Outline

Linguistic microvariation in L1A

- Variation in the input (V2 and SS) & Main findings in child langauge
- **Micro-cue Model (Westergaard 2009, 2014)**
  - the size of rules (*micro-cues*)
  - learning by parsing
  - conservative learning & step-wise acquisition

Microvariation in multilingual contexts

- **L2A**
- **L3A**
- Main claims:
  - L1A=L2A=L3A
  - Linguistic proximity is an important factor
  - Transfer / CLI is property-by-property

Variation in the Input in Acquisition (VIA project)

- Children exposed to a lot of variation, e.g. V2/non-V2, different subject/object positions, pre- and postnominal possessives, etc.

- Only some of this variation traditionally assumed to constitute a parameter, e.g. V2.

- BUT: The factors affecting word order choice vary across languages/dialects and must be **learned from input** (clause type, givenness, category type, specificity, definiteness, etc.).

Subject Shift (S-Neg vs. Neg-S)

Word order choice dependent on a number of factors, e.g.:

- **Category of the subject (pronoun vs. full DP)**

(1) *Denne boka   har **ikke** Peter lest.*
     this   book.DEF has not   Peter read

(2) *Denne boka   har **han ikke** lest.*
     this   book.DEF has he   not   read

Neg - DP

Pron - Neg

V2 vs. non-V2 in *wh*-questions

Word order choice dependent on a number of factors, e.g.:

- **Initial element**

Long *wh*-elements (phrases) – V2

(3) *Korfor **kommer du**? / *Korfor du   kommer?*

   why   come   you

Short *wh*-elements (heads) – V2/non-V2

(4) a. *Kor   **er mitt fly**?*   b. *Kor   **vi lande** henne?*

   where is my   plane   where we land   LOC

What – virtually always non-V2

(5) *Ka **du sir**?*

   what you say

Main findings in child data I

No overgeneralization across contexts: Fine distinctions in syntax and information structure typically in place from earliest possible utterances.

Subject positions / general finding:

Neg - DP

Pron - Neg

(6)   *der   står   **ikke** alle folkan*. (Ole, age 2;5.18)

there stand not   all   people.DEF/PL

(7)   *og   no   kan **æ ikke** drikke det*. (Ole, age 2;10.0)

and now can I not   drink it

Main findings in child data II

V2/Non-V2

- Distinction short vs. long wh-elements and *ka* 'what'; similar frequencies as in adult data.

Table 1: Percentage of V2 across *wh*-questions, Ina 1;8.20-2;10.12 (N=506).

Wh-element	*ka* 'what'	*kor/kem* 'where, who'	*korsen/koffør/katti* 'how, why, when' + *wh*-phrases
% V2	**19.2%** (49/285)	**83.7%** (149/178)	**100%** (73/73)

So …

- Children are **sensitive to fine distinctions** in the input from early on.

- Many of these are exceptions to parameters or variation that has not been argued to be parameterized – must be learned from input.

- **If children acquire this kind of variation early and easily, why do we need parameters for simple stuff like VO/OV (very frequent & salient in the input)?**

- Parameter setting would predict (massive) overgeneralization – generally not attested in syntax.

- In fact, we occasionally find the opposite; Roeper (1999:175): '… there is widespread evidence for "undergeneralization" in child language'.

Syntactic movement slightly delayed

Subject Shift

(8)   ?*nå   skal **ikke** **dem** *sove.* (Ole, 2;3.15)   NORWEGIAN

        now shall not   they sleep

V2

(9)   *der   **Ann har** *et.* (Ann, age 2;1.28)   NORWEGIAN

        there Ann has one

(10)   *Why **he can't** hit? (Adam, age 3;4.01)   ENGLISH

- Children non-target-consistently choose the less frequent form.

- **Overuse of syntactic movement virtually unattested – CONSERVATIVE LEARNING** (e.g. Snyder 2007).

- Most errors due to **economy**; i.e. no movement without clear evidence in input (Westergaard 2009, 2014).

Model of micro-cues I (Westergaard 2009, 2014)

- Fodor (1998: 6): A **treelet** is "a small piece of tree structure … that is made available by UG and is adopted into a learner's grammar if it proves **essential for parsing** input sentences."

- Lightfoot (1999, 2006): A cue is a **piece of abstract syntactic structure**, provided by UG.

- Cues are formulated in terms of major categories (V or DP) - make the same predictions as macro-parameters.

  – Cue for OV word order: $_{VP}[DP \; V]$
  – Cue for V2 word order: $_{CP}[XP \;_C V...]$

Model of micro-cues II

Westergaard (2009): The **context** specified as part of the cue. For example, V2 is not one big rule (or "parameter"), but several smaller rules, *micro-cues*:

- Micro-cue for V2 in questions with monosyllabic *wh*-elements:

$$_{\text{IntP}}[\ _{\text{Int°}}[wh]\ _{\text{TopP}}[\ _{\text{Top°}}[V\ldots XP_{[+FOC]}\ldots]]]$$

- Micro-cue for Subject Shift:
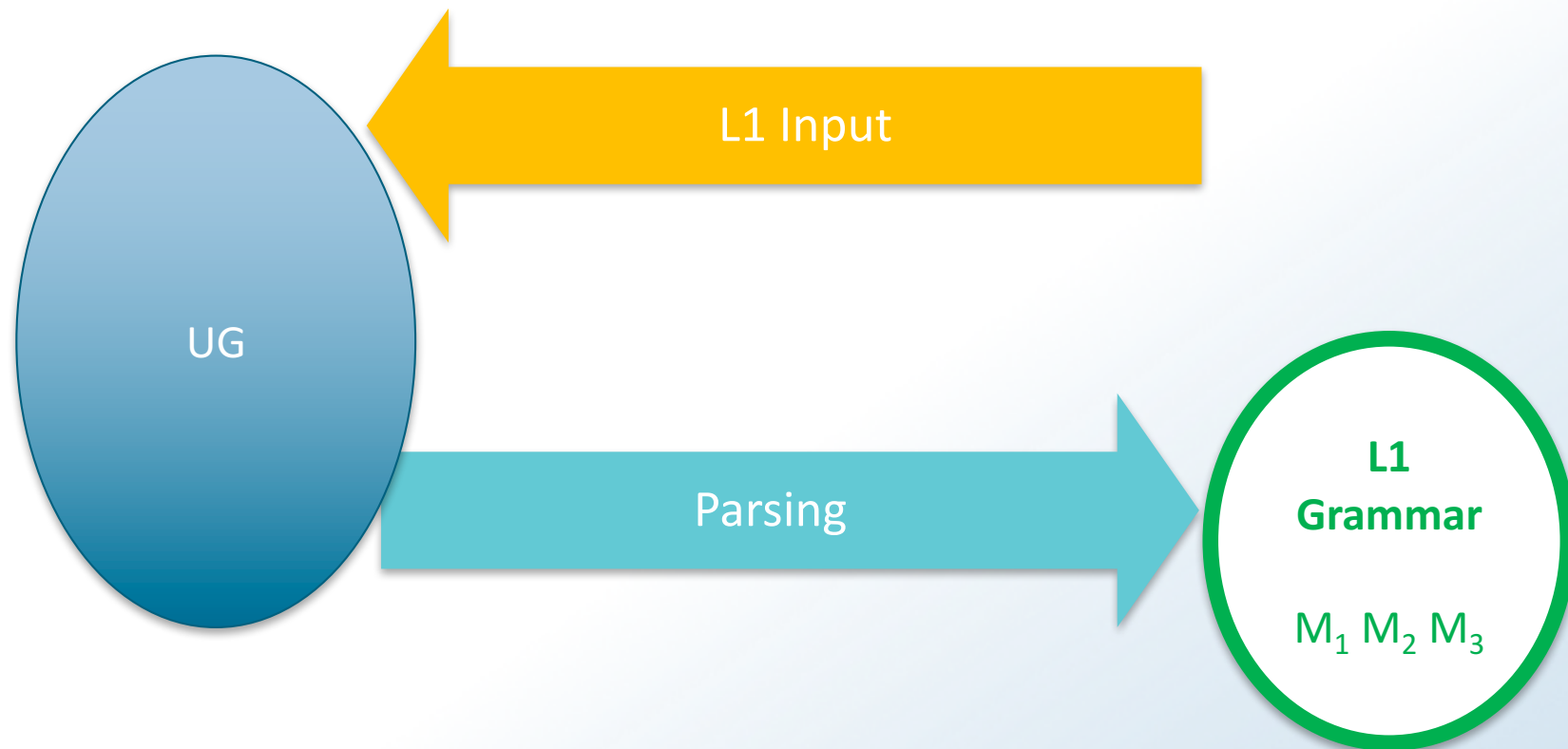
$$_{\text{InTopP}}[\ DP_{[-FOC]}\ AdvP\ldots]$$

Model of micro-cues III

- Generative approach: UG contains **no parameters** – but presumably categories/features, principles, constraints …

- Genetic endowment **enables children to *parse* linguistic input**, and build micro-cues in their I-language grammars.

- Language acquisition is **learning by parsing**, resulting from interaction between UG, input, and 3rd factors (economy, other cognitive factors).

- Unlike cues and treelets, **micro-cues are not provided by UG**; part of the grammar of a *specific language*.
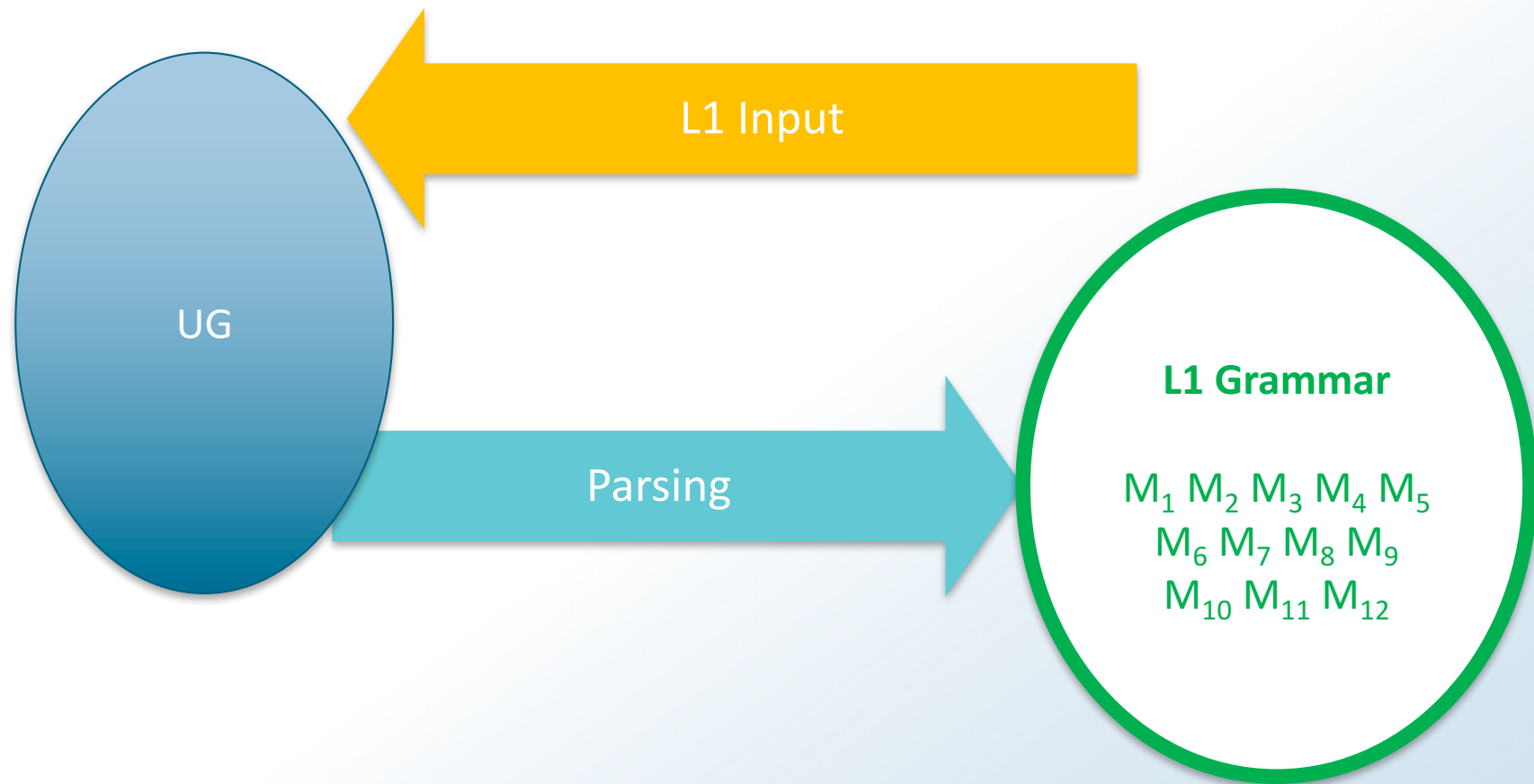
Model of micro-cues IV: From small to big

- Children start out **with small pieces of structure** & build up grammar incrementally.

- BUT: Adult language is not accumulated knowledge of specific constructions - generalization takes place based on sufficient positive evidence in input.

- **Generalization is step-by-step development. Steps are small**, involving addition of a sub-category, a lexical item/feature.

- Children do not immediately extend a process/rule to a major category (e.g. all nouns, all verbs, all *wh*-elements), but only within a small class or subcategory, i.e. **one micro-cue at a time.**

- **Advantage of step-by-step development: Little or no need for 'unlearning'.**

L1 Acquisition

UG

L1 Input

Parsing

L1 Grammar

M_1 M_2 M_3

L1 Acquisition

UG

L1 Input

Parsing

L1 Grammar

M_1 M_2 M_3 M_4 M_5
M_6 M_7 M_8 M_9
M_{10} M_{11} M_{12}

Intermediate summary L1A

- Children sensitive to fine syntactic distinctions from early on.
- Conservative learning: Non-target-consistent production typically due to ECONOMY.
- Overgeneralization only across subcategories.

- **Micro-cue Model of L1A**
  - UG: no parameters, but possibly categories/features, principles …
  - UG enables children to parse input - **learning by parsing**
  - Children build small pieces of structure, micro-cues, in their I-language grammar (linguistic *context* specified)
  - Micro-cues not in UG, but part of a specific language
 - Acquisition in small steps

What does the micro-cue model predict for multilingual situations?

Conservative learning in L2 Acquisition?

- L2 learners **not** conservative; sometimes overgeneralize movement, e.g.

  - L2 acquisition of German: Evidence of non-target-consistent verb movement in subordinate clauses (e.g. Clahsen, Meisel & Pienemann 1981, Haznedar & Schwartz 1997, Eide 2015).

  - Subject Shift in Norwegian (Anderssen et al., 2017):

    L1 preference: **L2/Ln preference:**

    Neg   DP   DP   Neg

   Pron Neg   Pron Neg

SS in L2/Ln Norwegian (over-acceptance of movement)
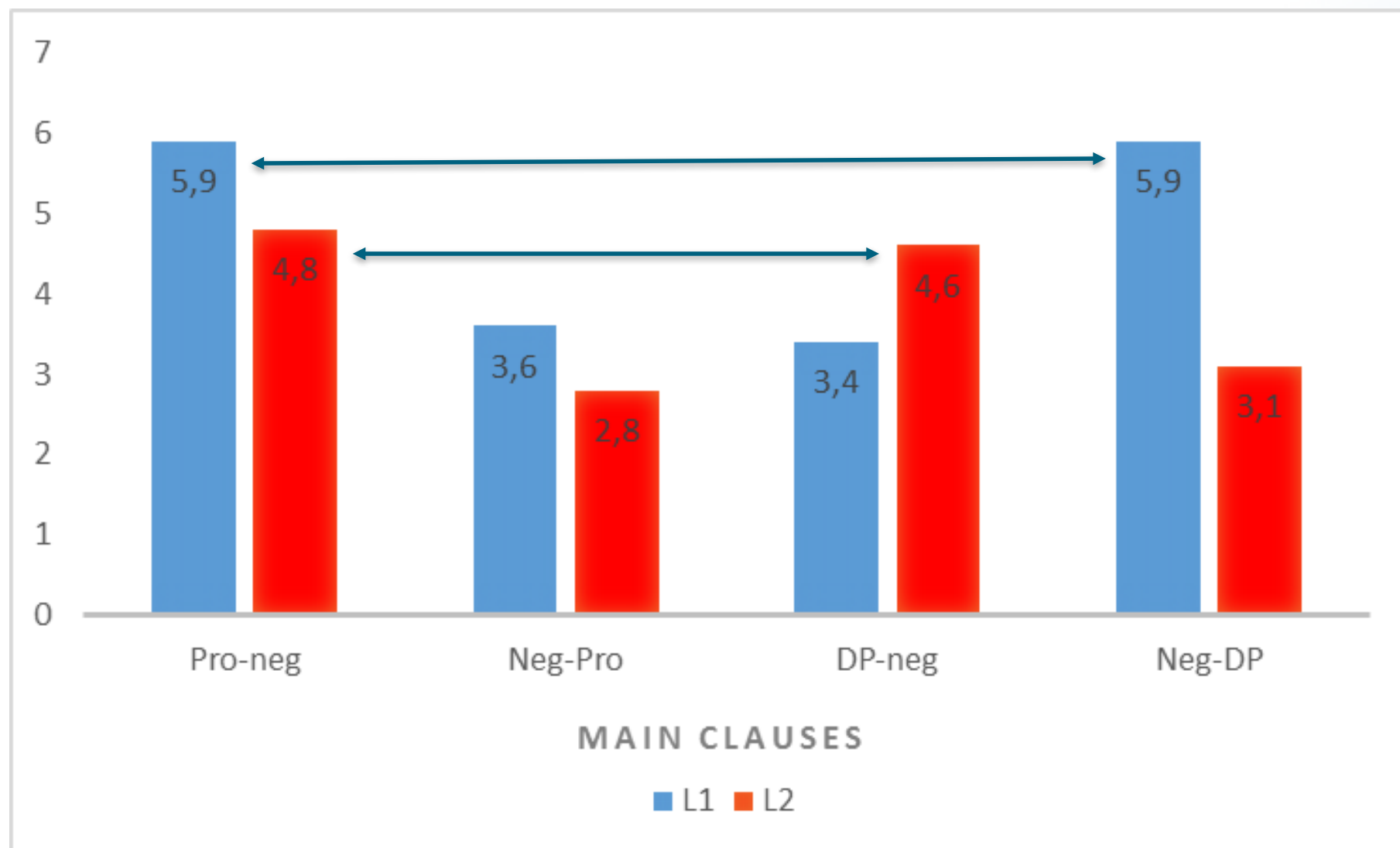
BUT: Transfer/CLI sensitive to microvariation I

- Westergaard (2003): V2 variation from L1 Norwegian (NN dialects) carried over to L2 English at early stages (i.e. no transfer of a "parameter setting")

- Distinction between long and short *wh*-items
(1) ***Where** the ball is?*   (grammatical in NN)
(2) ***What color** the ball is?*   (ungrammatical in NN)

- L1 NN learners of L2 English find (1) significantly more acceptable than (2).

Transfer/CLI of V2 microvariation in *wh*-questions (L1 Norwegian – L2 English)
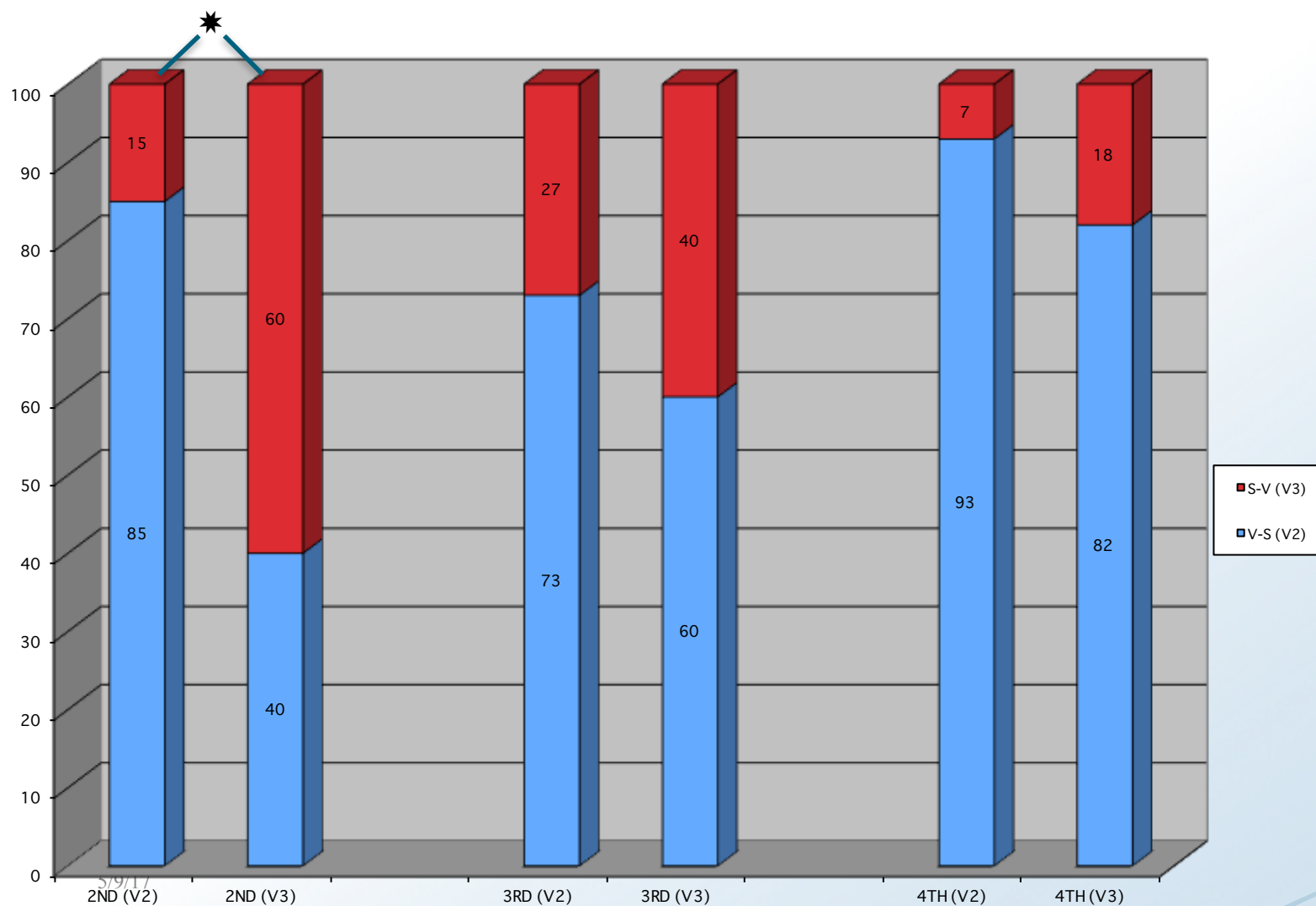
Transfer / CLI and the size of rules?

Amaral & Roeper (2014): Multiple Grammars Theory

- *Avoid Complex Rules* (no exceptions, no optionality)
  - GERMAN: V2
  - ENGLISH (two separate rules for verb movement):

    Subject-auxiliary inversion: What **will Peter** do?

    Quotative inversion: "Nothing", **said Peter**.

- One reason for this: Only simple rules can be transferred to another language

MW:
- **Typically, SMALL rules may be transferred (micro-cues)**
- **L2A findings may be used to identify small rules**

Transfer/CLI sensitive to microvariation II

- Non-subject-initial and subject-initial declaratives – both clause types traditionally considered to be part of the V2 phenomenon ("parameter").

(3) *Yesterday **played** Peter soccer.   (grammatical in N)
(4) *Peter **plays** **always** soccer.   (grammatical in N)

- Westergaard, Lohndal & Alexiadou (2016): (3) and (4) are syntactically different in Norwegian - verb movement to C vs. verb movement to a lower head – mainly for economy reasons ('do not move higher than there is evidence for in the input').

- Support from L2A: (Abstract) distinction between the two clause types carried over into L2 English: While V2 in (3) is unlearned early, V2 in (4) lags considerably behind – often into near-native proficiency.

Transfer of V2 microvariation (verb movement to C vs. I)

Non-S-initial vs S-initial declaratives
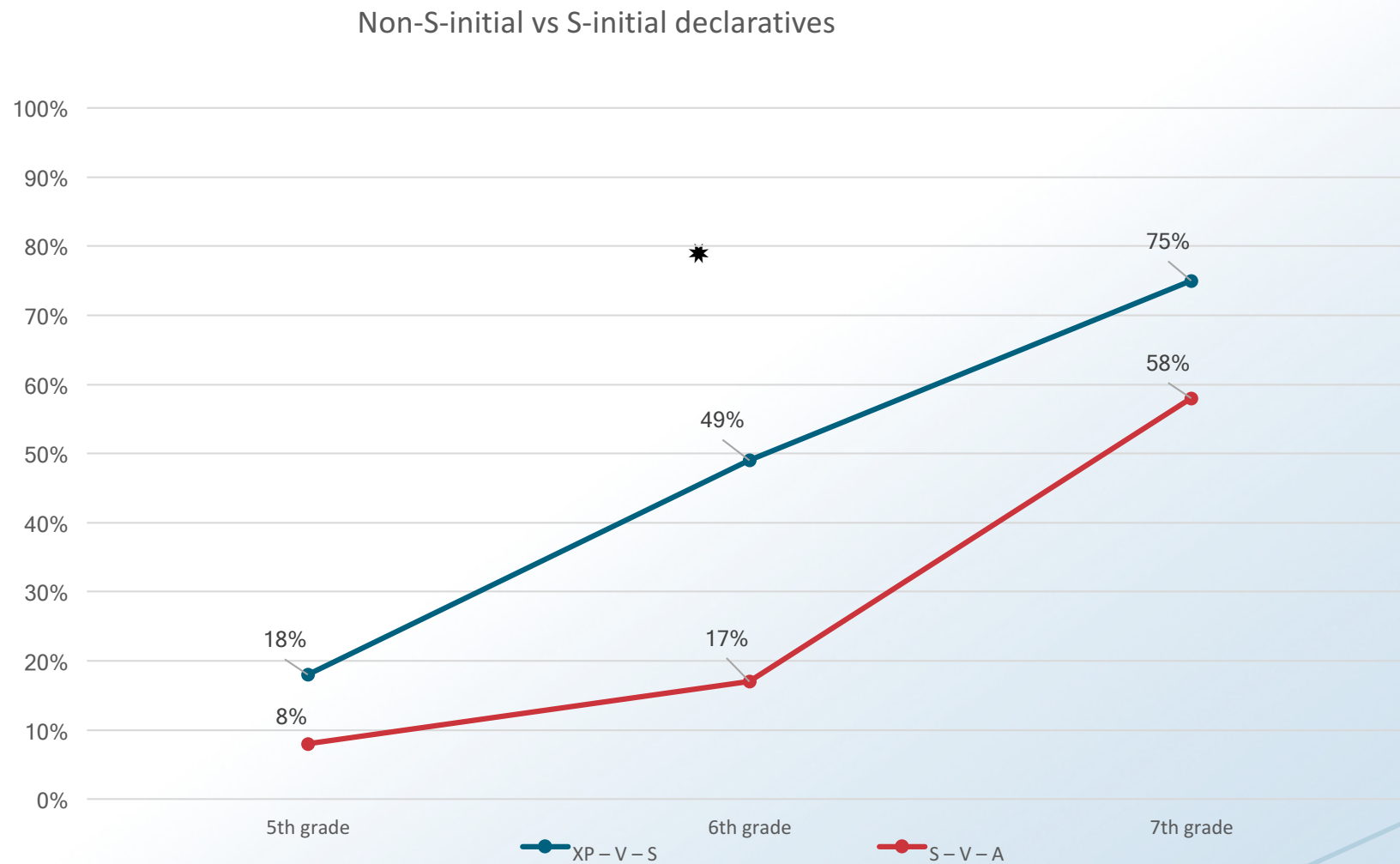
L2 Acquisition – what is transfer / CLI?

- Full Transfer / Full Access (FT/FA) - White (1989, 2003), Schwartz & Sprouse (1996), Grueter (2007), etc.
- Minimal Trees (Vainikka & Young-Scholten 1994/1996)
- Weak Transfer (Eubank 1993/4)
- Initial Hypothesis of Syntax (Platzack 1996)

In my view: Considerable and convincing evidence for **Full Transfer** / FA

- BUT: What does FT really mean? Wholesale transfer – or property-by-property?

L2 Acquisition – Full Transfer

Schwartz & Sprouse (1996: 40-41):

- 1. '… [t]he initial state of L2 acquisition is the final state of L1 acquisition.

- 2. '[T]he entirety of the Ll grammar (excluding the phonetic matrices of lexical/morphological items) … **immediately carr[ies] over** as the initial state of a new grammatical system **on first exposure** to input from the target language (TL). This initial state of the L2 system will have to change in light of TL input that cannot be generated by this grammar; that is, **failure to assign a representation to input data will force some sort of restructuring** of the system …

L2 Acquisition (FT / FA) – step I (initial state)

L1 Grammar

M_1 M_2 M_3
M_4 M_5
M_6 M_7 M_8
M_9
M_{10} M_{11} M_{12}

L2 Input

Transfer

L2 Grammar

M_1 M_2 M_3 M_4
M_5
M_6 M_7 M_8 M_9
M_{10} M_{11} M_{12}

UG

L2 Acquisition (FT / FA) – step II

L1 Grammar

M_1 M_2 M_3
M_4 M_5
M_6 M_7 M_8
M_9
M_{10} M_{11} M_{12}

UG

L2 Input

L2 Grammar

M_1 M_2 M_3
M_4 M_5
M_6 M_7 M_8
M_9
M_{10} M_{11} M_{12}

Parsing failure
Restructuring

L2 Grammar

M_1 M_2 M_3 M_4
M_5
M_6 M_7 M_8 M_9
M_{10} M_{11} M_{12}
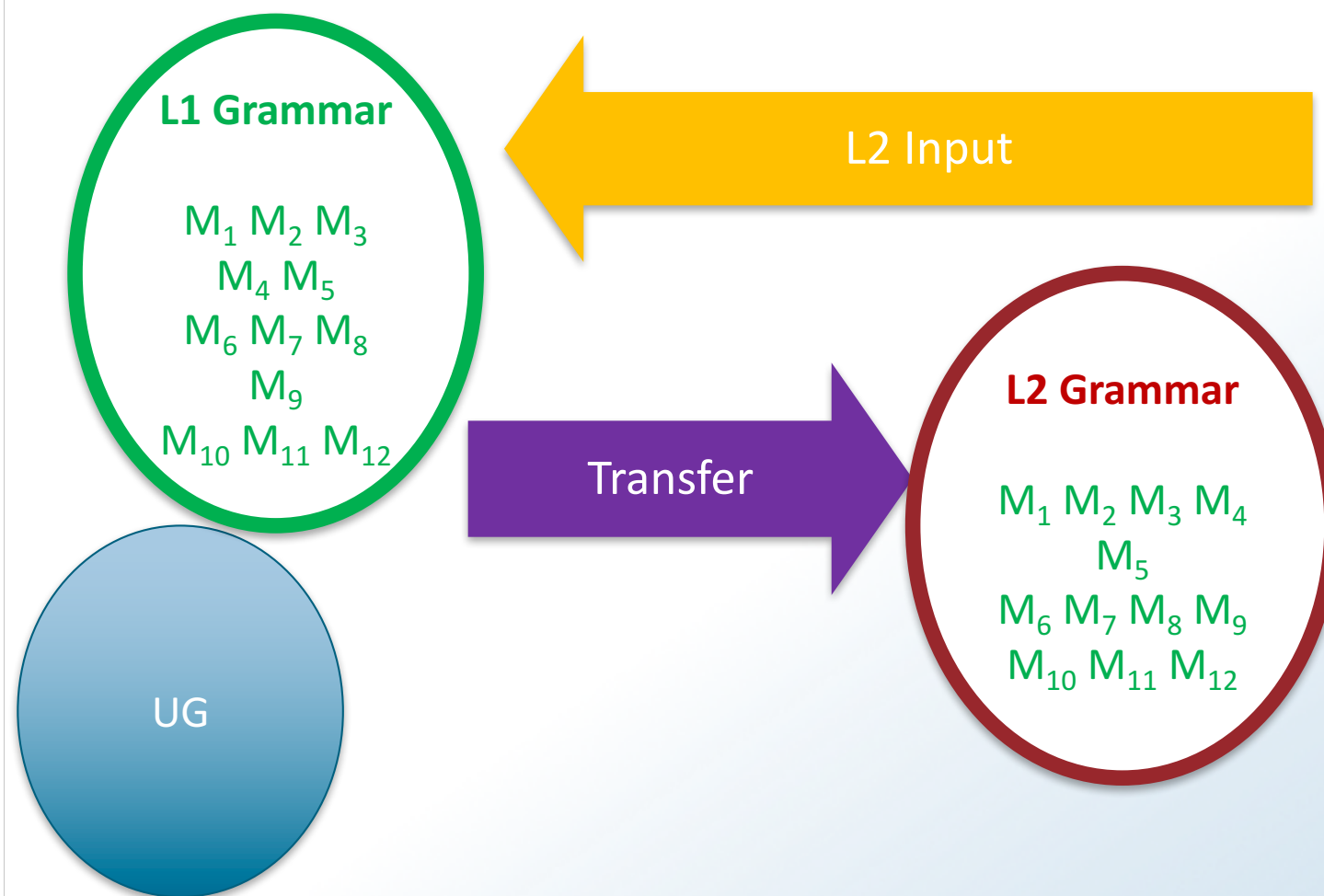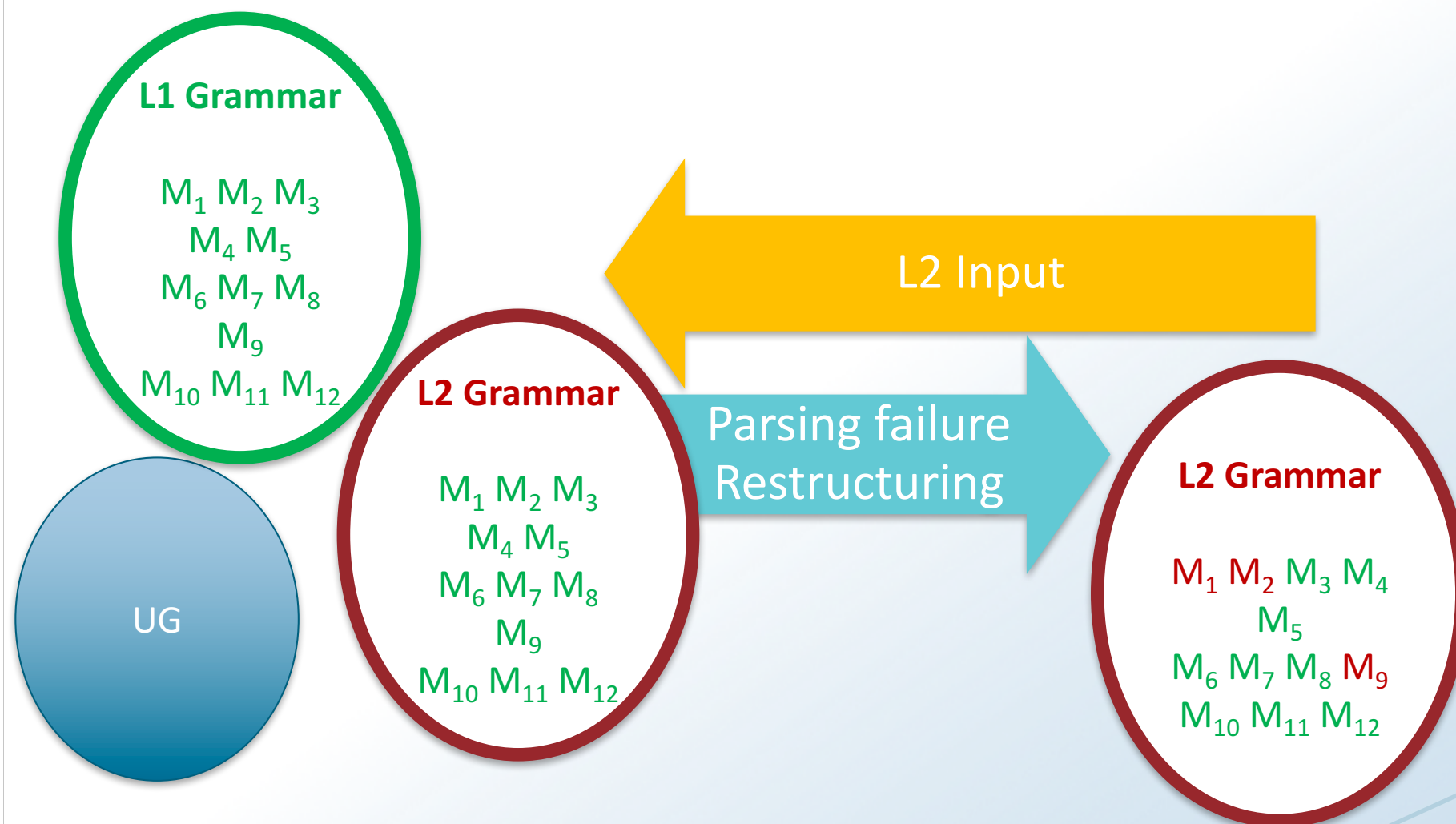
Questions

- What would be the **purpose** of the brain making a copy of the L1 if the L1 is still accessible?

- Is there any neurological **evidence** that this copying takes place in the brain?

- What does "**on first exposure**" mean? Will the brain make copies of the L1 for every language that one is ever (briefly) exposed to?

- If our language learning mechanism is able to make **fine distinctions** in L1A, why not in L2A?

- Why would the brain create a context for massive "**unlearning**" in L2A, when this is avoided in L1A?

L2 Acquisition – Full Transfer

Schwartz & Sprouse (1996: 40-41):

- 1. '… [t]he initial state of L2 acquisition is the final state of L1 acquisition.

- 2. '[T]he entirety of the Ll grammar (excluding the phonetic matrices of lexical/morphological items) … **immediately carr[ies] over** as the initial state of a new grammatical system **on first exposure** to input from the target language (TL). This initial state of the L2 system will have to change in light of TL input that cannot be generated by this grammar; that is, **failure to assign a representation to input data will force some sort of restructuring** of the system ('grammar') …

Full Transfer POTENTIAL (FTP) I

- The L1 is the initial state of the L2.

- The L1 is always active (so no need to make a copy of it).

- When exposed to L2 input, the learner tries to **parse** the incoming signal.

- The L2 learner (first) scans the L1 grammar:
  - If there is a micro-cue available to parse the input, transfer from the L1 occurs.
  - If there is no corresponding micro-cue in the L1 grammar, the learner resorts to UG.

Full Transfer POTENTIAL (FTP) II

- Transfer is property-by-property (economy: 'do not transfer more than there is (some) evidence for in the input').

- Facilitative transfer occurs when the L2 learner may use the same micro-cue in both languages.

- Non-facilitative transfer occurs when the learner misanalyzes the input (e.g. transfers too much) or has not had enough input.

- The L2 grammar is not a complete grammar at the initial state, but is built up incrementally based on an interaction of input & UG (as in L1A) plus transfer/CLI from the L1.

L2 Acquisition =L1 acquisition + transfer/CLI

L1 Grammar

M_1 M_2 M_3
M_4 M_5
M_6 M_7 M_8
M_9
M_{10} M_{11} M_{12}

UG

L2 Input

Parsing

Transfer / CLI

L2 Grammar

M_1 M_2 M_3
M_4 M_5
M_6 M_7

L2 Acquisition =L1 acquisition + transfer/CLI

L1 Grammar

M_1 M_2 M_3
M_4 M_5
M_6 M_7 M_8
M_9
M_{10} M_{11} M_{12}

UG

L2 Input

Parsing

Transfer / CLI

L2 Grammar

M_1 M_2 M_3 M_4
M_5
M_6 M_7 M_8 M_9
M_{10} M_{11} M_{12}
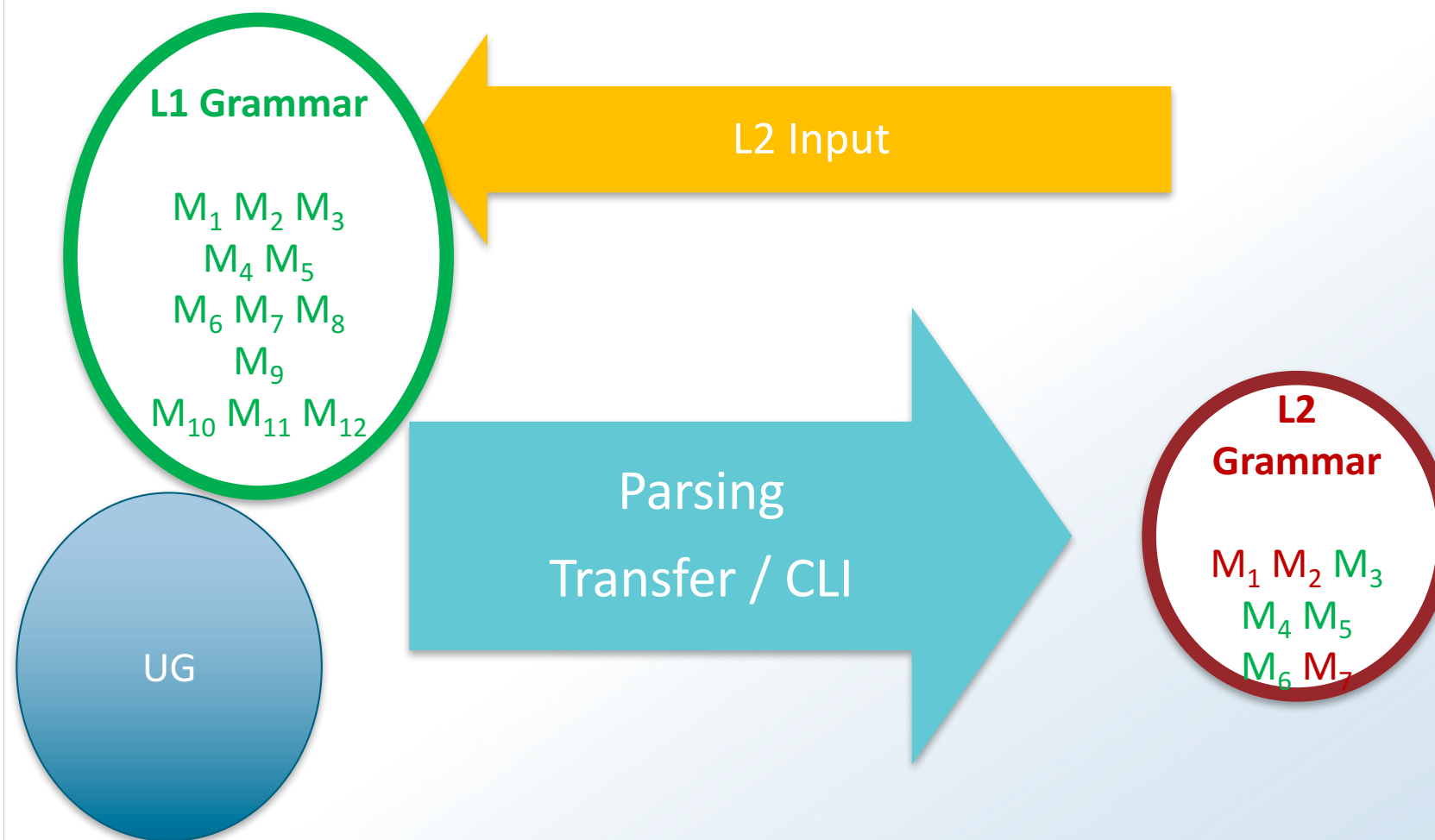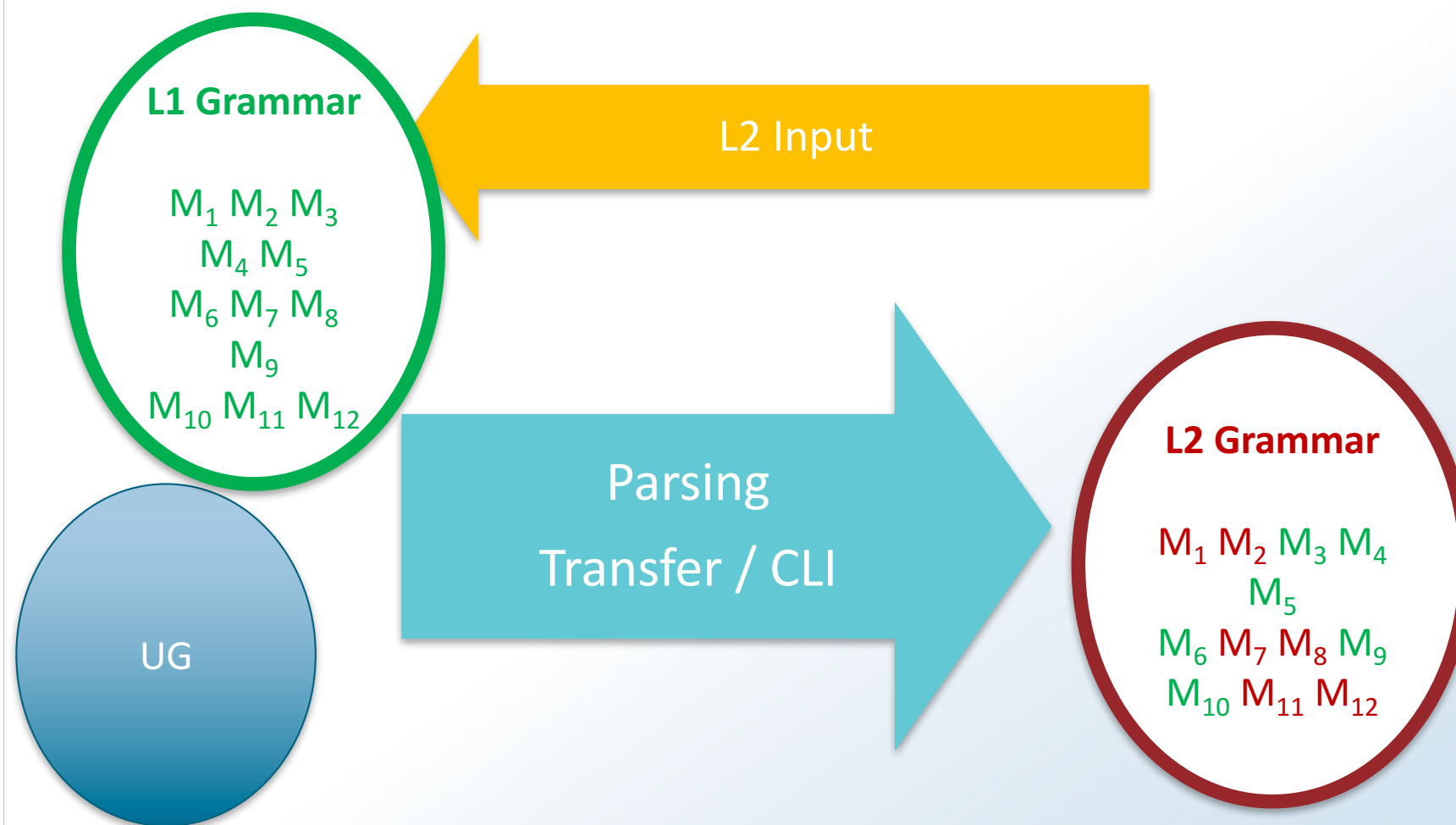
Wholesale transfer or property-by property?

- Is it possible to distinguish between wholesale transfer and property-by-property transfer on empirical grounds?

- Probably not in L2A: Whenever we find evidence for Full Transfer, we cannot know whether everything was transferred at the initial state or whether transfer occurred as the need arose (in an experiment or in spontaneous production/comprehension).

- BUT: It should be possible in L3A – i.e. if we find transfer / CLI from **both** previously acquired languages
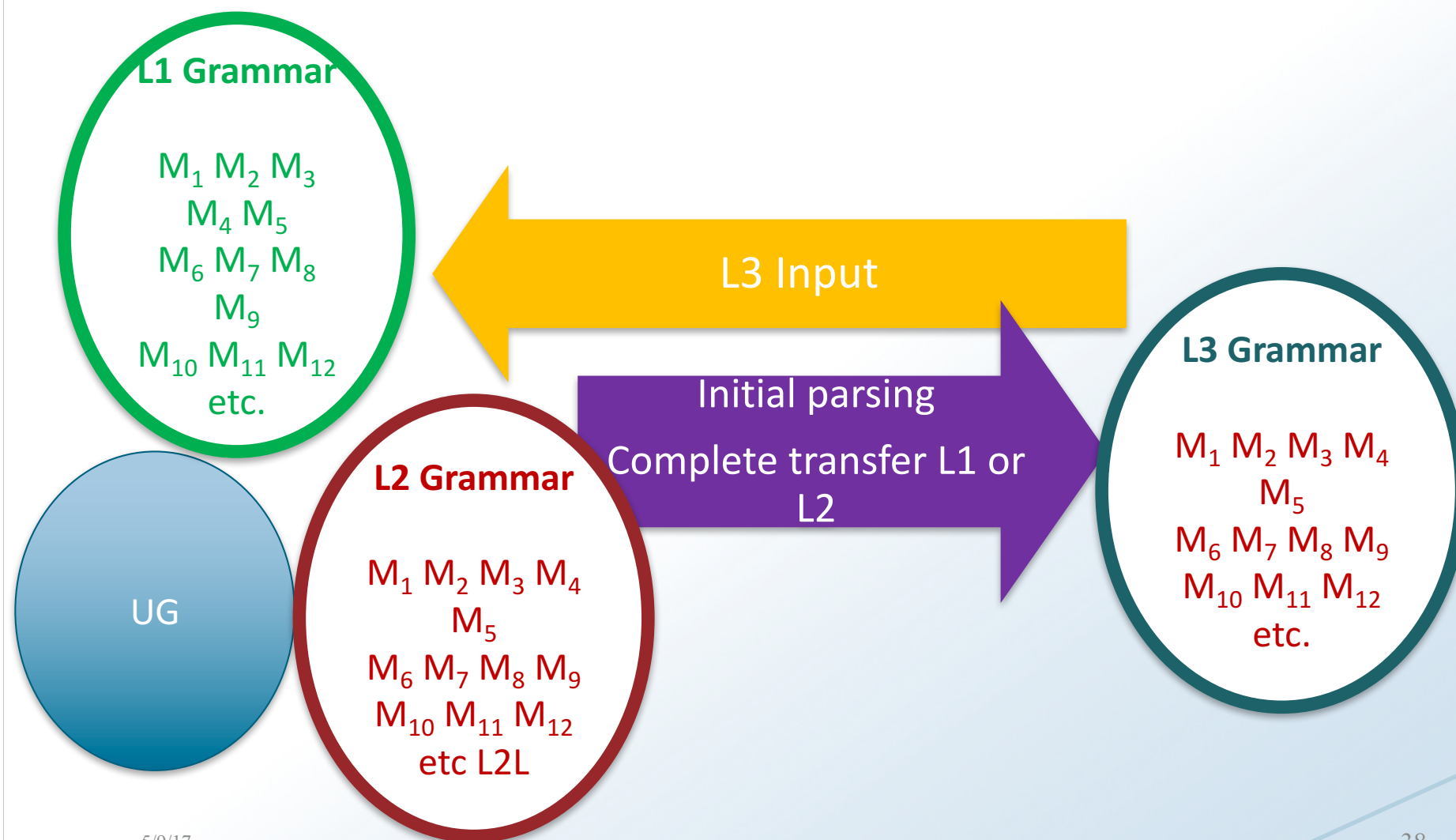
Linguistic Proximity Model (LPM) – Westergaard, Mitrofanova, Mykhaylyk & Rodina (2016)

Transfer in L*n* acquisition occurs when a *particular linguistic property* receives supporting input from the involved languages, regardless of order of acquisition (L1 or L2) or general typological grouping.

Other models

- **L1 transfer** L1 is primary source of interference in L3 (e.g. Jin 2009, Na Ranong & Leung 2009; Hermas 2014).

- **L2 status factor (L2SF)** L2 is the primary source of interference in L3, especially at an early stage (e.g. Bardel & Falk 2007, 2012).

- **Cumulative Enhancement Model (CEM)** Both L1 and L2 may positively affect L3 or otherwise remain neutral (i.e. no negative transfer) (e.g. Flynn et al. 2004, Berkes & Flynn 2012).

- **Typology-based Models, e.g. Interlanguage Transfer Hypothesis (ITH) or Typological Primacy Model (TPM)** **Wholesale transfer at initial state/stages** (cf. FT/FA) from the language that is typologically closer to the L3 (e.g. Leung 2003, Rothman 2015).

TPM: L3 Acquisition – step I (initial *stages*)

L1 Grammar

M_1 M_2 M_3
M_4 M_5
M_6 M_7 M_8
M_9
M_{10} M_{11} M_{12}
etc.

UG

L2 Grammar

M_1 M_2 M_3 M_4
M_5
M_6 M_7 M_8 M_9
M_{10} M_{11} M_{12}
etc L2L

L3 Input

Initial parsing
Complete transfer L1 or L2

L3 Grammar

M_1 M_2 M_3 M_4
M_5
M_6 M_7 M_8 M_9
M_{10} M_{11} M_{12}
etc.

TPM: L3 Acquisition – step II

L1 Grammar

M_1 M_2 M_3
M_4 M_5
M_6 M_7 M_8
M_9
M_{10} M_{11} M_{12}

L3 Grammar

M_1 M_2 M_3
M_4 M_5
M_6 M_7 M_8
M_9
M_{10} M_{11} M_{12}

L3 Input

UG

L2 Grammar

M_1 M_2 M_3 M_4
M_5
M_6 M_7 M_8 M_9
M_{10} M_{11} M_{12}

Parsing failure
Restructuring

L3 Grammar

M_1 M_2 M_3 M_4
M_5
M_6 M_7 M_8 M_9
M_{10} M_{11} M_{12}
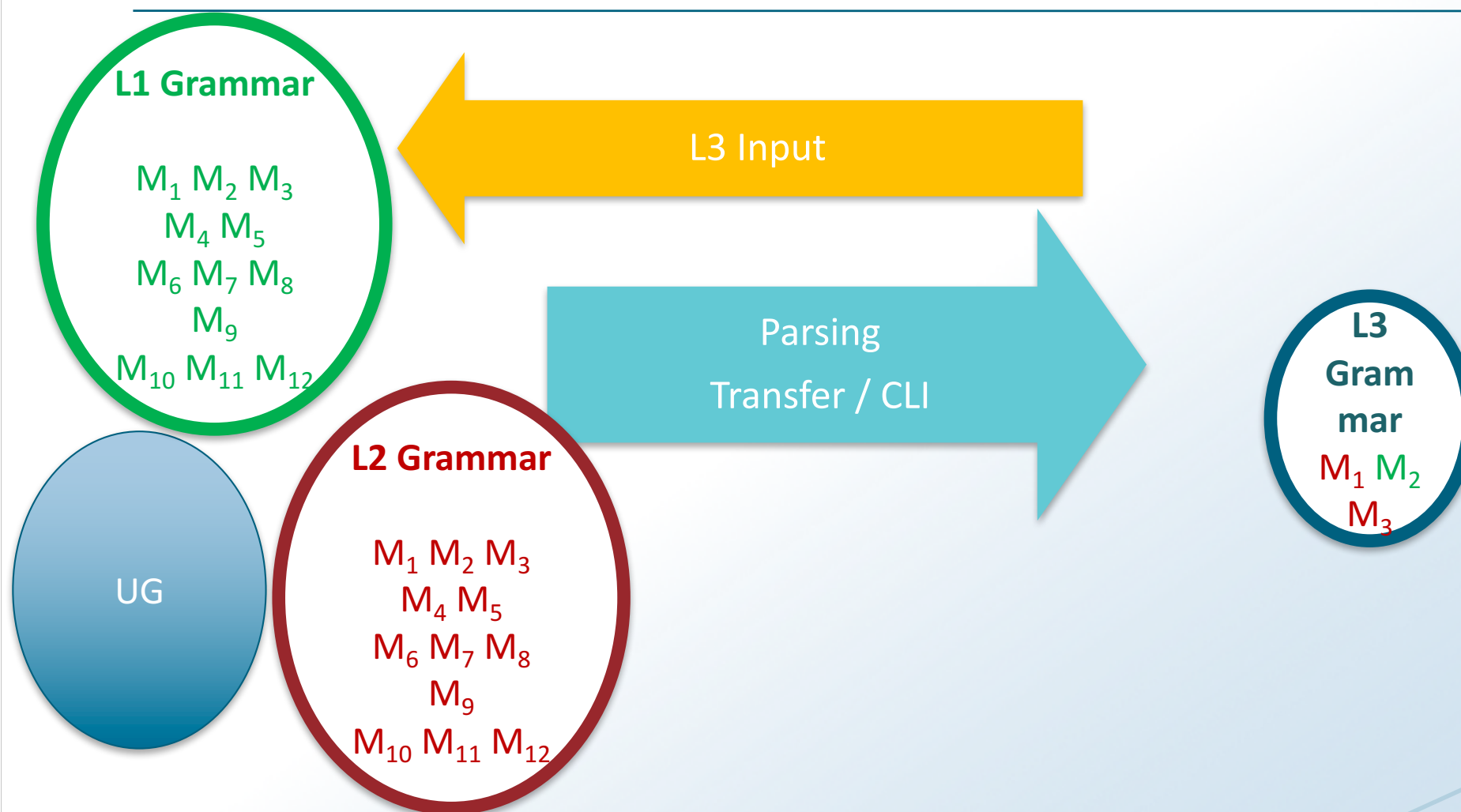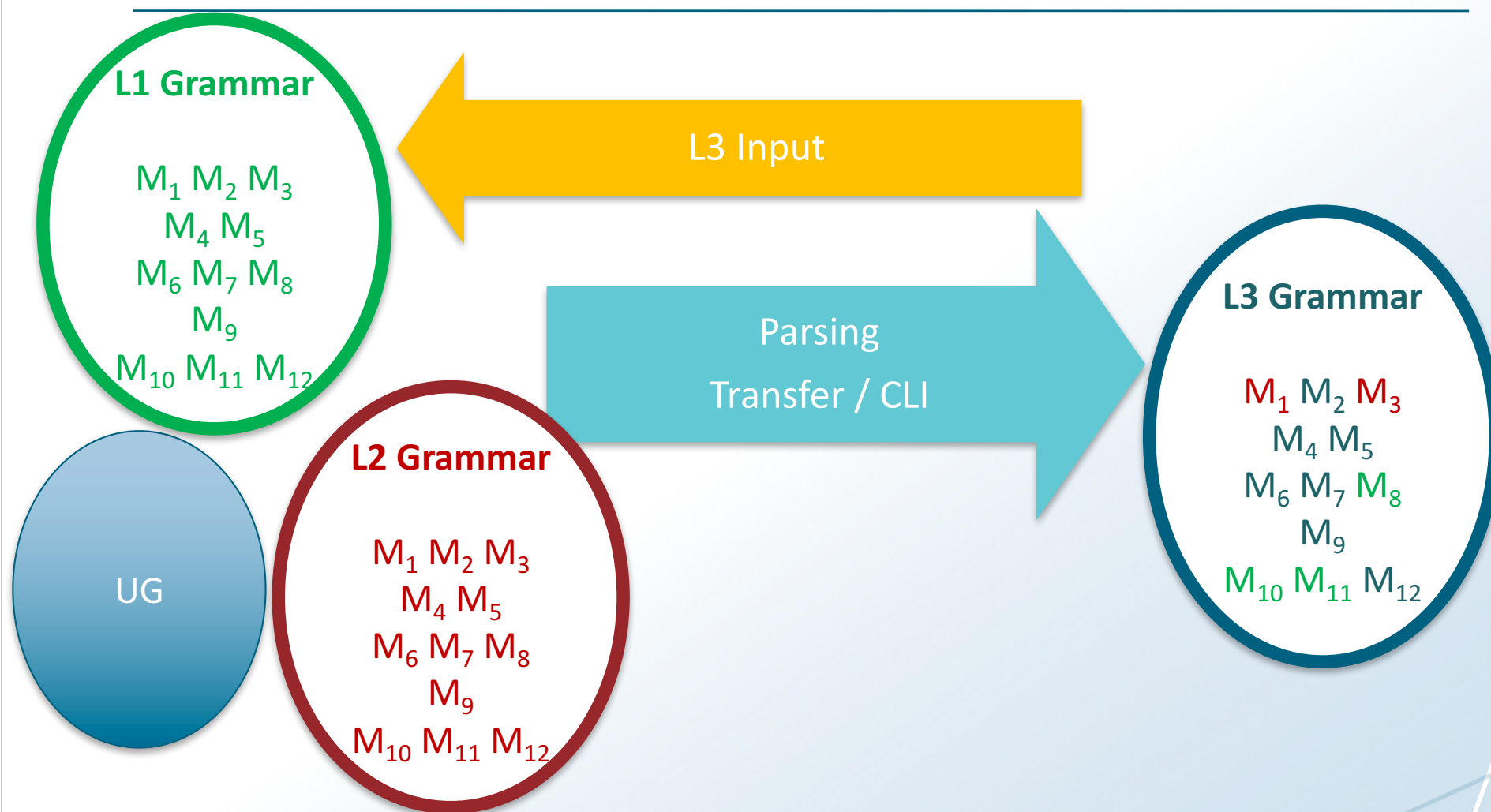
Linguistic Proximity Model (LPM)

- Order of acquisition unimportant ➔ 2L1 learners may be studied.

- Attempts to account for **any stage of L3A**, not just initial stages.

- Learners have **access to all previously acquired** linguistic knowledge.

- Facilitative influence typically based on (abstract) **structural similarity**.

- Non-facilitative influence due to **misanalysis** of L3 input.

- Transfer / CLI occurs **property-by-property**, not wholesale.

LPM: L3 Acquisition = L1 acquisition + transfer/CLI

L1 Grammar

M_1 M_2 M_3
M_4 M_5
M_6 M_7 M_8
M_9
M_{10} M_{11} M_{12}

L3 Input

Parsing
Transfer / CLI

L3 Grammar
M_1 M_2
M_3

UG

L2 Grammar

M_1 M_2 M_3
M_4 M_5
M_6 M_7 M_8
M_9
M_{10} M_{11} M_{12}

5/9/17

LPM: L3 Acquisition = L1 acquisition + transfer/CLI

L1 Grammar

M_1 M_2 M_3
M_4 M_5
M_6 M_7 M_8
M_9
M_{10} M_{11} M_{12}

L3 Input

Parsing
Transfer / CLI

L3 Grammar

M_1 M_2 M_3
M_4 M_5
M_6 M_7 M_8
M_9
M_{10} M_{11} M_{12}

UG

L2 Grammar

M_1 M_2 M_3
M_4 M_5
M_6 M_7 M_8
M_9
M_{10} M_{11} M_{12}

Westergaard et al (2016): L3 English / 2L1 Nor-Rus

English vs. Norwegian

Typologically close: Both Germanic

English vs. Russian

Typologically distant: Germanic vs. Slavic

Both pairs exhibit structural word order similarities / differences:
Adv-V and **Aux-S**

Adv-V word order in declaratives (vs. V2 in Norwegian)

ENG = RUS ≠ NOR

(1) Emma   **often**   **eats**   sweets.   *English*

      Emma   **často**   **jest**   konfety.   *Russian*

      Emma   **spiser**   **ofte**   konfekt.   *Norwegian (V2)*

- L1 Russian: strong preference for **Adv-V** in declaratives (4.8-4.9 out of 5; Kallestinova & Slabakova 2008).

- L1 Norwegian/L2 English: non-target-consistently transfer **V-Adv** (V2) from Norwegian (only 17% accuracy in 6th grade) (Westergaard 2003).

Subject-Auxiliary inversion (residual V2)

ENG = NOR ≠ RUS

(2)   What   **will**   **the little girl**   read?   *English*

       Hva   **vil**   **den lille jenta**   lese?   *Norwegian*

       Čto   **eta malen'kaja devočka**   **budet**   čitat'?   *Russian*

       Čto **budet**   eta malen'kaja devočka   čitat'?

- Russian allows both orders; **S-Aux** default - Aux-S pragmatically marked.

- **Aux-S** unproblematic for L1 Norwegians (accuracy above 90% in 6th-7th grades) (Westergaard 2003).

Participants

- 6th-7th graders

- Matched for English proficiency with simplified BPVS-II (1997) vocabulary test, 60% and more.

Group	Number	Mean age (SD)	Age range	Mean vocab. score (SD)
2L1 Nor-Rus	22	12.5 (1.2)	11-14	8.7 (1.17)
L1 Nor	46	12.0 (0.7)	11-13	8.7 (1.42)
L1 Rus	31	12.0 (0.6)	11-13	7.8 (1.19)

Method

- Acceptability Judgment Task – pre-recorded English test, audio & visual stimuli
- 24 test items; 12 items per condition: 6 grammatical & 6 ungrammatical
- 24 fillers

Structure	Condition 1 – Adv-V Declaratives with Adverbs	Condition 2 – Aux-S Questions with Auxiliaries
Grammatical	S_{NP} Adv V O_{NP}	Wh Aux S_{NP} V?
Ungrammatical	*S_{NP} V Adv O_{NP}	*Wh S_{NP} Aux V?

Condition 1

a. Susan **often eats** sweets.

b. *Susan **eats often** sweets.

Condition 2

a. What **will the little girl** play?

b. *What **the little girl will** play?

# LPM predictions: L3 Eng / 2L1 Nor-Rus

Adv placement

- L1Rus: ceiling performance, due to structural similarity L1 - L2.
- L1Nor: non-facilitative influence from Norwegian (cf. Westergaard 2003).
- 2L1: will outperform L1Nor, due to access to Russian, which patterns with the L3, but may score lower than L1Rus.

S-Aux inversion

- L1Nor: ceiling performance, due to similarity L1 - L2 (V2 & residual V2).
- L1Rus: non-facilitative influence from Russian.
- 2L1: will outperform L1Rus, due to access to Norwegian, which patterns with the L3, but may score lower than L1Nor.

Results: Overall

Correct responses in two conditions: Adv-V and Aux-S.
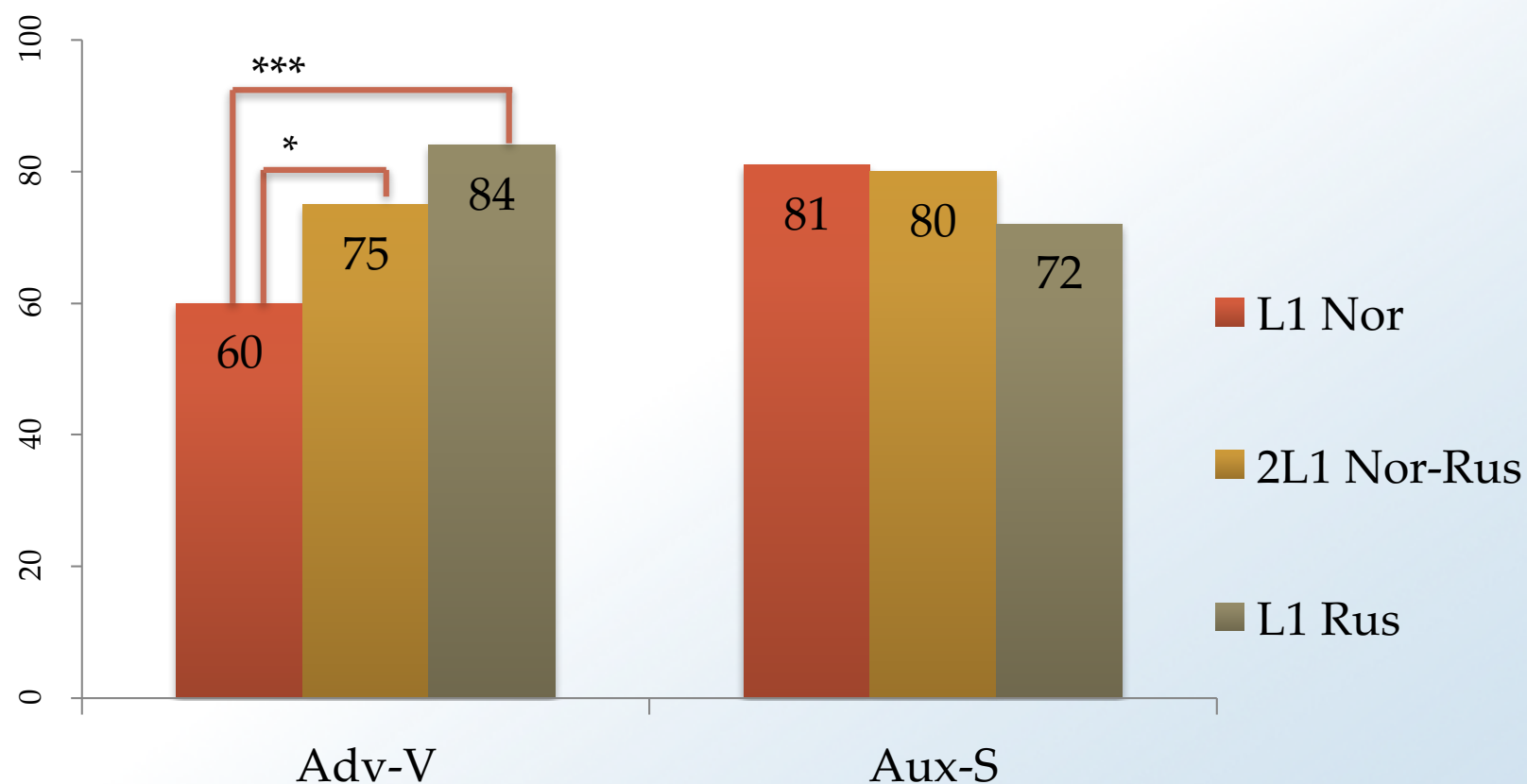
Main findings & argument

Adv-V

- Strong evidence for facilitating effect of Russian
- Non-facilitative influence from Norwegian in L1 Nor and 2L1 Nor-Rus

Aux-S

- Property already acquired, by all groups

Predictions confirmed (effect of both languages) A few other studies have reported this (e.g. Bruhn de Garavito & Perpiñán 2014 - L1 French–L2 English–L3 Spanish).

We argue: Typological proximity Norwegian & English overridden by structural similarity English & Russian.

(Much) more research needed!

L3 acquisition of an artificial language: Norwegian with Case (Aliensk)

Mitrofanova, Gonzalez-Alonso & Westergaard (in progress):

Participants: NOR-RUS and NOR-ENG bilinguals.

- RQ: What is more important in L3A, **typological or structural similarity (TPM vs. LPM)**?
- Prediction LPM: Previous experience with Russian (overt case marking/flexible word order) will be facilitative.

Sentence-picture verification task:
o SVO (Nom-Acc / *Acc-Nom)
o OVS (Acc-Nom / *Nom-Acc)

Training session: 10 sentences (SVO, OVS w/case marking)
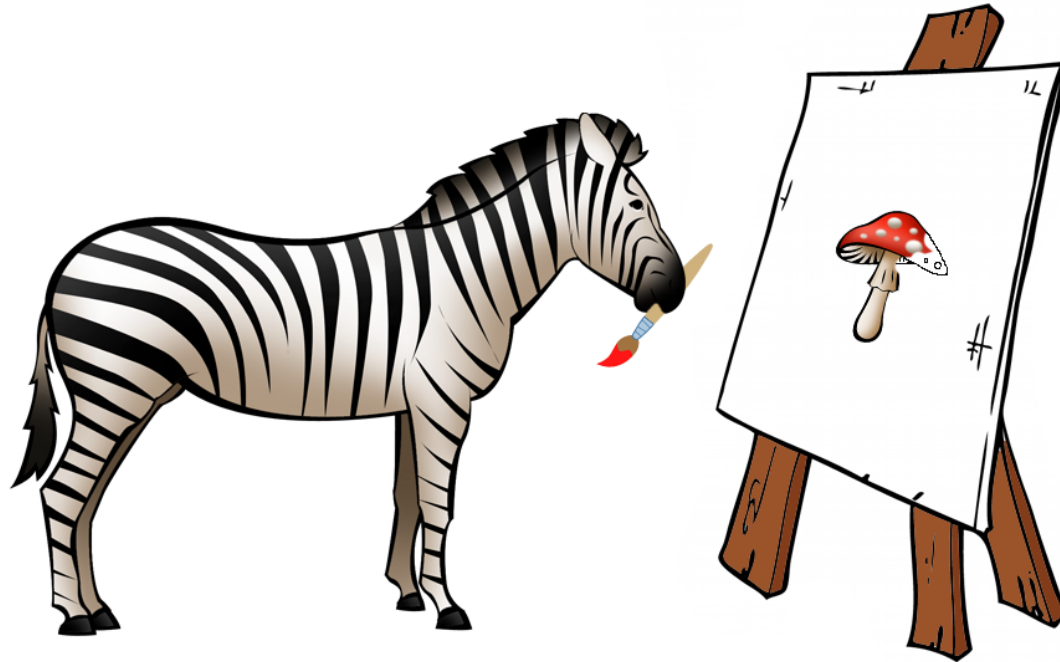
Sebrail tegner soppsu

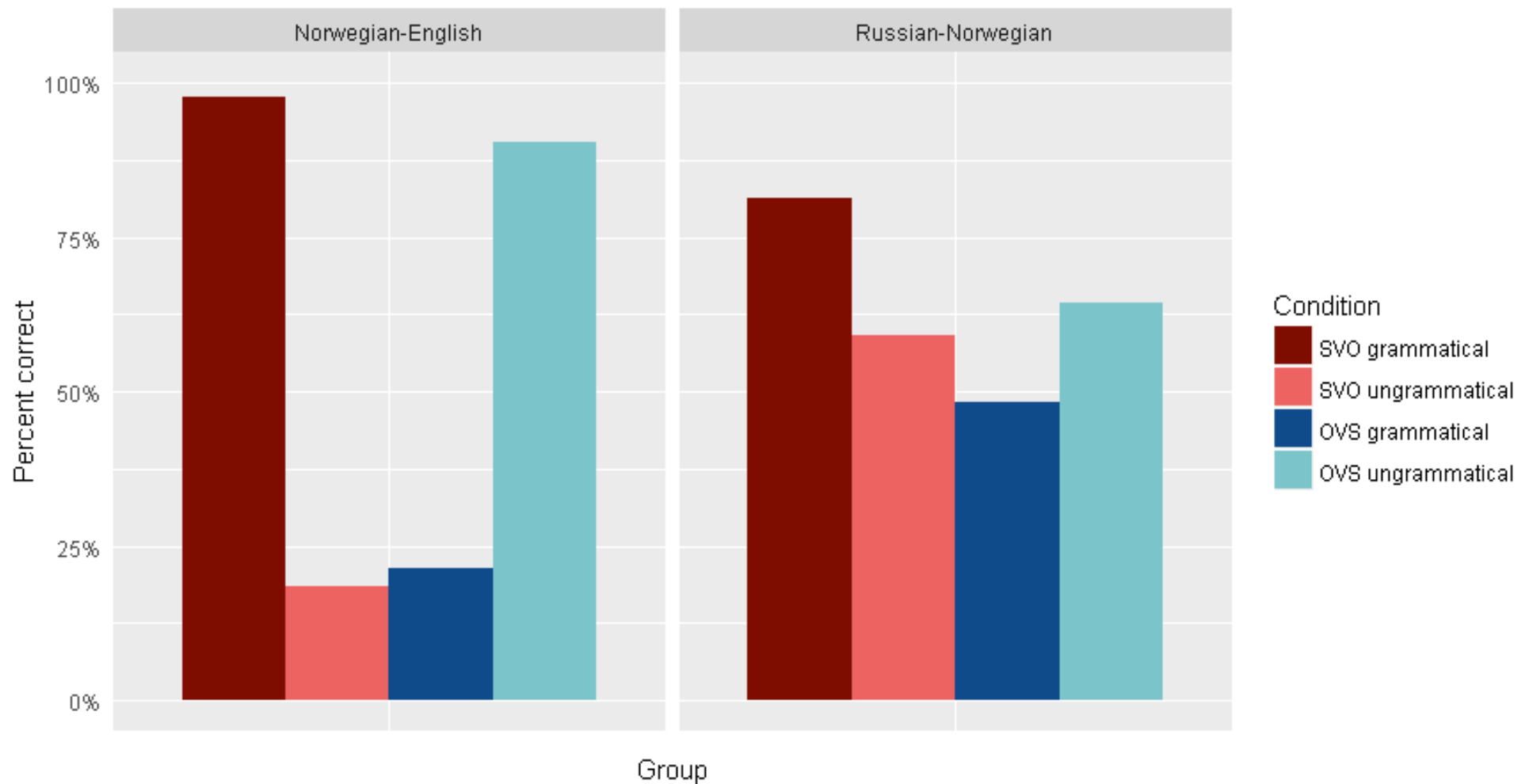Zebra-NOM draws/is drawing mushroom-ACC

Bakersu spiser suppeil

*Baker-ACC eats soup-NOM

Aliensk: Conditions & LPM predictions

Picture: A rabbit eating a carrot	Case	WO	NOR-ENG	NOR-RUS
A. Rabbit-NOM eats carrot-ACC	+	+	YES	
B. Rabbit-ACC eats carrot-NOM	-	+	YES	NO
C. Carrot-NOM eats rabbit-ACC	-	-	NO	
D. Carrot-ACC eats rabbit-NOM	+	-	NO	YES

Results so far... (9 NE, 15 NR)

We argue: Structural proximity should be considered an important factor in L3A
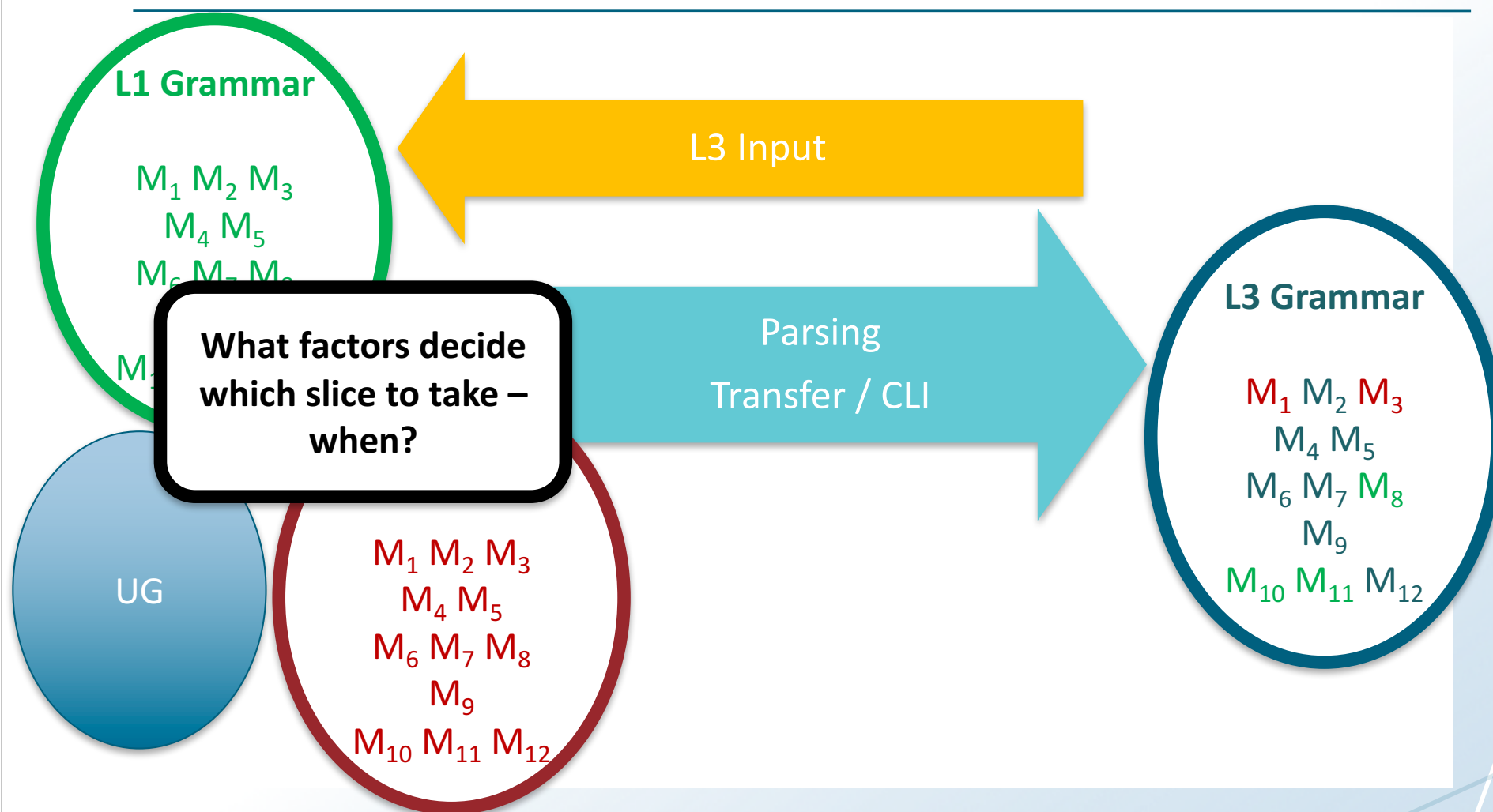
But is it the only factor?

Ideally, we should try to account for **all** findings in the literature, not just from studies designed to test (confirm?) our own favorite model.

- In Westergaard et al. (2016) we acknowledge:

Learners may transfer from a typologically similar language at an early stage – **before they are able to parse structural morphosyntactic similarity** – especially in contexts where the L3 is clearly similar to **one** of the previously learned languages.

- Can there also be transfer/CLI from the L2? (e.g. Bohnacker 2005, 2006 showing influence of non-V2 from L2 English in L1 Swedish – L3 German acquisition). What factors could play a role?
  - Instruction? / Proficiency? / Dominance? / Age? etc.

LPM: L3 Acquisition = L1 acquisition + transfer/CLI

L1 Grammar

M_1 M_2 M_3
M_4 M_5
M_6 M_7 M_8

What factors decide which slice to take – when?

UG

M_1 M_2 M_3
M_4 M_5
M_6 M_7 M_8
M_9
M_{10} M_{11} M_{12}

L3 Input

Parsing
Transfer / CLI

L3 Grammar

M_1 M_2 M_3
M_4 M_5
M_6 M_7 M_8
M_9
M_{10} M_{11} M_{12}

Summary / Conclusion

The Micro-cue Model of Language Acquisition

L1 as well as L2/L3/Ln acquisition

- Access to UG
- Learning by *parsing* (not by copying & restructuring)
- Step-by-step process

L2/L3/Ln acquisition

- All previously acquired grammars stay active
- Full Transfer Potential (FTP) – property-by-property
- FTP at all stages of development
- Transfer / CLI dependent on linguistic proximity, typological similarity, other factors?