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Data-Driven Learning: A Linguistically Authentic Complement to Coursebooks for Foreign Language Learners

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ABSTRACT

This study explores the potential of data-driven learning (DDL) as a complement to traditional coursebooks for multilingual learners of French as a foreign language. Motivated by the need to address insufficiencies in coursebooks, such as oversimplified and misrepresented grammar rules, the study aims to examine how DDL facilitates the learning of French, focusing on adjective placement. To investigate this, the study employed a mixed-methods experimental design incorporating corpus analyses to inform DDL materials, as well as pre-, post-, and delayed post-tests, questionnaires, focus group interviews, and field recordings. Findings indicate that while DDL and traditional instruction yielded comparable short-term outcomes, DDL enhanced long-term retention, critical thinking, and learner autonomy. By exposing learners to authentic language data, DDL heightened awareness of linguistic gradience and variability, supporting its role as a valuable complement to coursebooks in foreign language education.

RÉSUMÉ

Cette étude explore le potentiel de l'apprentissage sur corpus (ASC) comme complément aux manuels traditionnels pour les apprenants multilingues du français langue étrangère. Motivée par la nécessité de pallier certaines insuffisances des manuels, notamment la simplification excessive ou la représentation erronée de règles grammaticales, l'étude vise à examiner comment l'ASC facilite l'apprentissage du français, en mettant l'accent sur le placement de l'adjectif. Pour ce faire, l'étude a adopté un protocole expérimental à méthodes mixtes, intégrant des analyses de corpus pour concevoir les supports ASC, ainsi que des tests (pré-test, post-test et post-test différé), des questionnaires, des entretiens de groupe, et des enregistrements audio. Les résultats indiquent que si l'ASC et l'enseignement traditionnel produisent des résultats comparables à court terme, l'ASC favorise davantage la rétention à long terme, la pensée critique et l'autonomie des apprenants. En exposant les apprenants à des données linguistiques authentiques, l'ASC renforce la conscience de la notion de « préférence » et de la variabilité linguistique, confirmant ainsi sa valeur en tant que complément aux manuels dans l'enseignement des langues étrangères.

1 | Introduction

Reliance on language coursebooks is both practical and prevalent in foreign language teaching, particularly in regions far from target language communities; as ‘the default language learning resource’ worldwide (Mishan 2021, 1), coursebooks offer a coherent syllabus and structured learning process, addressing gaps where teachers may lack adequate training, proficiency, or the time and resources to develop their own materials (Allen 2015). They are widely assumed to provide all the necessary and appropriate resources for both learners and teachers.

However, critics argue that coursebooks often oversimplify linguistic complexity, processing and reducing it to ‘grammar McNuggets’ (Thornbury 2013, 216). This reflects what Long (2015) describes as a ‘synthetic’ approach, which divides language into discrete units, such as vocabulary, collocations, and sentence patterns, and sequences them based on criteria like frequency, saliency, or difficulty. These units are then presented accumulatively in coursebooks, expecting learners to synthesise them into communicative competence. Yet, this approach oversimplifies the transition from declarative knowledge (conscious understanding of language rules) to procedural knowledge (unconscious knowledge application) (Jordan and Gray 2019). Jordan and Long (2023) have sharply criticised the coursebook industry for prioritising commercial interests over educational principles. This prompts Jordan and Gray (2019) to advocate for alternatives to coursebooks, such as Breen’s (1987) process syllabus, Meddings and Thornbury’s (2009) Dogme approach, and Long’s (2015) task-based language learning. Building on these perspectives, the present study proposes data-driven learning (DDL) as another promising option—an approach grounded in lexico-grammatical patterns derived from naturally occurring language in corpora and aligned with discovery-based learning principles (Flowerdew 2015).

1.1 | Research Problem

This study involved 121 multilingual learners enrolled in an intensive one-year pre-university program preparing for tertiary education in France. Specialising in either engineering or social sciences, they had to progress from no prior French proficiency to CEFR B2 within 13 months, the level commonly required for higher education. Given the time constraints, relying on French coursebooks seemed practical, yet a review of eight popular FLE coursebooks (Appendix A), including *Alter Ego+ A1* and *Campus 2*, revealed significant inaccuracies, including the rules for attributive adjective placement, exemplifying the limitations of these materials.

French adjectives are flexible in placement, varying between ante- and postposition (Forsgren 2016). Semantic and positional variabilities often pose challenges for learners, as illustrated by Nölke’s (1996) examples. In (1) and (2), *ancienne* is interpreted differently: when shifting from post- to anteposition, the house is reinterpreted as no longer standing, possibly a ruin; this implies that placement dictates interpretation. Yet, (3) and (4) contradict this assumption with *énorme* retaining the same meaning in different positions. Additionally, *énorme* only demonstrates semantic variation depending on its noun collocates. In (5),

énorme in anteposition is interpreted figuratively, whereas in (6), its postposition conveys a literal meaning.

1. Une maison ancienne: ‘an old/ancient house’
2. Une ancienne maison: ‘a former house’
3. Une énorme maison: ‘an enormous house’
4. Une maison énorme: ‘an enormous house’
5. Un énorme mangeur: ‘a voracious eater’
6. Un manger énorme: ‘a corpulent eater’

Language coursebooks often present French adjective placement as straightforward, but this oversimplification is misleading (Camussi-Ni et al. 2016). Coursebooks typically provide vague rules like ‘certain adjectives are placed before the noun,’ accompanied by adjective lists, often without context. Some include longer lists (up to 14 adjectives in *Alter Ego+ A2*), while others provide none (*Texte 1*). These context-free lists are primarily intended for rote memorisation, but they conceal polysemy. For instance, *Campus 1* lists *dernier* as one of the ‘few adjectives that are short and very frequent (and which) are placed before the noun.’ This rule is both inaccurate and incomplete, as *dernier* can appear in either position with distinct meanings: *last* or *final* in anteposition and *previous* in postposition.

Similarly, *Alter Ego+ A1* claims that ‘certain adjectives are always placed after the noun... certain adjectives are always placed before the noun,’ suggesting equal distribution between positions. However, corpus analyses reveal that most adjectives are postposed: 90.6% of lemmas in spoken French (Benzitoun 2014) and 85% in mixed genres (Thuillier 2012) are uniquely postposed; only a small fraction are exclusively anteposed (1.9% in spoken French and 5.2% in mixed genres). Furthermore, Thuillier (2012) found that exclusively anteposed adjectives account for only 3% of all adjective occurrences, while exclusively postposed and flexible adjectives make up 61% and 36%, respectively. Similar patterns are observed in spoken French, where flexible adjectives have an even higher representation (Benzitoun 2014). These findings highlight that authentic data contradicts the coursebook’s suggestion of equal positional distribution of adjectives.

Many A1-level coursebooks omit semantic changes tied to adjective placement entirely, implying that this grammar point is unsuitable for beginners. However, corpus studies show that the most frequent and elementary-level adjectives, for example, *propre* (clean/own) and *dernier* (last/previous), are precisely those that alternate in position and interpretation (Benzitoun 2014; Forsgren 2016; Thuillier 2012). Excluding these phenomena risks leaving beginners unprepared to comprehend these common adjectives.

The discussion points to a disconnect between research and coursebook content. Frequency-based insights, which could help bridge this gap, are often absent from coursebooks. However, A1-level materials aim to provide accessible descriptions aligned with the Common European Framework of Reference (CEFR) (Council of Europe 2001) guidelines, making the integration of corpus findings a complex issue that warrants further exploration. Moreover, key stakeholders, including publishers, have expressed

scepticism about the practical relevance of such information for teachers (Curry et al. 2022).

Against this backdrop, this study explored an alternative for teaching French adjective placement, emphasising authentic language use while minimizing dependence on language coursebooks. Addressing discrepancies between corpus findings and coursebook representations, it conducted corpus analyses to provide empirical evidence directly integrated into the classroom. This aligns with DDL, which advocates giving learners direct access to authentic language data (Johns 1991). To achieve these objectives, the study formulated three research questions:

- RQ1: How does DDL affect learning outcomes compared to explicit grammar instruction?
- RQ2: How do learners navigate the multifactorial nature of adjective placement in inductive learning?
- RQ3: How do learners perceive DDL compared to methods reliant on coursebooks?

2 | Literature Review

2.1 | Data-Driven Learning

DDL, a term coined and popularised by Tim Johns (1990), is defined as ‘using the tools and techniques of corpus linguistics for pedagogical purposes’ (Gilquin and Granger 2010, 359), particularly in second (SL) or foreign language (FL) learning contexts. By giving learners ‘direct access to the data’ (Johns 1991, 30), DDL reduces reliance on teachers as intermediaries, encouraging students to explore corpora of naturally occurring language to uncover ‘commonly-occurring lexico-grammatical patterns’ (Flowerdew 2015, 15). Unlike traditional deductive methods, which simplify linguistic complexities into absolute rules (Boulton 2009), DDL emphasises patterns, tendencies, and prototypical usage over rigid right-wrong dichotomies (Leech 2015), while accounting for register differences (Boulton 2009). Nevertheless, recent research (e.g., Tsai 2019) suggests that DDL and deductive methods are complementary, with each excelling in different aspects of language learning.

DDL offers benefits by providing learners with direct access to authentic language and fostering linguistic awareness and autonomy through corpus exploration (Leńko-Szymańska and Boulton 2015). DDL develops cognitive skills such as observation, reasoning, inferencing, and reflection (O’Sullivan 2007). Additionally, corpora provide richer language data than traditional teaching materials, enhancing learners’ ability to identify and understand patterns, as they formulate appropriate queries to solve linguistic problems (Leńko-Szymańska and Boulton 2015). Boulton and Cobb’s (2017) meta-analysis confirms DDL’s suitability across extensively-studied contexts, particularly for university-level English learners, while highlighting the need for further exploration in other learner groups.

DDL has seen steady growth over the past three decades, evidenced by increasing publications (Boulton and Vyatkina 2021) and frequent meta-analyses (e.g., Boulton and Cobb 2017; Lee et al. 2019; Pérez-Paredes 2022). However, it has faced criticism for limited innovation (Boulton and Vyatkina 2024) and uptake

outside academia (Crosthwaite and Boulton *in press*). A lack of theoretical grounding remains a key issue, with many studies addressing frameworks like constructivism and socio-cultural theory (SCT) only retrospectively (Crosthwaite and Boulton *in press*), despite repeated calls for integration (Flowerdew 2015; O’Keeffe 2020).

DDL research predominantly focuses on English (Boulton and Vyatkina 2021), raising concerns that DDL may represent a ‘special case’ limited to English (Crosthwaite and Boulton *in press*). Studies often rely on small samples, tertiary students, short durations, and immediate post-tests, with only 9% of 489 papers including delayed post-tests (Boulton and Vyatkina 2021). Addressing these gaps, this paper examines DDL’s impact in a multilingual Malaysian context and on French as a Foreign Language, involving 121 participants who have a strong motivation to acquire French for their higher education, a delayed post-test, SLA theory integration, and advanced statistical methods.

2.2 | Theoretical Underpinnings of DDL

Corpus linguistics views language as probabilistic, prioritising frequency analysis to help learners identify patterns, generalise data, and recognise exceptions (Di Vito 2013; Tognini Bonelli 2010). Frequency also highlights collocations, essential for fluent language use (Xiao 2015), and shifts teaching focus from rigid rules to observable regularities and patterns (Kamber and Dubois 2016). This aligns with ‘usage-based linguistics,’ which suggests grammar emerges from usage (Tomasello 2005).

Flowerdew (2015) connects DDL research to SLA theories: constructivism, sociocultural theory (SCT), and the noticing hypothesis. Constructivism, celebrated as a ‘pedagogical hallmark’ of DDL (O’Keeffe 2020, 3), sees learners actively engage in discovery and knowledge construction through induction and hypothesis formation. Constructivism relies on learners abstracting general principles from encountered instances rather than memorising pre-formulated rules (Cobb 2024), creating thus memorable and transferable knowledge (Kerr 2013). Critics, however, stress its cognitive demands and potential to overwhelm learners (O’Keeffe 2020). Therefore, some DDL studies incorporate SCT (Vygotsky 1934/1986), particularly scaffolding, where teachers or peers support cognitive development (Verenikina 2003), and collaborative dialogue or ‘languageing,’ enabling co-construction of knowledge (Swain 2006), and fostering learner agency and self-regulation (O’Keeffe 2020).

O’Keeffe (2020) proposes a continuum between constructivism and SCT, with specific learner needs, such as proficiency and first language, moderating the balance between the two. This aligns with ‘pedagogic mediation’ (Johns 1991) and ‘guided inductive’ approaches (Johansson 2009), combining explicit guidance with corpus exploration. Examples include teacher-mediated or paper-based DDL, which Gabrielatos (2005) terms the ‘soft version,’ contrasting with the ‘hard version’ involving hands-on concordancing.

Finally, the noticing hypothesis (Schmidt 1990, 2001, 2010) distinguishes between strong and weak versions. The former asserts that input must be noticed to become intake, and understanding

of the input is not necessary (Schmidt 2010). Later, Schmidt's softened stance recognises the need for deliberate attention to less salient or L1-divergent items (Flowerdew 2015; Schmidt 2010). The related 'noticing the gap' hypothesis posits that learners must identify discrepancies between their output and input to improve (Schmidt 2010). Although various frameworks exist, constructivism often dominates DDL research, overshadowing other explanatory models (Crosthwaite and Boulton *in press*).

2.3 | French Adjective Placement

French adjectives can occur in both ante- and postposition, with postposition being the default since the twentieth century (Forsgren 2016) and consistently more frequent (Benzitoun 2014; Forsgren 1978; Thuillier 2012; Wilmet 1981). A small subset, representing less than 10% of all adjectives, is flexible in placement but disproportionately frequent in usage (Benzitoun 2014; Thuillier 2012). Many of these adjectives also vary in interpretation, challenging their classification under traditional categories of qualitative and relational adjectives. To address this, Feuillet (1991) introduced a third category, termed 'situational,' covering adjectives indicating place, time, and existence. Later referred to as 'adjectives of the third type' (Schneidecker 2002), this category was incorporated into formal French grammar (Riegel et al. 2009).

These adjectives exhibit diverse placement patterns: some predominantly occur in postposition, while others alternate between ante- and postposition, often with semantic modifications (Schneidecker 2002). Examples include *futur*, *grand*, *vrai*, and *nouveau* (*future*, *big*, *real*, *new*), which are among the most common adjectives, making them both essential for learners and challenging due to their semantic and positional variabilities. However, these adjectives are often marginalised in linguistic studies, grouped as 'others' (e.g., Noailly 1999) or excluded entirely (e.g., Forsgren 1978). Schneidecker (2002, 16) critiques this marginalisation, arguing that their frequency and shared traits warrant systematic description. More recently, the category has faced criticism for being fragmentary, with its variability attributed to usage differences rather than a distinct adjectival class (Goes 2021).

3 | The Current Study

This study involved a total of 121 multilingual Malaysian students, aged 18 to 19. The cohort comprised 79 engineering students and 42 social sciences students, with a gender distribution of 49 females and 72 males. The participants spoke diverse L1s, with most using Malay and others speaking English, Tamil, Chinese, or Iban. Each participant spoke at least three languages, typically Malay, English, and French, with some having repertoires of up to six languages, including Arabic, Bidayuh, Iban, Japanese, and Tamil. All participants received less than six months of French instruction at the time of the experiment.

Block randomisation ensured balance between the experimental (EG) and control (CG) groups, accounting for participants' academic tracks as the blocking variable to minimise systematic differences, such as linguistic diversity (Gelman et al. 2020). This yielded 61 EG and 60 CG participants, with six excluded from test

result analyses due to absences, leaving 115 participants. Numbers varied slightly across datasets.

3.1 | Experiment Protocol

The experiment spanned 3 months, with instructional sessions condensed into 3 weeks due to the program's intensity. Both groups attended six 1 h concurrent sessions. A pre-test preceded the first session, an immediate post-test followed the final session, and a delayed post-test occurred seven weeks later, constrained by the trimester's end. During the fifth session, the EG completed a questionnaire, and three online focus group interviews with 15 EG participants were held one week later.

The CG received traditional instruction from a French teacher using the *Alter Ego+ A2* coursebook, following a deductive approach, incorporating pronunciation practice, oral comprehension, writing, grammar lessons, and speaking activities. In contrast, the EG engaged in six DDL activities, supervised by the researcher, who offered guidance but refrained from providing answers to avoid influencing test results. As an inductive approach, DDL encouraged independent learning and peer scaffolding using paper-based materials with minimal teacher intervention.

3.2 | Target Phenomenon and Corpus Analysis

This study examines the effects of DDL focusing on 'adjectives of the third type,' specifically targeting *ancien* (*old*, *ancient*, or *former*) and *prochain* (*next*, *upcoming*, or rarely, *near*). These adjectives were selected based on three criteria: polysemy, frequency, and usefulness. Their polysemy allowed for evaluating DDL's ability to handle complex lexico-grammatical items. Both adjectives are highly frequent, as confirmed by adjective wordlists from the *Corpus d'Étude pour le Français Contemporain* (CEFC) (ATILF et al. 2024), or the Corpus for the Study of Contemporary French (Table 1), and corroborated by the *Routledge Frequency Dictionary of French* (Lonsdale and Le Bras 2009), ranking *prochain* 380th and *ancien* 392nd across all grammatical categories, confirming their usefulness for learners. While no learner corpus analysis was conducted, the selection of target items was based on the assumption that activities focusing on highly frequent yet complex adjectives would be relevant and beneficial for learners.

A preliminary corpus analysis of the target adjectives informed the development of DDL materials and test instruments. The study utilised the CEFC, a balanced 10-million-word corpus of spoken and written French, including contributions from over 2500 speakers across formal and informal contexts, as well as diverse written sources like literature, newspapers, scientific publications, and informal communications. Occurrences of *ancien* and *prochain* were extracted based on their lemmas, ensuring the inclusion of all inflected forms for gender and number. The dataset was then cleaned by removing irrelevant instances, such as nominal uses and non-realised nouns, resulting in 1689 occurrences of *ancien* and 1306 of *prochain*. These datasets were manually annotated for 17 linguistic variables across morphological, lexical, syntactic, phonetic, and semantic

TABLE 1 | The frequency distribution of the two target items in the CEFC.

Corpus d'Étude pour le Français Contemporain		
Adjectives	Written component (6 million words)	Spoken component (4 million words)
Ancien	214 occ. per million words (ranked 18 th)	46 occ. per million words (106 th)
Prochain	127 occ. per million words (43 rd)	103 occ. per million words (57 th)

factors (Appendix B). To address quasi-complete separation issues, binomial logistic regression was applied with a default prior (mean = 0, standard deviation = 2.5) per Gelman et al. (2020) recommendations.

Due to space constraints, this summary outlines the key results from the regression analysis (Appendices C and D). For *ancien*, there is a notable division between spoken and written French; anteposition is predominant in written French, whereas postposition is used in spoken French. Meaning is a critical predictor; *ancien* is typically anteposed when it means *former*, but both positions are possible for *old* or *ancient*. Moreover, when *ancien* is coordinated with another adjective, postposition is favoured. Conversely, if there is an uncoordinated adjective in postposition, *ancien* prefers anteposition.

For *prochain*, placement is influenced by semantic factors. *Prochain* tends to be postposed when modifying temporal nouns but anteposed with event-related nouns. The placement pattern reverses based on specific meanings, highlighting the complex interaction between placement, meaning and noun nature. Additionally, the placement varies with referent plurality; it consistently precedes temporal nouns in plural but varies with event-denoting nouns depending on their meaning.

3.3 | Experiment Instruments

Informed by the corpus analyses, DDL materials were designed for six sessions (three per target adjective), progressively introducing linguistic phenomena and gradually increasing in complexity. Printed materials included curated concordances and step-by-step worksheets, guiding learners through exploration and induction while encouraging independent rule formation with minimal teacher guidance. This approach aligned more with SCT principles, emphasising peer collaboration and scaffolding. Concordances, selected based on frequency and proportionality, were organised into tables to aid observation and induction. For example, Session 1 focused on *ancien*'s noun collocates, grouping concordances by person-denoting, concrete, and abstract nouns. Worksheets aid learners in observing collocates, deriving rules, and applying them to new contexts. Learners collaborated in groups but completed worksheets individually, balancing teamwork with independent learning. Session focuses are detailed in Table 2, and two worksheet examples are presented as Appendices E and F¹.

For the CG, materials were drawn from the *Alter Ego+ A2* coursebook, previously used at the institute, to replicate a deductive

learning environment. Chapters with the highest frequencies of *ancien* and *prochain* were selected to maximise exposure, and grammatical rules from the coursebook's appendix (Appendix G) supported explicit instruction. This ensured comparable exposure to linguistic items for a controlled comparison between the EG and CG.

The test instrument (Appendix H) evaluated DDL effectiveness (RQ1) through 22 questions targeting adjective interpretation (10) and placement (12) using authentic CEFC corpus samples. To assess the generalisability of DDL-acquired knowledge, the adjective *dernier* (*final*, *recent*, *previous*) was included. Statistically significant factors from the corpus analyses guided the design (Appendices I–L), ensuring targeted and empirically grounded assessment. The same test was administered at three stages, with randomised question and answer orders to reduce memorisation bias.

To address RQ2 on learner interaction in inductive learning, field recordings and DDL worksheets were analysed. Four EG groups were voice-recorded during each session, and all completed worksheets were examined for thematic analysis. For RQ3 on learner perceptions of DDL, a questionnaire based on Mizumoto et al. (2015) was administered, focusing on perceived effectiveness and attitudes of DDL. Semi-structured Zoom interviews explored six areas: perceptions, challenges, effectiveness, classroom dynamics, the teacher's role, and teamwork.

4 | Results

This section examines the effects of DDL on learning French adjective placement compared to coursebook-based instruction. Voice recordings provide insights into learners' processing of complex lexico-grammatical patterns, while questionnaire and focus group data explore learners' perceptions of DDL.

4.1 | The Effects of DDL on Learning French Adjective Placement

Table 3 and Figure 1 summarise CG and EG performance across the three tests. The EG started slightly below the CG at baseline. Levene's test confirmed variance homogeneity at pre-test ($F(1, 343) = 0.086$; $p = 0.77$), showing no significant initial group difference. Both groups improved over time, but the EG progressed faster, surpassing the CG by the post-test and maintaining its score with a slight increase at the delayed post-test, while the CG's scores declined slightly.

TABLE 2 | DDL activity focus for each session.

Session	Focus
1	Noun natures (i.e., person, concrete and abstract nouns) + meaning + placement of <i>ancien</i>
2	Production mode + placement of <i>ancien</i>
3	Presence of additional adjective + coordination + placement of <i>ancien</i>
4	Noun natures (i.e., temporal and event-denoting nouns) + placement of <i>prochain</i>
5	Noun natures + meaning + placement of <i>prochain</i>
6	Noun natures + plurality + placement of <i>prochain</i>

TABLE 3 | Overall performance of the CG and EG over time.

Test	Control				Experimental			
	Mean	Mean (%)	SD	SD (%)	Mean	Mean (%)	SD	SD (%)
Pre-test	13.7	62%	2.5	11%	12.8	58%	2.3	11%
Post-test	14.7	67%	2.4	11%	15.1	69%	2.2	10%
Delayed	14.5	66%	2.7	12%	15.2	69%	2.3	11%

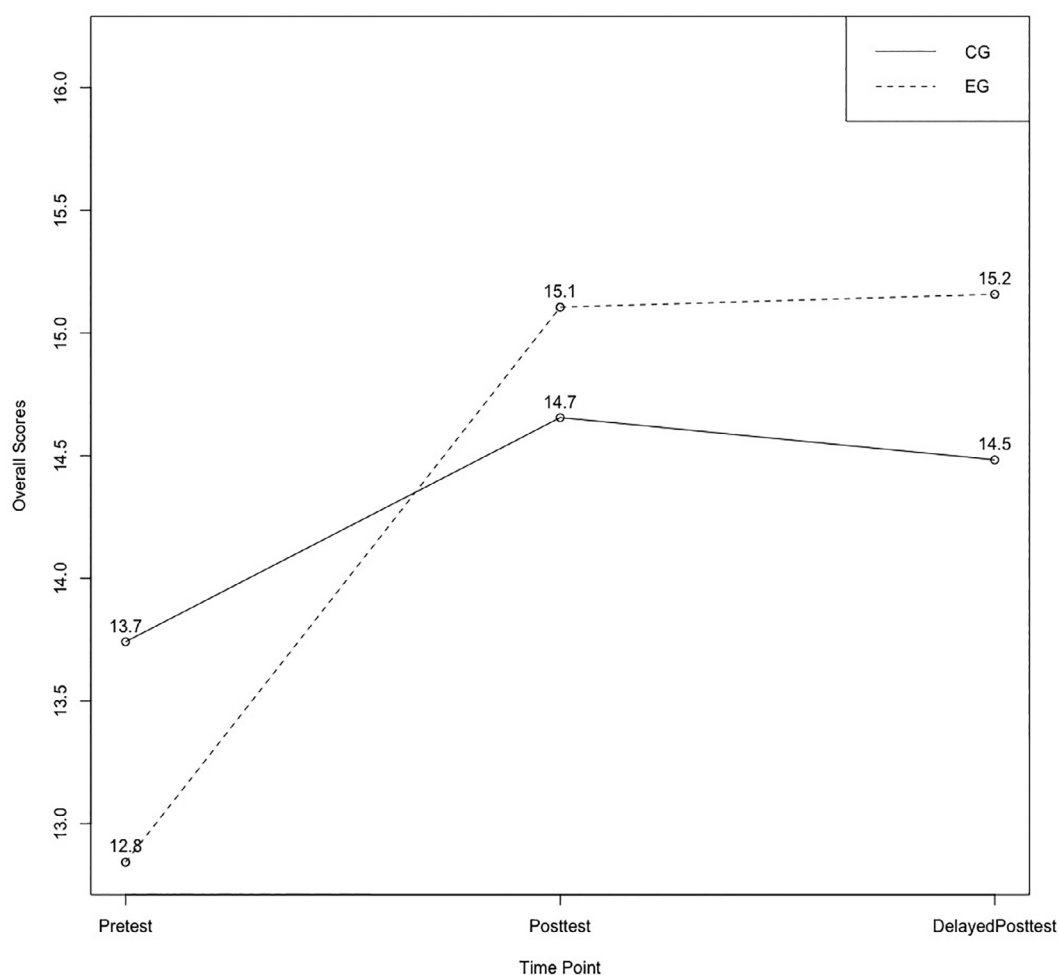
**FIGURE 1** | Overall performance of the CG and EG over time (zoomed range of 13–16 points).

TABLE 4 | Repeated measures ANOVA on the test scores.

Source	df (Effect)	Sum of squares (Effect)	Mean square (Effect)	<i>F</i>	<i>p</i>	GES
(Intercept)	1	64782.43	64782.43	6969.59	<0.001	0.97
Group	1	0.18	0.18	0.02	0.89	<0.01
Programme	1	10.22	10.22	1.10	0.30	<0.01
Time	2	134.74	67.37	16.51	<0.001	0.07
Group:Programme	1	0.52	0.52	0.06	0.81	<0.01
Group:Time	2	48.97	24.49	6.00	0.002	0.02
Programme:Time	2	21.16	10.58	2.59	0.07	0.01
Group:Programme:Time	2	25.74	12.87	3.15	0.04	0.01

TABLE 5 | Independent samples *t*-test results across the three testing occasions.

	Control			Experimental			<i>df</i>	<i>t</i>	<i>p</i>	<i>d</i>
	Mdn	M	SD	Mdn	M	SD				
Pre-test	14.0	13.7	2.49	13.0	12.8	2.34	112.8	1.995	0.05	0.37
Post-test	15.0	14.7	2.38	15.0	15.1	2.25	112.8	−1.042	0.30	0.19
Delayed post-test	15.0	14.5	2.74	15.0	15.2	2.32	110.7	−1.428	0.16	0.27

To evaluate the effects of DDL on French adjective placement, repeated measures ANOVA (RM ANOVA) assessed group-by-time effects across the three test points. Follow-up scores were used to avoid inflated statistical significance (Fu and Holmer 2016). Statistical assumptions were met. Table 4 shows that RM ANOVA revealed no significant main effects for Group (EG vs. CG) or Programme (engineering vs. social sciences). However, a significant main effect of Time with a small to moderate effect size indicated score changes over time. Generalised eta-squared (GES) effect sizes, based on Cohen's (1988) scale (small: 0.02, moderate: 0.13, large: 0.26), were used. A significant group-by-time interaction with a small effect size suggested slight variations between groups, while a minimal three-way interaction among Group, Programme, and Time reflected negligible progress differences.

An independent samples *t*-test compared CG and EG scores corroborated RM ANOVA results: no significant differences emerged between the groups across all three test times (Table 5), with effect sizes (Cohen's *d*) ranging from 0.07 to 0.27, considered negligibly small.

Cohen's *d*, distinct from GES, was interpreted using L2-specific benchmarks from Plonsky and Oswald (2014) and Plonsky et al. (2023) for between-group (small-*ish*: 0.40, medium-*ish*: 0.70, large-*ish*: 1.00) and within-group comparisons (small-*ish*: 0.60, medium-*ish*: 1.00, large-*ish*: 1.40). These stricter benchmarks reflect smaller effect sizes typical in L2 research, particularly in grammar-focused ($d = 0.59$) and classroom studies ($d = 0.58$), compared to lexis ($d = 1.32$) and lab settings ($d = 0.96$). This study's focus on classroom-based grammar learning made smaller effect sizes anticipated.

TABLE 6 | Paired samples *t*-test results across the three testing occasions within the experimental group.

	M	SD	M	SD	<i>df</i>	<i>t</i>	<i>p</i>	<i>d</i>
Pre versus post	12.8	2.34	15.1	2.25	56	6.28	<0.001	0.96
Post versus delayed	15.1	2.25	15.2	2.32	56	0.14	0.89	0.02
Pre versus delayed	12.8	2.34	15.2	2.32	56	6.89	<0.001	0.99

TABLE 7 | Paired samples *t*-test results across the three testing occasions within the control group.

	M	SD	M	SD	<i>df</i>	<i>t</i>	<i>p</i>	<i>d</i>
Pre versus post	13.7	2.49	14.7	2.38	57	2.18	0.03	0.38
Post versus delayed	14.7	2.38	14.5	2.74	57	−0.44	0.66	0.07
Pre versus delayed	13.7	2.49	14.5	2.74	57	1.78	0.08	0.28

While the non-significant independent *t*-test suggests that both deductive and inductive methods offer advantages, as both EG and CG demonstrated comparable overall progress, paired samples *t*-tests revealed significant improvements within the EG (Table 6) not observed in the CG (Table 7). The CG showed some improvement from pre-test to post-test but experienced a slight, non-significant decline from post-test to delayed post-test. In contrast, the EG exhibited a significant increase from pre-test to post-test with a medium-*ish* effect size, followed by a slight, non-significant gain from post-test to delayed post-test, indicating knowledge retention. The improvement from pre-test to delayed post-test in the EG was significant, with a slightly larger

effect size, representing the continued progress seven weeks post-experiment.

4.2 | Interactions With Lexico-Grammatical Patterns During Induction

The collaborative DDL activities, with the EG in eleven self-formed groups, were analysed through sociocultural theory and thematic analysis of voice recordings. This revealed insights into scaffolding, languaging for rule induction, translanguaging to understand foreign concepts, and strategies for approaching multifactorial phenomena.

4.2.1 | Scaffolding, Languaging and Translanguaging

In collaborative DDL, scaffolding and languaging were important strategies. Languaging involved learners engaging in metatalk to co-construct knowledge, while scaffolding referred to the peer support in the process, facilitated by the structured DDL tasks. These strategies often occurred simultaneously as learners collectively observed patterns, proposed hypotheses, and refined their understanding.

For instance, learners discussed the placement of *ancien* based on the concordances, identifying recurrent patterns such as its anteposition when modifying person-denoting nouns. As they debated its meaning, distinguishing between *former* and *old*, disagreements were resolved through collaborative reasoning. Learners not only induced specific rules but also developed a deeper understanding of how meaning and placement interact in specific collocations. This highlighted the importance of peer scaffolding in learning complex linguistic phenomena.

In paper-based DDL, scaffolding is also embedded in the structured worksheet, which provides step-by-step guidance for learners to examine concordances and gradually uncover linguistic features. However, when learners deviate from the worksheet's intended sequence or skip questions, they risk losing essential scaffolding that supports accurate rule induction. Such deviations can result in incomplete or incorrect generalisations, as learners may overlook important patterns or fail to fully understand the target phenomena.

Another observed form of languaging was 'pedagogical translanguaging' (Cenoz and Gorter 2021), where learners used their entire linguistic repertoire to compare French adjective placement with Malay and English. In Malay, adjectives typically follow the noun, while in English, they precede it, causing confusion in French, where both positions are simultaneously possible. Fictitious examples like 'beautiful hat orange,' though ungrammatical in English, helped learners identify gaps in their knowledge and the need for explicit learning.

4.2.2 | Processing of Lexico-Grammatical Patterns

Field recordings of languaging reveal cognitive processes in the learning of multifactorial adjective placement. The corpus analysis showed an interaction between the meaning of *prochain*,

the plurality of the referent, and noun nature. Processing such complexities often requires breaking them into manageable steps. A three-minute monologue captured a learner summarising rules (Appendix F), demonstrating intensive metalinguistic processing. The learner systematically addressed placement and noun nature separately before associating them, but managing all three factors, including meaning, proved difficult. To ease the cognitive loads, the learner approached multifactorial phenomena bi-factorially, first by addressing noun nature and placement, then placement and meaning, eventually enabling complete rule induction.

The preferential nature of adjective placement adds to the challenge. Marked by gradience, adjective placement reflects preferences affecting sentence acceptability rather than strict grammaticality (Thuillier 2012). However, learners often seek absolute rules and ignore exceptions. For instance, while *ancien* typically prefers anteposition, its postposition 24% of the time is dismissed as an 'exception.' Encountering a single exception might lead learners to discard an accurately induced rule, reflecting low confidence in inductive reasoning and the difficulty of transitioning from deductive to inductive learning.

4.3 | Perceptions of DDL

This section presents findings from questionnaires completed by 60 EG participants (one absent) and focus group interviews with 15 EG participants. Factor analysis on the 20-item, 4-point Likert-scaled questionnaire confirmed five underlying factors ($\chi^2(100) = 83.88; p = 0.88$). Using maximum likelihood estimation with promax rotation, three items were removed due to weak associations. Table 8 details the five factors.

The factor analysis identified 'lexico-grammar learning' as the primary factor, showing learners' perception of DDL activities as beneficial for learning grammar and vocabulary, ensuring higher lexico-grammar knowledge retention, and visualising the practical usages of the target items. Nonetheless, some learners noted occasional confusion with DDL tasks.

'DDL learning experience' emerged as the second key factor. Learners largely saw DDL as an active learning approach and expressed a desire for more DDL activities, with some mixed responses regarding preferences between DDL and traditional classes. This variability suggests that preferences for learning methods may differ among individuals.

The third factor, 'attitudes towards DDL,' reflected increased learner confidence in using French adjectives and willingness to engage further with DDL activities. Learners found DDL worthwhile for learning French adjective placement. Yet, they also highlighted that the complexity of materials and concordances could sometimes be a drawback. Overall, attitudes were positive, with learners indicating that DDL supported their independent learning.

Lastly, 'metalinguistic awareness' and 'awareness of multifactoriality' were identified, with lower internal consistency. Learners reported increased awareness of metalinguistic and multifactorial aspects, such as the need for considering multiple factors in

TABLE 8 | Factor analysis results, including various statistics.

Factor	α	Questionnaire items	Loadings	Mean (out of 4)	SD
Lexico-grammar learning	0.75	18. These activities were useful for grammar and vocabulary learning	1.05	3.3	0.6
		20. I remember better the grammar and vocabulary seen in these activities.	0.68	3.0	0.8
		7. These activities [did not] confuse me.	0.65	2.0	0.8
		3. It was easier to learn French in these activities.	0.43	2.8	0.7
		1. I understood adjective placement better in these lessons.	0.36	2.9	0.6
		10. I learn [more] things in these activities.	0.34	3.4	0.7
DDL learning experience	0.72	19. I can visualise the practical usage of adjective via these activities.	0.33	3.0	0.8
		2. This type of learning is not passive but active.	1.15	3.5	0.7
		5. I [do not] prefer my usual French classes than these activities.	0.39	2.1	0.8
		15. I would like to have more activities like these.	0.32	3.0	0.8
Attitudes towards DDL	0.71	8. I can figure out how to use an adjective without asking the teacher.	0.94	2.6	0.7
		15. I would like to have more activities like these.	0.49	3.0	0.8
		11. These activities are worth my time and effort.	0.40	3.2	0.6
		1. I understood adjective placement better in these lessons.	0.31	2.9	0.6
		19. I can visualise the practical usage of adjective via these activities.	0.31	3.0	0.8
		16. It is important to have many examples to learn adjective placement.	-0.35	3.8	0.4
Metalinguistic awareness	0.61	17. The example sentences show the context where the adjectives are often used.	0.73	3.6	0.6
		9. I became aware that the adjective's meaning can change if I place it in a different position.	0.59	3.8	0.5
		16. It is important to have many examples to learn adjective placement.	0.57	3.8	0.4
		13. I became aware that I need to consider a number of things (e.g. genre or other adjectives) to decide where to place an adjective.	0.37	3.8	0.4
Awareness of multifactoriality	0.36	4. I became aware that an adjective can have more than one meaning in these lessons.	0.59	3.9	0.3
		13. I became aware that I need to consider a number of things (e.g. genre or other adjectives) to decide where to place an adjective.	0.33	3.8	0.4

adjective placement and how this need affects the interpretation of polysemous adjectives.

To add further depth, focus group interviews with fifteen participants underwent a thematic analysis. Learners described DDL as an active learning approach requiring them to seek answers and construct knowledge, which many found exciting and motivating. Some likened it to a 'science experiment,' where they formed hypotheses and tested ideas. DDL fostered independence, with learners feeling empowered to study outside the classroom. Many appreciated its analytical focus, though one learner noted it felt 'more technical than natural' and did not improve speaking skills, which was not the experiment's aim.

Collaborative learning evoked mixed reactions. Some valued the opportunities to 'teach each other,' while others found reaching consensus and minimising conflict challenging, preferring authoritative guidance to dictate learning. Learners credited DDL

with better knowledge retention, viewing it as more 'natural' than rote learning. Mistakes reinforced memory, and learners felt more confident using French, with one noting, 'I rarely make mistakes now, even in speaking.' However, some considered DDL less efficient, describing it as 'time-consuming' compared to explicit grammar instruction, while others doubted the long-term value of memorised rules, finding DDL's critical engagement more insightful.

Learners identified gaps in their deductively taught knowledge, finding simplified rules inadequate for real language use. However, in DDL, rare occurrences, unfamiliar vocabulary, lengthy sentences, and insufficient teacher guidance are common difficulties. Facing these challenges, the participants suggested combining inductive and deductive methods for better outcomes. Nevertheless, the researcher's supportive role reduced fears, offering emotional reassurance and resolving conflicts. Learners likened him to a 'big brother,' 'tutor' or 'facilitator,' further

suggesting that regular checkpoints or leader figures in each group could further aid learning. While learners viewed DDL positively, most felt it should complement, rather than replace, traditional methods to provide a comprehensive approach to language learning.

5 | Discussion

Although the activities focused on *ancien* and *prochain*, they addressed broader linguistic phenomena, such as multiple adjectives in the noun phrase and collocation. DDL also exposed learners to language's variability, encouraging them to move beyond rigid grammatical rules and understand patterns through corpus tendencies, providing valuable lessons applicable beyond the study's immediate scope.

Addressing RQ1, the study assessed DDL's effects on learning French adjective placement among multilingual learners. While independent *t*-tests showed no significant differences between CG and EG, RM ANOVA and paired *t*-tests revealed significant within-group progress. EG learners showed accelerated, sustained gains, with effect sizes increasing from 0.96 (pre- to post-test) to 0.99 (pre- to delayed post-test), reflecting DDL's long-term impact. In contrast, CG learners experienced slower, less pronounced progress, with diminishing effects over time.

These results highlight DDL's role in fostering immediate and long-term gains, aligning with constructivist principles of active, memorable learning (Kerr 2013; O'Keeffe 2020). Scaffolding supported learners of similar proficiency through structured DDL tasks and curated data, compensating for reduced teacher presence while highlighting the teacher's role in material preparation, such as rule-hiding (Johns 1991). Languageing also enables learners to negotiate, construct, and reflect on knowledge collaboratively (O'Sullivan 2007; Swain 2006). Both scaffolding and languageing emerged as essential strategies in inductive learning, enhancing inductive reasoning and critical thinking. While direct comparisons did not establish DDL as superior, the findings suggest that balancing inductive and deductive methods might optimise outcomes.

For RQ2, field recordings revealed challenges in learning French adjective placement. Learners struggled with the preferential and multifactorial aspects of language, often resorting to translanguaging (Cenoz and Gorter 2021) to make sense of them, albeit with limited success. Reducing multifactorial relationships to bi-factorial ones was effective in learning complex phenomena. While this may lead to incomplete learning, partial rules can serve as valuable stepping stones to achieve further understanding (Aston 2001) as learners often develop detailed rules exceeding those in coursebooks, echoing Boulton (2009). Despite challenges, learners demonstrated significant inductive abilities, with steady progress observed within 3 weeks, challenging Camussi-Ni et al. (2016) suggestion to reserve adjective polysemy in DDL for C1-level learners.

Addressing RQ3, the study highlights the time needed to adapt to DDL, particularly for learners accustomed to teacher-led classrooms (cf. Bernardini 2004). Structured and repetitive DDL tasks,

combined with peer scaffolding, facilitated gradual transitions and steady progress in inductive learning. However, challenges arose from the absence of immediate guidance, leaving learners uncertain when examining concordances or addressing conflicts with prior knowledge. The abundance of language data also felt overwhelming for some, emphasising the importance of balancing data quantity with accessibility and providing structured guidance for both learning and emotional reassurance (cf. O'Sullivan 2007).

Learners generally perceived DDL as effective for fostering active, autonomous learning and engagement with authentic data, enhancing their metalinguistic awareness and understanding of language use. While they appreciated DDL, they felt it should complement deductive methods, particularly for structured syllabus delivery and immediate feedback. This aligns with Biggs' (2014) constructive alignment approach, which integrates teaching, assessment, and learning outcomes, as well as frameworks like 'embedded' DDL (Templeton and Timmis 2023) and 'normalised' DDL (Looi and Cacciato 2024), which blend inductive techniques within deductive environments.

The role of DDL as a complement to other resources within a deductive environment is well supported. Corpus linguistics has significantly informed coursebook development, offering a usage-based perspective on language, authentic examples, and frequency-driven content that better reflects spoken and written language differences (e.g., McCarthy 2004). Learner corpora also help identify typical challenges across L1 backgrounds (Curry and Mark 2023), while the integration of spoken corpus data allows for greater representation of accents, formality levels, and registers (Sung 2016), which in turn fosters intercultural competence (Curry 2022). Corpus insights provide teachers and learners with a clearer understanding of authentic language use and help ground syllabi in real-world relevance (Curry and Mark 2023), allowing foreign language learners to engage with authentic language without immersion in a target-language environment (McCarthy 2004).

6 | Conclusion

This study addresses the over-reliance on language coursebooks in foreign language learning, demonstrating DDL as an effective complement. Using French adjective placement as an example, it highlights the benefits of integrating corpus insights into classrooms for empirically grounded language learning. DDL allowed for accelerated and sustained knowledge gains up to seven weeks post-experiment, with learners reporting improved lexico-grammar knowledge and agency.

From the learner's perspective, DDL enhances knowledge acquisition, agency, and critical thinking. Viewing learning as a social process can alleviate DDL challenges (cf. O'Sullivan 2007), allowing learners to focus on the process and creating a worthwhile learning experience. For participants preparing to study abroad, DDL fosters awareness of language as characterised by gradience and preferences rather than rigid rules. Engaging with authentic language data sharpens learners' understanding of real-world usage, preparing them to operate in the target

communities. This equips learners to continue developing their language skills upon immersion, fostering lifelong learning and smoother integration into new environments. Teachers remain pivotal in inductive learning, preparing materials and providing structured support to balance independence with guidance in DDL (cf. Templeton and Timmis 2023). Learners emphasised that integrating inductive and deductive approaches can foster more effective language development.

In terms of research, the study addresses gaps in the literature on languages other than English (LOTEs), particularly for lower-level learners, and employs a robust design with experimental and control groups, block randomisation, data triangulation, and a delayed post-test. Furthermore, it responds to calls for stronger theoretical grounding by integrating SLA frameworks like SCT and constructivism, reinforcing the pedagogical potential of DDL for diverse learner contexts.

Author Contributions

Jarvis Looi: conceptualisation, formal analysis, investigation, methodology, writing – original draft. **Alex Boulton:** methodology, supervision, writing – review and editing. **Roshidah Hassan:** funding acquisition, supervision. **Patricia Nora Riget:** project administration, supervision

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Ethics Statement

This study was conducted in accordance with the ethical guidelines and received approval from Universiti Malaya under reference code UM.TNC2/UMREC_3155, ensuring compliance with research standards for participant consent, confidentiality, and data protection.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Peer Review

The peer review history for this article is available at <https://publons.com/publon/10.1111/ijal.12753>

Endnotes

¹ All research instruments are available in the IRIS repository.

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Appendix A: Coursebooks Examined for Adjective Placement Rules

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3. Girardet, J. and Pécheur, J. (2006). *Campus 1: Méthode de français*. CLE International.
4. Girardet, J. and Pécheur, J. (2006). *Campus 2: Méthode de français*. CLE International.
5. Capelle, G. and Menand, R. (2009). *Le Nouveau Taxi 1 !: Méthode de français*. Hachette Français Langue Étrangère.
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7. Lopes, M.-J. and Le Bounec, J.-T. (2016). *Texto 1: Méthode de français A1*. Hachette Français Langue Étrangère.
8. Hirschsprung, N. and Tricot, T. (2017). *Cosmopolite 1: Méthode de français A1*. Hachette Français Langue Étrangère.

Appendix B: Summary of variables annotated for.

	Grouping	Variables	Levels
1.	response	<i>adj_pla</i> The placement of the adjective	Binary: anteposition, postposition.
2.	general	<i>mode</i> The mode of production.	Binary: spoken, written.
3.	general	<i>genre</i> The genre of the subcorpus. e.g., the subcorpus Est-Républicain belongs to the category of <i>written press</i> .	Six levels: private.speech, professional.speech, literature, scientific.writing, unplanned.writing, written.press.
4.	morphological	<i>gender</i> If the noun that the adjective modifies is masculine or feminine. e.g., <i>ancien français</i> (trans. Old French)—masculine e.g., <i>dans la prochaine période</i> (trans. in the next period)—feminine	Binary: feminine, masculine
5.	morphological	<i>num</i> If the noun that the adjective modifies is singular or plural. e.g., <i>les anciennes peintures chinoises</i> (trans. the old Chinese paintings)—plural e.g., <i>une prochaine fois</i> (trans. another time)—plural	Binary: singular, plural
6.	lexical	<i>lenrat</i> The difference in length (syllables) between the adjective and the noun. e.g., <i>son ancien poste</i> (trans. his previous position)—minus1 e.g., <i>l’année prochaine</i> (trans. next year)—equal	Four levels: equal, minus1, plus1, plus2, plus3 (more than three syllables) Note: This variable is subsequently transformed into <i>lenrat1</i> which has only three levels: equal, minus1, and plus (comprising plus1, plus2, and plus3).

(Continues)

	Grouping	Variables	Levels
7.	syntax	<p><i>gramrole</i></p> <p>The grammatical role played by the noun phrase in which the adjective is used.</p> <p>e.g., <i>deux anciennes employées ... ont été jugées.</i> (trans. two former employees have been tried.)—subject</p> <p>e.g., ... <i>jusqu'au prochain nouvel an</i> (trans. until the next new year)—circumstantial</p>	Eight levels: subject, direct object, indirect object, predicate, appositive, circumstantial, complement, and others.
8.	syntax/morphosyntax	<p><i>coor</i></p> <p>If the adjective is coordinated with another adjective.</p> <p>e.g., <i>nos anciens et nouveaux sponsors</i> (trans. our old and new sponsors)</p> <p>e.g., <i>la prochaine réunion</i> (trans. the next meeting)—non-coordinated</p>	Binary: non-coordinated, coordinated.
9.	syntax/morphosyntax	<p><i>modified</i></p> <p>If the adjective is modified by an adverb.</p> <p>e.g., <i>deux textes assez anciens</i> (trans. two fairly old texts)—modified</p> <p>e.g., <i>leur prochain spectacle</i> (trans. their next show)—non-modified</p>	Binary: non-modified, modified.
10.	syntax/morphosyntax	<p><i>adjs</i></p> <p>If there is one or more adjectives present altogether with the adjective in the same noun phrase. If yes, then in which position.</p> <p>e.g., <i>les grandes maisons littéraires anciennes</i> (trans. the old great literary publishers)—in.both.positions</p> <p>e.g., <i>la prochaine messe dominicale</i> (trans. the next Sunday mass)—in.postposition</p>	Four levels: absent, in.anteponition, in.postposition, in.both.positions.
11.	syntax/morphosyntax	<p><i>rel</i></p> <p>If the noun phrase in which the adjective is used contains a relative clause.</p> <p>e.g., <i>cet ancien site de tir allemand, devenu un centre historique...</i> (trans. this old German shooting site, which has become a historic centre...)—present</p> <p>e.g., <i>lors d'une prochaine crise internationale</i> (trans. during a forthcoming international crisis)—absent</p>	Binary: absent, present.
12.	syntax/morphosyntax	<p><i>postndep</i></p> <p>If the noun phrase in which the adjective is used has a nominal complement.</p> <p>e.g., <i>un ancien maire de gauche</i> (trans. a former mayor of the left)—present</p> <p>e.g., <i>la prochaine coalition gouvernementale</i> (trans. the next governmental coalition)—absent</p>	Binary: absent, present.
13.	syntax/morphosyntax	<p><i>det</i></p> <p>If the noun phrase in which the adjective is used has a determiner. If yes, then which type.</p> <p>e.g., <i>mon ancien maître</i> (trans. my former master)—possessive determiner</p> <p>e.g., <i>la prochaine assemblée annuelle</i> (trans. the next annual meeting)—definite determiner</p>	Five levels: absent, definite, indefinite, possessive, demonstrative.

(Continues)

Grouping		Variables	Levels
14.	phonetic	<p><i>liaison</i></p> <p>If there is a liaison between the adjective and the words around it. If yes, then which nature.</p> <p>e.g., <i>son ancien club</i> [sɔ̃nɑ̃sjɛ klœb] (trans. his former club)—obligatory</p> <p>e.g., <i>la prochaine cible</i> [la prɔʃɛn sibl] (trans. the next target)—prohibited</p>	<p>Three levels: prohibited, obligatory, optional.</p> <p>Note: The nature of the liaison is determined based on the description of Léon and Bhatt (2017; Chapter 11).</p>
15.	phonetic	<p><i>liaisonpos</i></p> <p>If there is a liaison between the adjective and the words around it. If yes, then in which position.</p> <p>e.g., <i>son _ ancien club</i> [sɔ̃nɑ̃sjɛ klœb] (trans. his former club)—head</p> <p>e.g., <i>la prochaine cible</i> [la prɔʃɛn sibl] (trans. the next target)—absent</p>	<p>Four levels: absent, head, tail, both.</p> <p>Note: This variable considers obligatory and optional as equal because what matters here is the liaison's position.</p>
16.	semantic	<p><i>sig</i></p> <p>The meaning of the adjective.</p> <p>e.g., <i>un ancien professeur de français</i> (trans. a former French teacher)—former</p> <p>e.g., <i>son prochain roman</i> (trans. his next novel)—next</p>	<p>Binary:</p> <p>[<i>ancien</i>] which exists for a long time, former.</p> <p>[<i>prochain</i>] next, upcoming</p>
17.	semantic	<p><i>anim</i></p> <p>If the noun that the adjective modifies is animate or inanimate.</p> <p>e.g., <i>un ancien sous-marin soviétique</i> (trans. a former Soviet submarine)—<i>inanimate</i></p> <p>e.g., <i>le prochain président</i> (trans. the next president)—animate</p>	<p>Binary: inanimate, animate</p>
18.	semantic	<p><i>temp</i></p> <p>If the noun that the adjective modifies is temporal in nature. Only applicable to <i>prochain</i>.</p> <p>e.g., <i>la semaine prochaine</i> (trans. next week)—temporal</p>	<p>Binary: non-temporal, temporal</p>

Appendix C: Regression results predicting the postposition of ancien.

Variable	Estimate (posterior median)	MAD_SD	95% credible intervals	Decision
(Intercept)	1.90	0.52	(0.892, 2.980)	Reject Null
genre-literature	-2.10	0.60	(-3.345, -0.967)	Reject Null
genre-professional speech	1.46	1.09	(-0.526, 3.885)	Undecided
genre-scientific writing	-1.74	0.61	(-2.935, -0.533)	Reject Null
genre-unplanned writing	-1.51	0.66	(-2.838, -0.242)	Reject Null
genre-written press	-1.62	0.55	(-2.785, -0.566)	Reject Null
sig-former	-8.66	1.41	(-12.135, -6.338)	Reject Null
anim-animate	-0.76	0.40	(-1.588, 0.011)	Undecided
liaison-obligatory	-1.09	0.25	(-1.595, -0.620)	Reject Null
liaison-optional	4.16	0.55	(3.205, 5.386)	Reject Null
coor-coordinated	1.66	0.60	(0.550, 2.875)	Reject Null
adjs-in anteposition	1.76	1.03	(-0.091, 3.914)	Undecided
adjs-in both position	-2.78	2.12	(-7.650, 0.718)	Undecided
adjs-in postposition	-2.18	0.51	(-3.277, -1.237)	Reject Null
lenrat1-minus1	0.26	0.25	(-0.266, 0.758)	Undecided
lenrat1-plus	-0.08	0.26	(-0.587, 0.432)	Undecided
gender-masculine	-0.47	0.23	(-0.909, -0.050)	Reject Null

Appendix D: Regression results predicting the postposition of prochain.

Variable	Estimate (posterior median)	MAD_SD	95% credible intervals	Decision
(Intercept)	-4.58	0.79	(-6.237, -3.161)	Reject Null
genre-literature	1.39	0.74	(-0.022, 2.813)	Undecided
genre-scientific writing	-12.72	7.29	(-31.922, -3.968)	Reject Null
genre-unplanned writing	-1.88	0.69	(-3.252, -0.634)	Reject Null
genre-written press	-2.39	0.57	(-3.544, -1.321)	Reject Null
sig-upcoming	4.66	0.81	(3.186, 6.370)	Reject Null
temp-temporal	7.33	1.00	(5.600, 9.468)	Reject Null
upcoming:temporal	-5.15	1.16	(-7.606, -2.920)	Reject Null
nontemporal:plural	-1.25	0.96	(-3.328, 0.482)	Undecided
temporal:plural	-7.48	0.98	(-9.811, -5.806)	Reject Null

Appendix E: Structured DDL Worksheet for the first session on *ancien*.

Full name: _____ Date: _____

DDL-ANC01

Table 1

A	Son père,	ancien	joueur de l'équipe nationale de Chine, l'envoie faire du basket dans un club de Shanghai.
B	J'ai fait corriger une fois une fiche de lecture par mon	ancien	professeur de français.
C	Une	ancienne	athlète organise dix épreuves en France pour collecter des fonds.
D	Ce plan Cancer aide les	anciens	malades à continuer après la maladie.
E	J'en remercie encore mes	anciennes	collègues.
F	Ils ont reçu le soutien de l'	ancien	président américain Bill Clinton.

Table 2

A	Le président cède, à titre gratuit, des	anciens	livres scolaires à l'association « les couleurs du Barba ».
B	La statue la plus	ancienne	exposée à Zurich date de l'an 529.
C	Sur un petit bureau très	ancien ,	j'avais un cahier.
D	Elle recherchait aussi les bijoux	anciens .	
E	En Orient, un livre	ancien	est toujours inspiré, quel qu'en soit le contenu.
F	Si vous possédez des photographies	anciennes	concernant les bâtiments, vous pouvez les faire parvenir à L'Est Républicain.

Table 3

A	Arrête-toi un moment et écoute une	ancienne	histoire de notre ville, contée en peu de mots.
B	Un	ancien	consensus peut évidemment être remis en cause.
C	Mais, en réalité, elles ont une bien plus	ancienne	origine.
D	C'est un joli mot un peu	ancien .	
E	Il s'inspire du halqa, cette forme	ancienne	où le théâtre se joue dans la rue.
F	Il était ému par cet écho de ses	anciennes	pensées, par les souvenirs où elle le reportait.

Full name: _____ Date: _____ DDL-ANC01

1. Observe <i>ancien</i> and list its different forms.	2. Say why there are different forms of <i>ancien</i> .
3. Observe and identify the nouns used with <i>ancien</i> by circling them in the sentences.	
4. Observe these nouns and state their similarities within each table.	
5. Observe these nouns and state their differences across tables	
6. Observe and identify the position of <i>ancien</i> when used with these nouns.	

7. Observe the positions of <i>ancien</i> and identify its meaning(s).
8. Based on your observation, describe how <i>ancien</i> is used.
9. Translate into English: <i>Une ancienne athlète organise dix épreuves en France pour collecter des fonds.</i>
10. Translate into English: <i>Sur un petit bureau très ancien, j'avais un cahier.</i>
11. Translate into English: <i>C'est un joli mot un peu ancien.</i>

Full name: _____ Date: _____ DDL-PROC02

Table 1A

A	La	prochain	collecte de sang aura lieu le mardi 14 mai.
B	Les Castors attendent le	prochain	stage afin de perfectionner leur mode d'expression dans le domaine des arts.
C	J'ai regardé par curiosité le cours	prochain	qu'est-ce que c'est le neurone.
D	Thomas Pesquet, le	prochain	astronaute français de l'ESA rejoindra l'ISS en 2016.
E	Pour leur	prochain	match, les Australiens rencontreront les Roumains.

Table 1B

A	Ça pourrait éviter de choisir un mauvais profil'année	prochain	.
B	Je vais être arrière-grand-mère au mois	prochain	.
C	Le temps va sembler long aux Français ces trois	prochaines	années.
D	Je vais rentrer décembre	prochain	pour les vacances de Noël.
E	Enfin, la semaine	prochaine	, Copenhague accueillera un sommet européen.

Table 2A

A	Greenpeace porte tous ses espoirs sur le	prochain	Sommet de la Terre de Johannesburg.
B	Lors des	prochaines	élections, les Flévillois devront redoubler d'attention.
C	Jean-René Fourtou annonce le déblocage	prochain	de 2 milliards d'euros.
D	Mais devant la mort inévitable et	prochaine	, ce qui restait à faire était simple et prévu depuis des siècles.
E	Quand la Maison Pour Tous sera ouverte, elle accueillera les	prochains	centres aérés.

Table 2B

A	La perspective d'intégrer un jour	prochain	les athlètes handisports est souvent évoquée comme la solution idéale.
B	Je devais faire un achat dans les	prochaines	années.
C	Le chômage devrait donc augmenter dans les	prochains	mois.
D	D'autres actions sont prévues dans les	prochains	jours avant la grève interprofessionnelle contre la réforme des retraites.
E	Stéphane, déçu, espère plus de participants un	prochain	week-end.



Full name: _____

Date: _____

The sentences are grouped based on two criteria.

1. Identify the nouns used with <i>prochain</i> in all 4 tables by circling them in the sentences.
2. Count the different positions of <i>prochain</i> in each table.
Table 1A: _____ time(s) before the noun; _____ time(s) after the noun
Table 1B: _____ time(s) before the noun; _____ time(s) after the noun
Table 2A: _____ time(s) before the noun; _____ time(s) after the noun
Table 2B: _____ time(s) before the noun; _____ time(s) after the noun
3. Compare Tables 1A and 2A to Tables 1B and 2B. Identify the similarities in the nouns in these 2 sets of tables.
4. Compare Tables 1A and 1B to Tables 2A and 2B. Identify the similarities/differences in the meaning of <i>prochain</i> .
5. Having identified the two criteria for the groupings, describe how <i>prochain</i> is used based on your observations.
6. Choose the correct translation for the highlighted phrase in the following sentences:
i. Mais devant la mort inévitable et prochaine , ce qui restait à faire était simple.
a. before the inevitable and approaching death
b. before the inevitable and next death
ii. La prochaine collecte de sang aura lieu le mardi 14 mai.
a. the next blood drive
b. the upcoming blood drive
iii. Le temps va sembler long aux Français ces trois prochaines années .
a. over the next three years
b. over the three upcoming years
iv. La perspective d'intégrer un jour prochain les athlètes handisports est souvent évoquée comme la solution idéale.
a. some day
b. next day
v. Pour leur prochain match , les Australiens rencontreront les Roumains.
a. their upcoming match
b. their next match
vi. Stéphane, déçu, espère plus de participants un prochain week-end .
a. next weekend
b. on a future weekend

Berthet, A., Daill, E., Hugot, C., Kizirian, V.M., Waendendries, M. (2012). *Alter Ego+ A2*. (p. 177). Hachette Livre.

The position of adjective

Following the general rule, adjective is placed after the noun. It is the case especially for:

- Adjectives of nationality: *un acteur américain* (an American actor)
- Adjectives of colour or shape: *une voiture grise* (a grey car); *une table ronde* (a round table)
- Adjectives followed by a complement: *un livre agréable à lire* (A nice book to read)
- Also participles (present or past) used as adjectives: *un scénario intéressant* (an interesting scenario), *une actrice connue* (a famous actress)

The following adjectives are generally placed before the noun: *petit* (small), *grand* (big), *gros* (fat), *bon* (good), *mauvais* (bad), *vieux* (old), *jeune* (young), *nouveau* (new), *beau* (beautiful), *joli* (pretty), *prochain* (next), *dernier* (last), *jeune* (young), *ancien* (ancient).

Some of these adjectives convey a different meaning when they are placed after the noun.

Examples:

- *Un jeune cinéaste* (a young film maker) = He is starting out in the profession.
- *Un cinéaste jeune* (a young film maker) = He is not old.
- *Une bonne critique* (a good critic) = A positive criticism
- *Un homme bon* (a good man when we speak of persons only) = A man who has kindness
- *Un mauvais film* (a bad film) = A film without quality
- *Un personne mauvaise* (a bad person) = A person who is mean
- *Une salle ancienne* (An old hall) = It is old.
- *Une ancienne salle de cinéma* (A former cinema hall) = It is no longer a cinema hall, its function has changed.

The adjectives *prochain* (next) and *dernier* (last) are placed after the noun when it is about a temporal term (days of the week, week, month, year).

Examples:

- *Il travaille à son prochain film.* (He works on his next film.)
- *Son film sort la semaine prochaine.* (His film is released next week.)
- *Son dernier film remporte un gros succès.* (His last film was a huge success.)
- *Son film est sorti mercredi dernier.* (His film was released last Wednesday.)

Special cases:

The adjectives *vieux* (old), *nouveau* (new), and *beau* (beautiful) have an irregular form in singular and masculine when they are followed by a noun beginning by a vowel ou a silent *h*.

Examples:

- *Un vieil homme* (an old man)
 - *Un bel endroit* (a beautiful place)
 - *Un nouvel actor* (a new actor)
-

Appendix H: Test instrument (Pre-test)



Full name: _____ Date: _____ DDLREG

There are two types of questions that you will see in this test. In Part A, you will choose the correct interpretation of the phrases highlighted in bold; in Part B, you will decide where to place the adjective.

It is mandatory that you answer **each and every question**.

Part A: Choose the correct interpretation for the phrases highlighted in the following sentences.

1. La **prochaine assemblée** du Théâtre de Cristal se tiendra le jeudi 25 avril.
 - a. The next meeting (after the current one)
 - b. The next meeting (that will happen soon)
 - c. I don't know
2. Rouletabille jugea qu'il devait être dans **une ancienne fabrique abandonnée**.
 - a. A factory which exists since a long time and is still a factory
 - b. A factory which is no longer used as a factory, but a ruin
 - c. I don't know
3. Ta présence à toutes les étapes de **mon parcours des dernières années** m'a été vitale.
 - a. My journey in the final years
 - b. My journey in recent years
 - c. I don't know
4. C'est avec plaisir que nous apprenons **le prochain mariage** de Yannick Adnet.
 - a. The next marriage (the second or third marriage of Mr. Adnet)
 - b. The approaching marriage (the marriage that will soon happen)
 - c. I don't know

1

Part B: Decide where the adjective should be placed.

1. Au total, plus d'une soixantaine de personnes ont profité de ce grand moment de d' _____ musique _____.
 - a. d'ancienne musique
 - b. de musique ancienne
 - c. I don't know
2. C'est la dernière fois que je descends à la cave. La _____ fois _____, c'est toi hein. Je déteste les araignées.
 - a. La fois prochaine
 - b. La prochaine fois
 - c. I don't know
3. Ce _____ type _____ de requête permet d'extraire du dictionnaire l'ensemble des mots.
 - a. Ce type dernier de requête
 - b. Ce dernier type de requête
 - c. I don't know
4. Initié par le/l' _____ ministre _____ de l'environnement Yves Cochet après la catastrophe AZF, il met l'accent sur l'information aux populations et à la réparation des dommages.
 - a. L'ancien ministre
 - b. Le ministre ancien
 - c. I don't know
5. La/l' _____ assemblée _____ du Théâtre de Cristal se tiendra le jeudi 25 avril.
 - a. La prochaine assemblée
 - b. L'assemblée prochaine
 - c. I don't know
6. Je ne t'ai pas écrit ces _____ temps _____; il y avait peu de chances pour qu'une lettre te rejoigne dans tes vagabondages à travers le Soudan.
 - a. Ces temps derniers
 - b. Ces derniers temps
 - c. I don't know

3

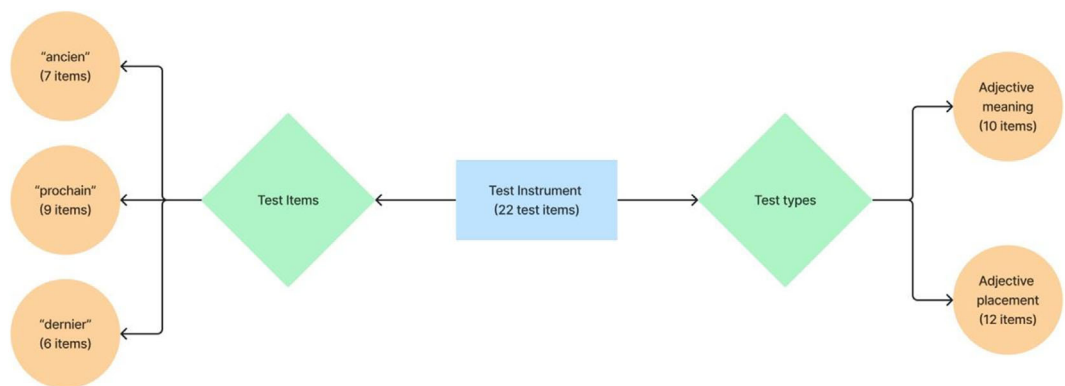
5. On a des populations heureusement qui ont pu rester **dans des immeubles anciens**.
 - a. In buildings that are old but still standing
 - b. In buildings that are ruins
 - c. I don't know
6. Que nous disent **les derniers résultats de l'élection présidentielle** ?
 - a. The latest results of the presidential election
 - b. The final results of the presidential election
 - c. I don't know
7. À cause de son **grand âge**, le médecin avait déclaré que c'était pour elle **la fin très prochaine**.
 - a. The approaching end of her life
 - b. The next end of her life
 - c. I don't know
8. La ministre de la Culture, Catherine Tasca, a remis la rosette à Jorge Lavelli, **ancien et premier directeur du Théâtre national de la Colline** à Paris lors de deux cérémonies au ministère.
 - a. The first director but no longer so
 - b. The first director and remaining so
 - c. I don't know
9. **La dernière semaine des vacances** a été consacrée à la réalisation des fresques sur les édifices situés rue de Toul, à l'entrée du village et près de l'école.
 - a. The final week of holidays
 - b. The recent week of holidays
 - c. I don't know
10. Saisi en référé, le tribunal administratif de Strasbourg devra trancher cette question **dans les prochaines semaines**.
 - a. In the weeks to come but the exact date is undetermined
 - b. The exact date is next week
 - c. I don't know

2

7. Un tel procédé se retrouve dans la/l' _____ poésie italienne _____.
 - a. L'ancienne poésie italienne
 - b. La poésie italienne ancienne
 - c. I don't know
8. Les responsables du programme dénoncent un manque de 1 milliard de dollars sur les 5 _____ années _____.
 - a. Les 5 années prochaines
 - b. Les 5 prochaines années
 - c. I don't know
9. Il a confirmé le _____ recrutement _____ d'un « manager général à l'anglaise qui va contrôler l'ensemble du projet sportif ».
 - a. Le recrutement prochain
 - b. Le prochain recrutement
 - c. I don't know
10. Il serait difficile de fournir un catalogue étendu de _____ livres bretons _____.
 - a. De réellement anciens et originaux livres bretons
 - b. De livres bretons réellement anciens et originaux
 - c. I don't know
11. Les questions de l'emploi et du chômage vont demeurer au premier plan de l'actualité économique et sociale des _____ mois _____.
 - a. des prochains mois
 - b. des mois prochains
 - c. I don't know
12. Les _____ indicateurs _____ disponibles suggèrent que celle-ci n'interviendrait pas avant mi-2003.
 - a. Les derniers indicateurs
 - b. Les indicateurs derniers
 - c. I don't know

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Appendix I: Test instrument design overview



Appendix J: Statistically significant factors embodied in the target item *ancien*

