The Effects of Animacy and Complexity on the Morphosyntactic Acquisition of English Genitives by Jordanian Arabic Speakers

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Abstract: This study investigates the effects of semantic and structural factors on the second language acquisition of English genitive constructions by Jordanian Arabic speakers. The study used two tasks: an Acceptability Judgement Task (AJT) and an Elicited Production Task (EPT). In both tasks, possessors varied in animacy (animate vs. inanimate) and complexity (simple vs. complex possessors). A control group of native English speakers showed a strong preference for the 's-genitive in animate contexts and the of-genitive in inanimate ones, with only mild effects of structural complexity. The L2 group showed the same overall preferences, but their responses were more gradient and showed stronger sensitivity to possessor complexity. In the AJT, ratings for the 's-genitive dropped notably in Animate–Complex contexts, whereas in the EPT, the L2 group produced the of-genitive at high rates across all conditions. Proficiency had a selective effect: more advanced learners were more target-like mainly in the complex-possessor contexts where English and Jordanian Arabic differ most. These findings support the Feature Reassembly Hypothesis, suggesting that semantic cues are acquired earlier and more robustly than the structural mechanisms underlying the English 's-genitive. The difference between judgement and production shows that learners may recognise the target forms before they can produce them easily.

Keywords: animacy, English genitive, feature reassembly, L1-Jordanian Arabic L2-English speakers, morphosyntactic development, structural complexity

1. Introduction

Genitive variation has often been recognized as a domain in which semantic and syntactic factors interact (Rosenbach 2001, 2005). English has two genitive configurations: the 's-genitive, which involves a possessor-raising structure marked

by the clitic *'s*, and the of-genitive, which includes an analytic postnominal PP headed by *of* (Biber et al. 1999; Rosenbach 2014). The choice between the prenominal 's-genitive (e.g., the government's response) and the postnominal of-genitive (e.g., the response of the government) is not random. Instead, it follows systematic patterns related to semantic and syntactic factors. For this reason, this alternation is useful for examining how L2 learners acquire a structure in which several factors influence the choice between the two forms (Hinrichs and Szmrecsanyi 2007).

Several studies have identified animacy as an important semantic and morphosyntactic factor in genitive choice (e.g., Quirk et al. 1985; Biber et al. 1999; Rosenbach 2001, 2005, 2014). Possessors with the [+animate] feature are more likely to occur with the 's-genitive, whereas [–animate] possessors are more commonly associated with the of-genitive. Previous studies have also shown that syntactic complexity influences genitive choice. Structurally complex possessors are more often expressed with the of-genitive, whereas simpler possessors tend to occur with the 's-genitive (Deshors and Gries 2014; Rosenbach 2005). Other factors such as definiteness (Rosenbach 2001, 2002; Huddleston and Pullum 2002), prosodic patterns (Couper-Kuhlen 1986; Shih et al. 2015), and register (Hinrichs and Szmrecsanyi 2007; Biber et al. 2023) have also been found to influence genitive variation. However, the focus of the current study is limited to animacy and possessor complexity. These distinctions are especially relevant for Arabic speakers, whose L1 expresses possession through a construction that differs fundamentally from the English genitive system, as will be discussed in the following section.

The presence of two English genitive forms that can overlap in use poses difficulties for L2 learners, especially since classroom instruction does not usually make clear when each form is preferred over the other (Escobar-Alvarez 2012; Rosenbach 2014; Azaz 2020). Earlier studies indicate that the 's-genitive tends to be acquired relatively late, particularly when learners' L1 does not contain a comparable structure (Krashen 1977; Escobar-Alvarez 2012; Algie 2023). This difficulty could be due to syntactic complexity: the 's-genitive requires possessor raising, while the of-genitive has a simpler structural form (Jakubowicz 2011; Gil 2014; Azaz 2020). Learners' choices could also be influenced by L1, as previous work has shown that preferences often reflect structural patterns available in their L1 (Algie 2023). Based on this discussion, the present study seeks answers to the following questions:

(1) Do L1–Jordanian Arabic speakers show sensitivity to animacy and possessor complexity in their acceptability judgements of English genitive constructions?
(2) Do they show similar sensitivity when they produce English genitive constructions in the elicited production task?
(3) Does English proficiency predict more target-like preferences, especially in structures that require greater morphosyntactic complexity?

The present study contributes to previous work on genitives by using the Feature Reassembly Hypothesis (introduced in the following section) to examine the English genitive alternation among L1-Jordanian Arabic L2-English speakers. The study offers new insight into how animacy and possessor complexity are integrated across tasks and proficiency levels.

1.1 Feature Reassembly Hypothesis (FRH)

To frame the research questions theoretically, the study adopts the Feature Reassembly Hypothesis (FRH) (Lardiere 2008, 2009), a framework that explains how L2 learners acquire morphosyntactic features. In contrast to accounts that focus on whether learners transfer or access entire grammatical systems (cf. Full Transfer/Full Access, as in Schwartz and Sprouse 1996, or the Missing Surface Inflection Hypothesis, Prévost and White 2000), FRH emphasises how individual features are identified, reorganised, and ultimately realised in the L2 grammar.

In this model, functional categories are analysed as bundles of abstract features. FRH distinguishes between a *feature inventory*, i.e. the features present in the L1, and *feature configuration*, i.e. how these features are packaged and expressed in the grammar. L2 acquisition requires identifying the relevant features and reassembling them into the configuration required by the target language. This process often involves redistributing familiar features across new morphological markers and syntactic positions, leading to persistent variability even when the L1 and L2 share similar inventories.

Within the FRH, features that are already available in the L1, such as animacy, are expected to be easier to map onto the L2 system, whereas features that require new syntactic configurations, such as the structural complexity of the possessor in English genitive constructions, are expected to develop more gradually. Based on this, the present study tests the following hypotheses:

(1) **Hypothesis 1 (Animacy)**: Learners will show early sensitivity to animacy, favouring the 's–genitive with animate possessors and the of-genitive with inanimate possessors.
(2) **Hypothesis 2 (Complexity)**: Sensitivity to structural complexity will be weaker, reflecting the greater difficulty of reassembling features associated with possessor structure.
(3) **Hypothesis 3 (Proficiency)**: With increasing proficiency, learners will show more target-consistent integration of both semantic and structural constraints, especially in structurally complex contexts.

1.2 Genitives in Jordanian Arabic and the Feature Reassembly Hypothesis-based predictions

Jordanian Arabic (henceforth JA), like other Arabic varieties, expresses possession primarily through the construct state (iḍāfa) (e.g., *beet ʔɪl-walad* 'the boy's house'), in which the possessed noun (*beet* 'house') raises within the nominal phrase and surfaces before the possessor (*il-walad* 'the boy'), carrying the definiteness of the whole phrase (Ritter 1988; Fassi-Fehri 1989, 1999; Abushunar and Othman 2022).

JA also has a non-construct alternative, *ʔɪl-beet tabaʕ ʔɪl-walad* 'the house of the boy', marked by the relational particle *tabaʕ* 'of/for', but this construction preserves the same possessed–possessor word order as the construct state (Abdel-Aziz et al. 2024).

The English 's-genitive differs from both JA possessive constructions, mainly in its use of the clitic 's and in deriving the possessor–possessum relation through possessor raising rather than the iḍāfa structure. As a result, L1 JA speakers cannot rely on structural transfer when acquiring the English 's-genitive. However, the surface similarities between the English of-genitive and the JA non-construct *tabaʕ* construction, particularly their shared use of a relational marker and the possessed–possessor word order, may encourage an early, non-target like reliance on the of-genitive. According to FRH, this reflects an early stage in which learners map familiar linear patterns onto the L2 before reconstructing the underlying semantic and structural features required for native-like genitive choice.

Like English, JA shows animacy effects in possessive constructions, but the patterns differ in important ways. In JA, the construct state is generally preferred with inanimate possessors, whereas the non-construct *tabaʕ* construction is more commonly used with animate possessors (Abdel-Aziz et al. 2024). Given the surface similarities between the English of-genitive and the JA non-construct state, which both use a relational marker and share the possessed–possessor word order, JA speakers may initially overextend the of-genitive in contexts with animate possessors. This early reliance reflects the mapping of familiar L1 patterns onto the L2 before the full English animacy–form associations are acquired.

According to Abdel-Aziz et al. (2024), possessor complexity is not a determining factor in genitive alternation in JA. Therefore, sensitivity to structural weight requires new feature reassembly and is predicted to develop later than animacy. Taken together, these factors point to a developmental pattern in which learners are expected to gradually approximate native preferences: 's-genitive with animate, simple possessors and of-genitive with inanimate, complex ones, while continuing to overproduce of-genitive due to its structural similarity to the JA non-construct state. These predictions are tested in the present study through judgements and production tasks.

2. Literature review

Research on the acquisition of English genitive constructions suggests that learners often find it difficult to connect semantic features, such as animacy, with the appropriate morphosyntactic form. This difficulty increases when the possessor is structurally complex. Therefore, animacy and complexity help examine how speakers express possession and how the L1 affects L2 development. For example, Romano (2016) investigated how animacy influences genitive production in native and advanced non-native English speakers. The study found that both groups were sensitive to animacy when they produced English. In Zakrocka's (2016) study, Polish speakers with higher English proficiency showed preferences closer to those of native speakers. On the other hand, learners with lower proficiency produced a

wide range of non-target forms, which suggests that learners rely on semantic cues more consistently as their proficiency increases.

In their study of a large corpus of English writing from learners of diverse L1 backgrounds, Dubois et al. (2022) observed how language proficiency influences their preference for English genitive variants. The results showed that lower-proficiency learners were less sensitive to animacy and tended to rely more heavily on the of-genitive, whereas more advanced learners' responses were closer to those of native speakers. More recently, Dubois et al. (2023) investigated how animacy and proficiency influence learners' use of English genitives using comparable corpus data. Native speakers showed clear animacy-based preferences. Advanced learners approximated this pattern, while lower proficiency learners showed weaker and more variable sensitivity to animacy. Thus, proficiency was positively associated with more native-like preferences; however, variability persisted even among advanced learners. These findings suggest that successful acquisition requires reorganising morphosyntactic features beyond surface distributional patterns.

Structural factors and L1–L2 similarity also play an important role in learners' acquisition of English genitives. Azaz (2020) examined how intermediate and advanced learners of English whose L1 is Egyptian Arabic acquire the English genitive alternation. The findings revealed that intermediate learners tended to overuse the of-genitive. Advanced learners, on the other hand, showed more native-like responses. Azaz argued that learners acquire the of-genitive earlier because it resembles Arabic genitive constructions.

Further evidence for structural influences comes from Algie (2023), who used corpus data and psycholinguistic tasks with L1 Japanese and L1 Spanish learners. Both groups strongly favoured of-genitives, reflecting the structural simplicity of this form, but Japanese learners, whose L1 contains a surface pattern resembling the English 's-genitive, produced more 's-genitives than Spanish learners. Algie's findings demonstrate that L1 structure guides initial variant choice, and that acquiring the English system requires gradual restructuring beyond simple surface transfer.

While existing accounts offer valuable insights into early stages of acquisition, they do not capture the gradual restructuring of feature bundles that underlies learners' emerging sensitivity to both semantic and structural cues. FRH may offer a more comprehensive framework for analysing this developmental process, yet it has not been applied to English genitive acquisition, particularly for Arabic-speaking learners. Research to date shows that learners are sensitive to both semantic and structural cues, though the strength and consistency of these effects vary, and findings on structural complexity are especially mixed. Most studies have also focused on L1 groups that share surface properties with English, leaving little evidence on how learners from linguistically distant backgrounds, such as Arabic speakers whose L1 lacks an equivalent 's/of-genitive contrast, approach the alternation. To our knowledge, no study has investigated genitive acquisition within FRH for Arabic L2 learners. Thus, the present study addresses these gaps by examining how JA speakers integrate animacy and possessor complexity in

acceptability judgements and production. It also tests FRH-based predictions and provides new insight into how semantic and structural features are reorganised in the L2 grammar.

3. Method

The present study employed two complementary tasks: an Acceptability Judgement Task (AJT) and an Elicited Production Task (EPT). Both tasks were administered to the same groups of L1-English speakers and L1-JA L2-English speakers to better understand how semantic and structural cues shape judgements and production within the same participants. The sections below first describe the participant groups, followed by detailed accounts of each task and its design.

3.1 Participants

Sixty-eight participants took part in the present study: 21 L1 speakers of English (L1 group: 9 males, 12 females) and 47 L1–JA L2–English speakers (L2 group; 19 males, 28 females). Gender was not included as a factor in the analysis as it was not expected to influence genitive choice. The L1 English group consisted of undergraduate and graduate students at York St John University, York, UK, who volunteered to participate in the study. Participants were recruited through personal academic contacts. The L2 group was recruited from Al al-Bayt University, Jordan through classroom visits. Before completing the experimental tasks, they completed the Oxford Quick Placement Test (2001), a multiple-choice assessment of reading, vocabulary, and grammar (maximum score = 60). Participants' proficiency levels ranged from A2 to C1 on the CEFR scale. For the analysis, proficiency was treated as a continuous variable, in line with the FRH, which treats feature reassembly as a gradual process. The age and proficiency profiles of the participants are presented in Table 1.

Table 1. Participants' age and proficiency task scores by group

Group (n)	Age mean (SD)	Range	Prof. mean (SD)	Range (/60)
L1–English (21)	22.9 (3.9)	21–29	–	–
L2–English (47)	24.1 (3.8)	19–32	39.3 (7.8)	25–53

3.2 Materials

3.2.1 Acceptability judgement task

The AJT included 80 critical sentences that varied according to three factors: Genitive Type ('s-genitive vs. of-genitive), Animacy (animate vs. inanimate possessors), and Complexity Type (simple vs. complex possessors). This resulted in a 2 × 2 × 2 design, with 10 items in each condition. The items were divided into two counterbalanced lists, so each participant saw only one genitive version of each lexical item. Each participant judged 40 critical items, with five items per condition. Participants rated the sentences on a 1–5 Likert scale. The task was administered online using Qualtrics. Table 2 provides representative examples of the eight conditions.

Table 2. The eight test categories in the AJT with representative examples

Category	Example
Animate–Simple–'s-genitive	The doctor's bag is missing from the hospital office.
Animate–Simple–of-genitive	The bag of the nurse was found in the staff room.
Animate–Complex–'s-genitive	The supervisor of the training department's report was reviewed this week.
Animate–Complex–of-genitive	The laptop of the engineer from the overseas branch needs to be repaired immediately.
Inanimate–Simple–'s-genitive	The museum's collection was expanded this year.
Inanimate–Simple–of-genitive	The playground of the school was renovated last summer.
Inanimate–Complex–'s-genitive	The website for the university library's layout was redesigned this month.
Inanimate–Complex–of-genitive	The homepage of the website for scientific news was updated yesterday.

The sentences were controlled for definiteness, lexical frequency, and plausibility to minimise unintended effects on genitive choice. Animacy was manipulated on the possessor noun phrase. The possessed noun was kept inanimate across all items to avoid semantic confounds related to possessed-noun animacy. A possessor was considered complex when it included a modifying prepositional phrase, such as *the manager of the finance team*.

Each item had two versions (A/B) that differed only in genitive type, as illustrated in (1). Two Latin-square lists were constructed so that no participant saw both versions of the same item. To reduce predictability and maintain engagement, 30 filler sentences were added (agreement errors, word-order errors, and grammatical fillers), yielding a total of 70 sentences per participant.

1. A-version ('s-genitive)
   The doctor's bag is missing from the hospital office.

   B-version (of-genitive)
   The bag of the doctor is missing from the hospital office.

3.2.2 Elicited production task

The EPT was designed to elicit spontaneous production of English genitives using the same 2 × 2 design (Animacy × Complexity). The task contained 40 critical possessor–possessed pairs (10 per condition) and 40 fillers. Each elicitation item appeared as a short question requiring participants to produce a full noun-phrase response by typing into a free-text box. Table 3 provides examples for each condition.

Table 3. The four test categories in the EPT with representative examples

Condition	Representative elicitation question	Expected type of response
Animate–Simple	Whose bag is this? (the teacher)	the teacher's bag / the bag of the teacher
Animate–Complex	Whose report was approved today? (the manager of the finance team)	the manager of the finance team's report / the report of the manager of the finance team
Inanimate–Simple	What was renovated last summer? (the hospital wing)	the hospital's wing / the wing of the hospital
Inanimate–Complex	What was redesigned this month? (the website for the university library)	the university library's website / the website of the university library

Using both tasks enabled the study to examine learners' underlying acceptability (AJT) as well as their real-time morphosyntactic production (EPT). To ensure naturalness and consistency, all materials for both the AJT and the EPT were reviewed and piloted by two linguists specialising in English syntax and Arabic–English contrastive structure. The EPT was administered online using Qualtrics.

Target-like responses were determined based on native-speaker preferences reported in previous research (e.g., Rosenbach 2001, 2005, 2014; Hinrichs and Szmrecsanyi 2007; Dubois et al. 2023). However, it should be noted that native-speaker preferences for genitive constructions are actually gradient rather than categorical; therefore, "target-like" responses in the present study reflect alignment with probabilistic tendencies rather than strict grammatical correctness. According to these findings, Animate–Simple and Animate–Complex possessors favour the 's-genitive, with a stronger preference in Simple contexts, whereas Inanimate–Simple and Inanimate–Complex possessors favour the of-genitive, with the preference strongest in Complex contexts. Although Complex possessors generally favour the of-genitive, this effect interacts with Animacy: Animate possessors

continue to prefer the 's-genitive even when Complex, whereas Inanimate–Complex possessors show the strongest preference for the of-genitive.

Fillers also consisted of simple noun-phrase items unrelated to possession and that required participants to combine cue words into a coherent NP (e.g., *What is on the table?* (notebook, red) → a/the red notebook). These items were simple to produce and did not include possession.

The use of both AJT and EPT enhances the validity of the study by capturing both learners' underlying representation and their real-time production behaviour.

3.3 Procedure

All participants received an online information sheet outlining the study aims and provided informed consent. Data were collected across two sessions to minimise task-order effects. The same participants completed both sessions. In the first session, participants completed a demographic questionnaire, a short language background questionnaire, and, for the L2 group only, the Oxford Quick Placement Test (Oxford University Press et al., 2001). They then completed the AJT. All components were administered online using Qualtrics.

Each sentence in the AJT was presented individually and rated on a 5-point Likert scale (1 = completely unacceptable, 5 = completely acceptable). Items were fully randomised and preceded by a short set of practice trials. Completion time was approximately 12–15 minutes for the L1 group and 15–20 minutes for the L2 group. In the second session, held on a different day, participants completed the EPT that was also administered online using Qualtrics. This task took about 10–12 minutes for the L1 group and 15–20 minutes for the L2 group to complete.

3.4 Data analysis

All analysis was conducted in R (R Core Team, 2025) using the lme4, lmerTest, and emmeans packages. Descriptive statistics (means, SDs, SEs) were computed for each combination of Genitive Type ('s-genitive vs. of-genitive), Animacy (Animate vs. Inanimate), and Complexity (Simple vs. Complex possessors), separately for the L1 and L2 groups.

For inferential analysis, linear mixed-effects models (LMMs) were fitted using the lmer() function. For the L1 group, the model included Genitive Type, Animacy, and Complexity as fixed effects. For the L2 group, Proficiency was added as a continuous predictor. Random intercepts for participants and items were included in both models.

Proficiency represented participants' scores on the Oxford Quick Placement Test and was z-transformed (mean = 0, SD = 1) so that effects could be interpreted per standard-deviation increase. Random intercepts for participants and items were included to account for individual and lexical variability. To interpret significant interactions, especially the contrasts between of-genitive and 's-genitive within each Animacy × Complexity condition, estimated marginal means (EMMs) and pairwise comparisons were computed using *emmeans*.

Regarding the EPT task, participants' responses were hand-coded as 's-genitive, of-genitive, or other. To assess coding reliability, two of the researchers

independently coded a randomly selected subset of the data. Interrater agreement was high (Cohen's κ = .90), and discrepancies were resolved through discussion. Responses that did not express possession were excluded from the analysis. For valid responses, each answer was coded as either 's-genitive or of-genitive. The analysis then examined how likely participants were to produce an 's-genitive. Mixed-effects logistic regression models were used to analyse production outcomes. The fixed-effect structure included Animacy, Complexity, and their interaction for the L1 model. For the L2 model, Proficiency was added as a continuous predictor with its interactions with Animacy and Complexity.

4. Results

4.1 AJT results

Table 4 presents the mean acceptability ratings (1–5) and standard errors (SE) for both groups across the eight conditions (see Table 4).

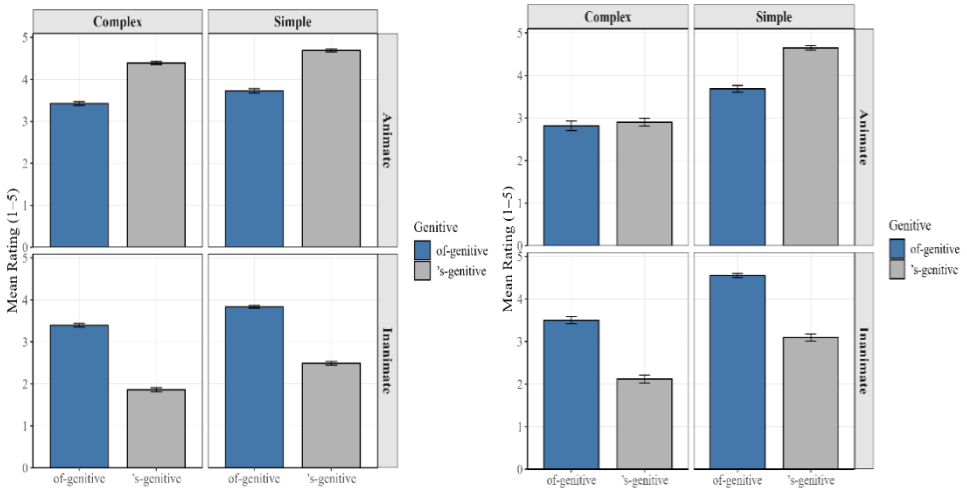
Table 4. Mean acceptability ratings by animacy, complexity, genitive type, and group

Animacy	Complexity	Genitive	Mean L1	SE L1	Mean L2	SE L2
Animate	Simple	of-genitive	3.73	0.05	3.69	0.08
Animate	Simple	's-genitive	4.69	0.03	4.65	0.05
Animate	Complex	of-genitive	3.43	0.05	2.87	0.12
Animate	Complex	's-genitive	4.39	0.04	2.90	0.09
Inanimate	Simple	of-genitive	3.83	0.03	4.55	0.05
Inanimate	Simple	's-genitive	2.49	0.04	3.10	0.08
Inanimate	Complex	of-genitive	3.40	0.04	3.50	0.08
Inanimate	Complex	's-genitive	1.86	0.05	2.12	0.10

The L1 group showed a clear pattern: 's-genitive received the highest ratings with animate possessors (Animate–Simple–'s = 4.69; Animate–Complex–'s = 4.39), whereas of-genitive was preferred with Inanimate possessors (Inanimate–Simple–of = 3.83; Inanimate–Complex–of = 3.40). Complexity produced only a modest effect; complex possessors were rated slightly lower than simple ones, but the main animacy pattern remained.

The L2 group showed a similar pattern, but the differences were less sharp. Ratings for the 's-genitive decreased sharply in the Animate–Complex condition

(M = 2.90), while of-genitives with animate possessors also received moderate ratings (Simple–of = 3.69; Complex–of = 2.87). In contrast, Inanimate contexts yielded higher acceptance of the of-genitive (Simple–of = 4.55; Complex–of = 3.50). Complexity effects were substantially stronger in the L2 group, with complex possessors consistently reducing acceptability, particularly for the 's-genitive. Figure 1 illustrates these patterns. The L1 group showed a clear animacy-based contrast, with higher ratings for the 's-genitive in animate contexts and for the of-genitive in inanimate contexts. By contrast, the L2 group showed a more gradual pattern, with a noticeably stronger effect of structural complexity, especially in animate conditions.



L1 L2

Figure 1. L1 and L2 mean ratings (1–5) by animacy, complexity, and genitive type, with ±1 SE error bars

To statistically examine these patterns, linear mixed-effects models were estimated for the L1 and L2 groups. Each model included Genitive Type, Animacy, and Complexity as fixed effects, with random intercepts for participants and items. Table 5 summarises the fixed-effects estimates. For the Genitive Type (of-genitive) coefficient, negative estimates indicate lower acceptability of the of-genitive relative to the 's-genitive baseline (Animate–Simple–'s).

Table 5. Fixed-effects estimates from linear mixed-effects models for L1 and L2 groups

Predictor	L1 Estimate	L1 SE	L1 p	L2 Estimate	L2 SE	L2 p
(Intercept)	4.69	0.04	< .001	4.65	0.11	< .001
Genitive (of-genitive)	–0.96	0.06	< .001	–0.97	0.13	< .001
Animacy (Inanimate)	–2.20	0.07	< .001	–1.55	0.14	< .001
Complexity (Complex)	–0.30	0.05	< .001	–1.75	0.12	< .001
Genitive × Animacy	2.31	0.09	< .001	2.42	0.19	< .001
Genitive × Complexity	0.00	0.10	.96	0.87	0.18	< .001
Animacy × Complexity	–0.33	0.08	<.001	0.78	0.19	< .001
Genitive × Animacy × Complexity	0.20	0.12	.12	–0.95	0.27	< .001

The L1 model revealed that Animacy had a significant main effect and interacted strongly with Genitive Type. Complexity showed a small but significant effect, and interactions involving Complexity were weak or non-significant, reflecting the fact that native speakers rely primarily on semantic cues, with structural complexity exerting only a modest influence.

In contrast, the L2 model revealed a greater impact of Complexity. The Complexity (Complex) coefficient was substantially larger than in the L1 model, and both the Genitive × Complexity and Animacy × Complexity interactions were significant, indicating that structural complexity had a stronger effect on genitive preferences in the L2 group. The significant three-way interaction also showed that complexity particularly weakened learners' preference for the 's-genitive in Animate contexts, producing a less categorical pattern than that observed for native speakers. Overall, the L2 model reflects a more gradual system in which structural complexity plays a considerably greater role than in the L1 grammar.

A second model examined whether proficiency (z-scored) influenced the L2 acceptability ratings. Proficiency and its full set of interactions with Animacy, Complexity, and Genitive Type were included as fixed effects. Table 6 illustrates the fixed-effects estimates for this model.

As shown in Table 6, proficiency did not uniformly increase acceptability: the main effect of z-Proficiency was not significant. Instead, proficiency interacted primarily with structural factors. A significant Complexity × Proficiency interaction indicated that higher-proficiency learners were less affected by Complex possessors. Two higher-order interactions were also significant: Genitive × Complexity × Proficiency and the marginal Genitive × Animacy × Complexity × Proficiency interaction. These effects suggest that proficiency was more closely related to structural complexity than to animacy.

Table 6. Fixed-effects estimates for the L2 acceptability model including proficiency (z-scoredand all interactions

Predictor	Estimate (β)	SE	p
(Intercept)	4.65	0.11	< .001
Genitive (of)	–0.97	0.13	< .001
Animacy (Inanimate)	–1.57	0.13	< .001
Complexity (Complex)	–1.76	0.13	< .001
z_Proficiency	0.13	0.11	.232
Genitive × Animacy	2.43	0.19	< .001
Genitive × Complexity	0.88	0.19	< .001
Animacy × Complexity	0.78	0.19	< .001
Genitive × z_Proficiency	–0.21	0.13	.110
Animacy × z_Proficiency	0.08	0.13	.552
Complexity × z_Proficiency	–0.41	0.13	.003
Genitive × Animacy × Complexity	–0.97	0.27	< .001
Genitive × Animacy × z_Proficiency	–0.13	0.19	.489
Genitive × Complexity × z_Proficiency	0.54	0.19	.004
Animacy × Complexity × z_Proficiency	0.14	0.19	.455
Genitive × Animacy × Complexity × z_Proficiency	–0.56	0.27	.050

Figure 2 shows that proficiency mainly affects performance in complex conditions. Higher-proficiency learners showed more stable contrasts in these conditions, while the effect of animacy was relatively consistent across proficiency levels.

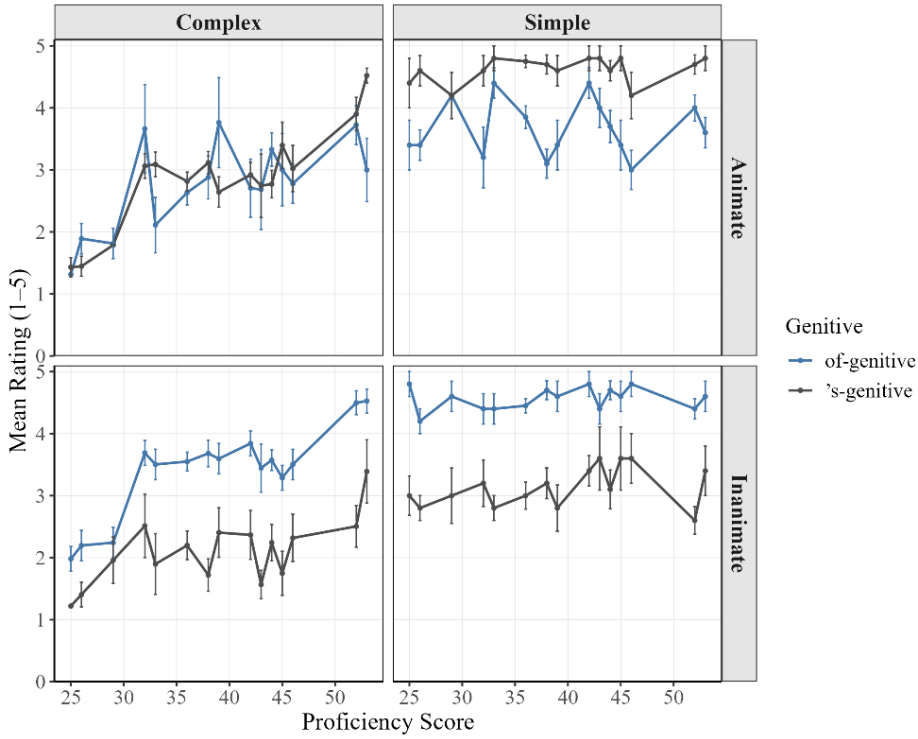


Figure 2. L2 mean ratings by proficiency across animacy × complexity × genitive conditions (±1 SE)

In sum, the AJT results suggest that the L2 group could use semantic cues, but still had difficulty with structurally complex possessors. The next section reports the results of the Elicited Production Task.

4.2 EPT results

The EPT examined elicited production of 's- versus of-genitives across Animacy and Complexity conditions. Table 7 and Figure 3 present the mean proportion of 's-genitive responses across the four conditions for both groups.

Table 7. Mean proportion of 's-genitive responses (± SE) by animacy and complexity for L1 and L2 groups in the EPT

Animacy	Complexity	Mean L1	SE L1	Mean L2	SE L2
Animate	Simple	0.87	0.024	0.57	0.024
Animate	Complex	0.64	0.033	0.42	0.024
Inanimate	Simple	0.48	0.035	0.28	0.021
Inanimate	Complex	0.11	0.022	0.09	0.013

The L1 group produced the ’s-genitive most frequently in Animate–Simple contexts, with reduced use in Animate–Complex contexts and near-categorical avoidance in Inanimate–Complex contexts. The L2 group followed the same hierarchy but with overall lower rates of ’s-genitive production. As in the AJT, Complexity exerted a stronger influence in the L2 group. Complex possessors reduced ’s-genitive production in both groups, but the L2 reductions were larger and more consistent across Animacy conditions.

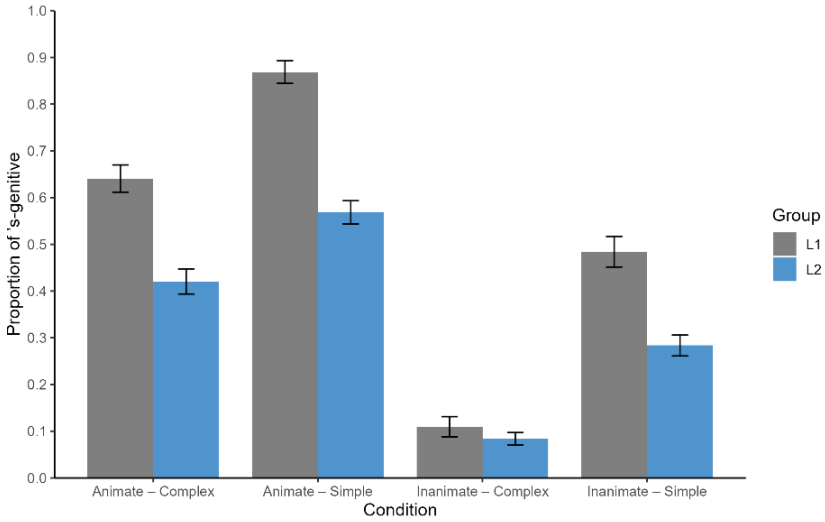


Figure 3. Mean proportion of ’s-genitive responses by animacy and complexity for L1 and L2 groups in the EPT, with ± 1 SE error bars

As illustrated in Figure 3, both groups follow the same overall hierarchy of preferences, with higher rates of the ’s-genitive in animate contexts and lower rates in inanimate contexts. However, the L2 group showed reduced use of the ’s-genitive across all conditions, with a particularly strong effect of structural complexity.

Estimated marginal means supported the descriptive patterns. In both groups, animate possessors led to significantly more ’s-genitives than inanimate possessors, all ps < .001. Simple possessors also led to significantly more ’s-genitives than complex possessors, all ps < .001. The L2 group produced fewer ’s-genitives than the L1 group in Animate–Simple, Inanimate–Simple, and Animate–Complex contexts, all ps < .001. However, the two groups did not differ in Inanimate–Complex contexts, p = .305. This is probably because both groups used very few ’s-genitives in this condition. Overall, the contrast between conditions was smaller in the L2 group. In sum, the EPT results mirrored the AJT results, but the contrasts were weaker in production.

5. Discussion

The study explored the effects of animacy and possessor complexity on judgements and production of English genitives by Jordanian Arabic speakers. The L1 group

showed clear and stable preferences in both tasks. They preferred the ’s-genitive with Animate possessors and the of-genitive with Inanimate ones, while possessor complexity had only a small effect. The findings of the L2 group supported the main predictions of the current study. In line with Hypothesis 1, the L2 group was sensitive to animacy and followed a similar general pattern to that of the L1 group, but the contrast between categories was weaker. Their judgements were mostly target-like, whereas their production was less consistent, especially in Complex contexts where they used fewer ’s-genitives.

The findings from both the AJT and EPT revealed a similar developmental pattern. The L2 group was able to use animacy as a cue, but still found it difficult to handle the structural differences between the English ’s-genitive and the of-genitive. This difference between judgement and production reflects the different demands of the two tasks. Acceptability judgements require learners to evaluate forms that might be familiar to them, whereas production requires them to retrieve the relevant structure and produce the correct morphology at the same time. This process can be challenging for L2 speakers even when they are aware of the underlying rules (Lardiere 2009). The EPT may have increased this difficulty because learners were supposed to plan, choose the right words, build the structure, and type their answers. Under this pressure, the of-genitive may have been easier to use than the ’s-genitive. Such task demands are also relevant to research showing that Jordanian learners of English use different strategies depending on task type and proficiency level (Al-Maani et al. 2024a).

Structural complexity was found to be challenging for the L2 group. While possessor complexity had only a small influence on L1 performance, it clearly reduced learners’ acceptance and use of the ’s-genitive. This pattern provides support for Hypothesis 2 and is in line with the FRH. Animacy is available in Jordanian Arabic and plays a role in several grammatical distinctions, which may help explain why learners showed early sensitivity to the animate–inanimate contrast. The structure required for the English ’s-genitive is different. It involves possessor raising and the ’s morpheme, a configuration that has no counterpart in the Jordanian Arabic genitive system. Therefore, the L2 group could not simply transfer an existing L1 structure. They had to build a new feature configuration from elements that may be familiar to them. The strong effect of complexity observed in the present study suggests that structural features take longer to reorganise than semantic features and can be more affected by processing demands.

The proficiency analysis in the present study supports Hypothesis 3. Improvement was not evenly distributed across all conditions. Instead, it appeared mainly in the most structurally demanding contexts, namely the Animate–Complex and Inanimate–Complex conditions. Higher-proficiency learners showed more stable contrasts in these conditions, which suggests that structural reassembly develops gradually and remains more difficult than the acquisition of semantic mappings. This is consistent with recent evidence that proficiency can shape real-time syntactic processing among L1-JA L2-English speakers (Al-Maani et al. 2024b). However, even the most proficient learners did not fully match native-speaker behaviour, especially in production, where reliance on the of-genitive

persisted. This pattern suggests that full convergence may be difficult when the target grammar differs substantially from the L1 in its morphosyntactic configuration. However, it remains possible that learners with higher proficiency levels than those included in the present study may eventually acquire more native-like patterns.

These findings are consistent with previous studies on genitive choice in L2 English. Azaz (2020) and Algie (2023) show that structural complexity and L1 influence play an important role in learners' early genitive preferences. The results of the current study extend this pattern to L1 Jordanian Arabic speakers, for whom the English 's-genitive requires a structural configuration that is not directly available in the L1. The findings also align with Romano (2016), Zakrocka (2016), and Dubois et al. (2022, 2023), who report that animacy is an important cue in genitive choice, but one that becomes stronger with proficiency.

The production results also align with Azaz (2020), who found that Arab learners of English preferred the of-genitive when the 's-genitive was expected. This tendency might be explained by surface-level correspondences between the English of-genitive and the Arabic non-construct state. Although the English of-genitive is not derivationally identical to the Jordanian Arabic non-construct genitive, both share a sequence in which the possessed noun is followed by a preposition and the possessor. According to FRH, such reliance suggests partial reassembly: learners initially map familiar linear patterns from the L1 onto the L2 before they fully integrate the structural features required for native-like use of the 's-genitive.

Overall, the findings suggest that the L2 group's performance cannot be explained by input frequency or surface preference alone. Instead, the learners appear to restructure their feature system in ways that gradually approximate the English genitive pattern. However, variation remains strongest where the L1 and the L2 differ most. These results extend previous work by showing that FRH offers a principled account of English genitive alternation in a typologically distant L1–L2 pairing.

6. Conclusion

The current study showed that L1-Jordanian Arabic L2-English speakers do not acquire all parts of the genitive alternation at the same pace. Animacy was easier for them to use, whereas the structure of the 's-genitive was more difficult. This was mainly observed with complex possessors and in production. Higher proficiency was found to help learners perform better within such contexts, but it did not remove all the variation. The results also suggest that learners may develop knowledge of the genitive system before they are able to use such knowledge in real time.

The findings support the main claim of the Feature Reassembly Hypothesis. Learners do not simply transfer the L1 pattern. Instead, they gradually adjust how semantic and structural features are combined in the L2. For learners whose L1 does not have the same genitive alternation, the main challenge seems to be the structure of the English 's-genitive. While frequency-based accounts can explain gradual

preferences, they cannot explain why complex animate 's-genitives were especially difficult or why this difficulty changed with proficiency. The FRH could explain this pattern because it suggests that learners may become aware of semantic cues, such as animacy, before they fully acquire the structural patterns that govern the use of English genitives.

In light of the findings, the present study recommends teaching genitive structure to L2 learners of English, especially when the possessor is complex. The study also recommends that future work use mixed methods to explore different aspects of learners' developing grammar. Further research could investigate whether highly proficient learners become more native-like, or whether some variation remains even at advanced levels. Finally, future studies could examine other factors, such as the complexity of the possessed noun, definiteness, register, and genre.

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