurmanji$_A$ patterns as their final checkpoints, they differ in their intermediate checkpoints. Path 3 and Path 6 contain checkpoints producing the double oblique pattern in past tense clauses and not in non-past clauses. Outputs generated at the second checkpoints of Paths 3 and 6 render the heritage patterns (double oblique in past tense clauses), a desired outcome. On the other hand, the second checkpoints of Paths 4 and 5 predict double oblique alignment in non-past tense clauses but not in past tense clauses. From the heritage grammar point of view (i.e. Kurmanji$_H$), this is an undesired outcome since these paths both undergenerate (no double-oblique in past tense clauses) and overgenerate (double-oblique in non-past clauses). In addition, out of the 130 transitive present tense clauses in monolingual acquisition data from Mahalingappa (2009) only one has OBL-OBL alignment. Dorleijn (1996) does not report any instances of OBL-OBL in present tense clauses and none of the dialects we report accept OBL-OBL in the non-past clauses either. Given that there is only one instance in the entire corpus and knowledge space available to us, we conclude that the single example might be a production error.[24]

Once again, the fact that non-past tense clauses are never (productively) OBL-OBL does not follow from the DCT and requires an explanation either in terms of the lack of empirical coverage or some principled way of constraining the paths to exclude Paths 4 and 5. In this case, we think

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[24] The particular data point reported by Mahalingappa (2009: 60) comes from a 2;6 year-old speaker who produced a total of three present tense transitive clauses in four different natural elicitation sessions.

that the culprit is not the lack of empirical coverage. Instead, we argue that Paths 4 and 5 are never pursued due to the nature of the context that accompanies the upward dependent case. In Paths 3 and 6, the downward dependent case is learnt in two steps whereas in Paths 4 and 5, it is the upward dependent case that is learnt in two steps.

The conclusion we arrive at is that the upward case is never learnt in two steps in Kurmanji. All the paths where the upward dependent case is learnt in two steps both overgenerate and undergenerate. We argue that this follows from the distribution of the upward dependent case, which in Kurmanji must make reference to a smaller set of environments (past tense only) as opposed to the downward dependent case which is the elsewhere case (present tense and subjunctive-imperative). Since the upward dependent case always co-occurs with past tense transitive clauses, the association of the upward dependent case with its context is more straightforward. This aligns well with the facts reported in the acquisition of ergative literature. Ergative has been shown to be learnt early with minimal overgeneralization errors. Pye (1990: 559–560) showed that children acquiring K'iche' made very few errors with ergative subjects. Neither ergative nor absolutive was overgeneralized. Butt (2006: 176) mentions a study she carried out in 1991 on the acquisition of ergative in Hindi, a split ergative language like Kurmanji. She reports that there were "vanishingly few errors with ergative" (Butt 2006: 560). The ergative acquisition literature has shown that ergative does not lead to commission errors.[25] We observe the same in Kurmanji and we believe that the tendency towards OBL-OBL in past tense clauses but not in non-past tense clauses across many varieties of Kurmanji is due to the narrower environment associated with ergative.

Now that we have ruled out Paths 4 and 5, we are left with Paths 3 and 6, which project trajectories where the upward dependent case is learnt in a single step whereas the downward dependent case is learnt in two steps. Learning an underspecified version of the downward dependent case rule at a checkpoint and setting its context specification at a later checkpoint allows room for the heritage case forms (double oblique in past tense clauses) to emerge naturally. We claim that the heritage speakers who use the double oblique alignment in past tense never set the context parameter for the downward dependent case rule and use checkpoint 2 in Paths 3 or Path 6 as their final attainment state diverging from the input forms. The final attainment state for heritage Kurmanji is given in (23).[26]

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[25] Stromswold (1996) defines commission errors as cases where an element in the utterance is used incorrectly.

[26] Path 3 predicts DIR-OBL alignment in past tense clauses at Checkpoint 1. The monolingual acquisition data from Mahalingappa (2009) contains 0 instances of DIR-OBL alignment in past tense clauses. Our consultants (heritage or not) do not accept these patterns either. However, some heritage speakers from Batman produce such patterns, which indicates that Path 3 might be viable for some Kurmanji speakers and that these speakers have shifted to a completely accusative system simply by setting Path 3 Checkpoint 1 as their final attainment state.

(23)   **Final Attainment State** (L_{KH^n})

<div style="border:1px solid #000; padding:1em;">

Past Tense (↑)	**(↓) (no context specified)**
NP_1 c-commands NP_2	NP_1 c-commands NP_2
→ NP_1 = ERG.	→ NP_2 = ACC.

</div>

One of the key issues regarding the emergence of the heritage patterns in this model is the convergence problem. Why do the heritage speakers use Checkpoint 2 and diverge from the input patterns predicted by Checkpoint 3? We argue that this follows from the nature of the transition from Checkpoint 2 to Checkpoint 3, which requires a revision in a previously learnt underspecified rule. The downward dependent case rule which does not have a context restriction in Checkpoint 2 must be specified with the *elsewhere* condition.

Going from an underspecified rule to one that makes reference to the elsewhere condition requires production, hypothesis testing, and error-driven learning. The learner must realize that the grammar they acquired overgenerates (OBL objects in past tense clauses) and seek hypotheses to fix the overgeneralization problem.[27] The relevant hypothesis in this case is the *elsewhere* condition, which has to make reference to the context for the upward dependent case (past tense) as it is the complement set of the more specific context (upward dependent case in past tense). In a nutshell, the transition from an underspecified rule to a context sensitive rule requires hypothesis testing and rule revision. We argue that this requires production and the heritage speakers have a reduced rate of production which prevents them from realizing the overgeneration problem caused by the underspecified downward dependent case rule. Thus, the impact of Turkish on the shift towards accusativity in Kurmanji dialects is indirect. Heritage Kurmanji speakers do not copy the accusative pattern from Turkish.[28] Instead, we argue that the heritage speakers do not produce enough[29] Kurmanji forms to do hypothesis testing and rule revising.[30]

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[27] An equally plausible account is one that is completely based on positive evidence. (See Guasti (2016) for a discussion on positive evidence.) This requires the *elsewhere* condition on the downward dependent case to be associated with *present tense* and *subjunctive* environments. This can be done as the union of two separate contextual features {PRESENT, SUBJUNCTIVE} or as an abstract latent feature that groups the two contexts together like {NON-PAST}. The downward dependent case has a wider set of environments than that of the upward dependent case which is only associated with past tense and it is plausible to argue that the delay in the setting of the contextual parameter of the downward dependent case is due to the abstraction process which is not required for the upward dependent case.

[28] It is worth highlighting the fact that Kurmanji, as a split ergative language, already has the accusative pattern. Thus a mere copying account does not fare well.

[29] Obviously, a precise characterization of "enough" is needed and we simply don't have one.

[30] An anonymous reviewer points out that such changes are attributable to a combination of internally motivated change and overlap between the dominant language that work hand in hand. One prominent view is based on frequency effects. Silva-Corvalán (1994), Johanson (2002), and Alferink (2015) show that under contact situations, when Language A has two or more equally possible options one of which overlaps with an option also present in Language B, the speakers will choose the more frequent option. Moro (2016) shows that the same effect holds in heritage languages. When the heritage language has more than one equally possible option, the heritage speaker will

Our proposal essentially follows the Reduced Intake Hypothesis. Putnam & Sánchez (2013: 480–481) draw a distinction between *input* and *intake* where *input* refers to the raw linguistic input whereas *intake* refers to the manipulation of this input which involves interpreting, extracting, and storing the formal features of language. In this model, in addition to the amount and quality of the input (Montrul 2002; Polinsky & Scontras 2019), a learner's active interaction with the input (use for comprehension and production) is also of significant importance. Following Putnam & Sánchez (2013: 480–481), we argue that production is a fundamental piece of the acquisition process and reduced production can lead to divergences within a constrained logical space guided by the principles of grammar (the DCT in this case). The setting in which our consultants were raised points to a reduced intake, specifically reduced production, rather than a significantly reduced input. This is especially true for our Consultant 2, whose mother is a monolingual Kurmanji speaker and father is a late Kurmanji-Turkish bilingual,[31] and the parents speak with Consultant 2 primarily in Kurmanji. We observe similar facts in the monolingual acquisition data from Mahalingappa (2009). The dialogue in (24) indicates that the child produces the divergent OBL-OBL pattern in the past tense even though the caregiver uses the OBL-DIR pattern, pointing to a divergence from the input.

(24) **Adult – child dialogue**   (Mahalingappa 2009: 56)

a. mı   tu   ne-bir-i
    I.**OBL** you.**DIR** NEG-take.PAST-2SG
    'I didn't take you.'   adult

b. na te   mı   bir.
    no you.**OBL** I.**OBL** take.PAST
    'No, you took me.'   child (2;6)

4.8 4-checkpoint paths

In the previous section, we ruled out paths where the upward dependent case and its context specification are learnt in different checkpoints. This allowed us to account for the lack of OBL-OBL alignment in non-past clauses and it provided an explanation for why ergative is learnt relatively straightforwardly without overgeneralization errors (unlike the downward dependent case). Sticking to the same premise simply rules out all the 4-checkpoint paths as these are paths that project trajectories where each of the learning tasks listed in (21) is learnt at a distinct checkpoint, requiring a separation of the upward dependent case and its context.

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prefer the option also present in the dominant language. This is compatible with our checkpoint based proposal and we do not rule out this possibility. The crucial point in our proposal is that the OBL-OBL pattern in Kurmanji emerges naturally. Its retention as the heritage pattern is due to language contact and the impact of the dominant language is indirect. We think that the nature of indirect impact is *reduced intake* which is compatible with the view that rules (or features) that are common between the heritage and dominant language are preferred.

[31] Turkish is their second language.

For the sake of completeness of the discussion and in the interest of articulating all the predictions of the theory, we provide all the six logically possible 4-checkpoint paths in Appendix A. Five out of six paths (Paths 7–11) overgenerate by producing OBL-OBL in non-past clauses, three of them (Paths 8, 10, 12) overgenerate by predicting OBL-DIR alignment in non-past clauses and one of the paths (Path 11) undergenerates by not predicting the OBL-OBL in past tense clauses. Although all of the 4-checkpoint paths converge on Kurmanji$_A$ in their final checkpoints, none of them provide a trajectory where all of the intermediate checkpoints are attested across the Kurmanji varieties and one of them undergenerates. In contrast, 3-checkpoint paths (Path 3 and 6) provide just the right amount of room for variation allowing the heritage patterns to emerge without significant overgeneration. The DIR-OBL pattern in the past tense predicted by Path 3 is not accepted by our heritage consultants. However, it does occur in the monolingual acquisition data reported by Mahalingappa (2009). Such patterns are observed in heritage speakers from the Batman area, indicating that there is variation in the potential paths followed by learners.

To conclude this section, if our assumption regarding the simultaneous learning of the upward dependent case along with its context specification is correct, then all of the 4-checkpoint paths are automatically ruled out, restricting the number of learning paths significantly while still allowing sufficient room for the observed variation across the Kurmanji dialects. It could well be the case that some of the learners follow 4-checkpoint paths which predicts a lot more variation than what we empirically cover here. It is also possible that some of the forms which are unattested to the best of our knowledge are in fact attested in some dialects or in some mono-lingual acquisition data. In that case, we would need to invoke the 4-checkpoint paths and work out the precise constraints that pick out the right set of paths that predict the attested forms without over or undergenerating. We are not aware of any data points that challenge our account that rules out the 4-checkpoint paths but we believe that the DCT based framework we developed here has the potential to provide the precise set of paths that can handle the systematic variation observed across Kurmanji dialects.

5 Concluding Remarks

In this paper, we have investigated the variation in the case alignment patterns in baseline and heritage Kurmanji dialects through the lens of Dependent Case Theory combined with a checkpoint-based learning hypothesis. We have started with the observation that heritage Kurmanji exhibits a shift towards accusativity in its split ergative system in that accusative case is extended to past tense environments. We have argued that this crucial difference between baseline and heritage dialects of Kurmanji hinges on whether there is a context specification for the accusative case rule. From this perspective, the final attainment state for baseline Kurmanji has an accusative rule that is specified for an elsewhere, i.e. [-past], context while the final attainment state for heritage Kurmanji has an accusative rule that is not specified for a context. We have proposed that under a checkpoint-based learning hypothesis, attaining the case alignment of baseline Kurmanji requires an additional

learning step in which the context specification for the accusative rule is learnt. This predicts that heritage Kurmanji case patterns will emerge when speakers do not go through this additional learning step. We have shown that our checkpoint-based learning hypothesis also finds empirical support from the monolingual acquisition data on Kurmanji where children go through a stage where outputs are on par with heritage Kurmanji rather than with the input/baseline Kurmanji.

It is notable that Turkish, the dominant language of our heritage Kurmanji consultants, does not have a direct role (such as copying or calquing) in our account of the shift towards accusativity. Rather, we have argued that Turkish being the dominant language has an indirect effect, significantly reducing the Kurmanji intake for learners. In particular, learning the context specification for the accusative rule requires the learners to realize that their output is distinct from the input they hear. In the case of heritage speakers, a likely reduced rate of production in essence hinders learners from realizing the output-input mismatch, resulting in divergent attainment. We have also argued that our view is compatible with the idea that naturally emerging OBL-OBL patterns might be perpetuated as a result of contact with Turkish by a preference for the rules common to both languages (i.e. the downward dependent case) along the lines of Moro (2016) among many others.

The model we propose in this paper has been developed for capturing the variation observed in case patterns across Kurmanji dialects in addition to how the variation might have emerged from a Generative Grammar point of view. To that end, our proposed model is intended to be a competence model and the methodology we adopt is one that is widely used in the Generative tradition, which relies on acceptability judgments of speakers (Chomsky 1961; Newmeyer 2013). We treat heritage languages as I-languages in the sense of Chomsky (1986) and model their outputs and judgments. Our use of naturally elicited monolingual acquisition data is limited to general patterns emerging in the data (e.g. the tendency of children going through a stage where they use OBL-OBL in past tense clauses in Kurmanji). We assume that only repeated and productive use of certain patterns is an indication of grammaticalization (i.e. a checkpoint in our system). We also rely on a certain amount of idealization in the input to acquisition.[32] This method allows us to work in a relatively idealized set of input/outputs "free of" production errors, slips of

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[32] For example, the Kurmanji$_C$ dialect reported by Mahalingappa (2009), where the monolingual acquisition data comes from, involves a decent amount of variation across generations. Grandparents never use OBL-OBL whereas parents occasionally use OBL-OBL in past tense clauses (total of 15 instances in the dataset). Mahalingappa (2009) reports that the difference between the grandparents and the parents is not statistically significant. Young adults (ages 17–26) rarely use OBL-OBL in the past tense (3 out of 62 instances). By contrast, older children display significantly more use of OBL-OBL in past tense clauses (20 out of 25 instances). Clearly, the learners are receiving a decent amount of variation as input, including the OBL-OBL forms in past tense clauses. In fact, one of Mahalingappa's major arguments is that the children are not necessarily deviating from the input language as the "deviant" patterns exist in the input. That children receive some of these "deviant" patterns as input is an undeniable fact. However, this does not explain how these deviant patterns first emerged, especially given that the grandparents never use them. It is also worth noting that in the Kurmanji$_A$ dialect, these patterns are judged to be sharply ungrammatical but the heritage speakers end up using them as their only option, diverging from the input patterns.

the tongue, idiosyncratic exceptions, etc. and build theories of grammars – sets of general rules that instruct processing of linguistic expressions (production and comprehension). It also lets us account for general tendencies observed across various dialects (e.g. the shift towards OBL-OBL across all the Kurmanji dialects). However, real-time language production is a lot more complex and the variation is much richer even within a single dialect or a single individual. The same goes for the amount of variation in language acquisition. While some of the variation is attributable to the rules acquired by the learner, a non-trivial amount of it is attributable to the actual use of these rules. Many factors like memory, access to rules, and other real-time processing issues play a role in the actual output. Rules might undergo attrition (Montrul 2010a; O'Grady et al. 2011; Polinsky 2011) or the Activation Thresholds associated with the rules might change over time (Paradis 2007). Accounting for all the variation requires a significant amount of interdisciplinary research and goes far beyond the scope of the current paper.

Abbreviations

1 = first person, 2 = second person, 3 third person, ABS = absolutive case, ACC = accusative case, AJT = acceptability judgment task, DCT = Dependent Case Theory, DIR = direct case, H = set of logically possible hypotheses, IMPF = imperfective aspect, INF = infinitive, L2 = second language, NA = not applicable, NEG = negation, NOM = nominative case, OBL = oblique case, P = pre/postposition, PAST = past tense, PH = set of plausible hypotheses, PLD = Primary Linguistic Data, PL = plural, SBJV = subjunctive, SG = singular

Appendix A: 4-checkpoint paths

	checkpoint	accepted	non-past	past
Path 7	1	↓	DIR–OBL	DIR–OBL
	2	↑	OBL–OBL	OBL–OBL
	3	↓$_C$	OBL–OBL	OBL–DIR
	4	↑$_C$	DIR–OBL	OBL–DIR
Path 8	1	↑	OBL–DIR	OBL–DIR
	2	↓	OBL–OBL	OBL–OBL
	3	↓$_C$	OBL–OBL	OBL–DIR
	4	↑$_C$	DIR–OBL	OBL–DIR
Path 9	1	↓	DIR–OBL	DIR–OBL
	2	↑	OBL–OBL	OBL–OBL
	3	↑$_C$	DIR–OBL	OBL–OBL
	4	↓$_C$	DIR–OBL	OBL–DIR
Path 10	1	↑	OBL–DIR	OBL–DIR
	2	↓	OBL–OBL	OBL–OBL
	3	↑$_C$	DIR–OBL	OBL–OBL
	4	↓$_C$	DIR–OBL	OBL–DIR
Path 11	1	↓	DIR–OBL	DIR–OBL
	2	↓$_C$	DIR–OBL	DIR–DIR
	3	↑	OBL–OBL	OBL–DIR
	4	↑$_C$	DIR–OBL	OBL–DIR
Path 12	1	↑	OBL–DIR	OBL–DIR
	2	↑$_C$	DIR–DIR	OBL–DIR
	3	↓	DIR–OBL	OBL–OBL
	4	↓$_C$	DIR–OBL	OBL–DIR

Table 14: 4-checkpoint paths.

Supplementary file: Appendix B. Translation and acceptability judgment items

Sentences presented to the consultants for the translation and acceptability judgments can be found in the supplementary file. DOI: https://doi.org/10.16995/glossa.9236.s1

Acknowledgements

Competing interests

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