

## **Syntactic Variation in Jordanian Arabic: Sociolinguistic Patterns, Regional Influences, and Implications for Language Technology**

الاختلافات النحوية في اللهجة الأردنية: الأنماط الاجتماعية، التأثيرات المنطقية، ودورها في تقنيات اللغة.

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## Abstract:

This study investigates syntactic variation in Jordanian Arabic, drawing on a corpus of 2,847 clauses from 180 speakers across northern, central, and southern regions. Employing quantitative variationist methods and insights from Construction Grammar, we analyze word order (VSO vs. SVO), object placement, and clitic doubling, revealing systematic correlations with age, region, education, and discourse context. Findings indicate a shift toward SVO dominance (62% overall), influenced by urbanization and contact with Palestinian and Syrian dialects. Sociolinguistic implications highlight syntactic choices as markers of identity and formality. We discuss applications for Arabic language technology, including adaptive parsers and dialect-aware NLP systems. This research advances understanding of Levantine dialectal dynamics and supports inclusive language policies.

**Keywords:** Jordanian Arabic, syntactic variation, sociolinguistics, dialect contact, language technology, Levantine Arabic.

## المخلص:

تتناول هذه الدراسة التغيرات التركيبية في العربية الأردنية، اعتماداً على مدونة لغوية تضم 2,847 جملة مأخوذة من 180 متحدثاً من الأقاليم الشمالية والوسطى والجنوبية. وتوظف الدراسة مناهج تغيرية كمية في اللسانيات الاجتماعية، إلى جانب إفادات من نحو الإنشاءات (Construction Grammar)، لتحليل ترتيب الكلمات (فعل-فاعل-مفعول به مقابل فاعل-فعل-مفعول به)، وموضع المفعول، وظاهرة تكرار الضمير (Clitic Doubling)، كاشفة عن ارتباطات منتظمة مع متغيرات العمر، والمنطقة، والمستوى التعليمي، وسياق الخطاب. وتشير النتائج إلى تحول ملحوظ نحو سيادة ترتيب فاعل-فعل-مفعول به (بنسبة 62% إجمالاً)، متأثراً بعمليات التحضر والاتصال باللغتين الفلسطينية والسورية. وتبرز الدلالات الاجتماعية-اللغوية أن الاختيارات التركيبية تؤدي دوراً في ترميز الهوية ودرجات الرسمية. كما تُناقش تطبيقات هذه النتائج في تقنيات اللغة العربية، بما في ذلك تطوير محلات تركيبية تكيفية وأنظمة معالجة لغة طبيعية واعية باللهجات. وتسهم الدراسة في تعميق فهم ديناميات اللهجات الشامية، وتدعم تبني سياسات لغوية شمولية.

**الكلمات المفتاحية:** العربية الأردنية، التغيرات التركيبية، اللسانيات الاجتماعية، تماس اللهجات، تقنيات اللغة، العربية الشامية.

## Introduction

Jordanian Arabic, as part of the Levantine dialect continuum, exhibits rich linguistic diversity shaped by historical, social, and contact-induced factors (Al-Wer, 2007; Holes, 2004). While phonological and morphological variations have received considerable attention (e.g., Abd-el-Jawad, 1987; Watson, 2002), syntactic variation remains underexplored, particularly in its sociolinguistic embedding. Syntactic structures in Arabic dialects are not merely grammatical alternatives but serve discourse functions, reflecting information structure and pragmatic needs (Lambrecht, 1994; Owens, 2006).

This paper examines syntactic variation in Jordanian Arabic, focusing on word order patterns, object constructions, and clitic placement. We address three research questions: (1) What are the distributional patterns of syntactic variants across regions and social groups? (2) How do linguistic and social constraints interact to condition these variants? (3) What implications do these patterns have for language technology and policy? Drawing on a stratified corpus, we employ statistical modeling to

reveal probabilistic preferences, emphasizing the role of dialect contact and urbanization. This contributes to variationist sociolinguistics (Labov, 2001) and applied Arabic linguistics (Habash, 2010).

**Literature Review** Syntactic variation in Arabic dialects arises from the interplay of Classical Arabic heritage, contact with neighboring varieties, and functional adaptations (Brustad, 2000; Versteegh, 2014). In Levantine Arabic, word order flexibility (VSO/SVO) is conditioned by discourse factors, with SVO increasing in informal contexts (Mohammad, 2000). Studies on Palestinian and Syrian Arabic highlight regional differences: Palestinian favors SVO in urban speech, while Syrian retains VSO in narratives (Cowell, 1964; Eid, 1991).

Jordan's position in the Levantine continuum exposes it to Palestinian influence in central regions and Syrian in the north (Al-Shawashreh, 2012; Miller, 2007). Sociolinguistic frameworks, such as Usage-Based Theory and Construction Grammar, posit that frequency and entrenchment shape syntactic preferences (Heine & Kuteva, 2005). Variation is socially stratified: younger, urban speakers lead innovations toward SVO, correlating with education and gender (Al-Wer, 2007; Eckert, 2000).

Gaps persist in quantitative analyses of Jordanian syntax and its applications. This study bridges these by integrating apparent-time analysis (Sankoff, 2006) with GIS mapping for regional patterns, informing NLP advancements (Zaidan & Callison-Burch, 2014).

**Methodology Data Collection** We analyzed a corpus of 2,847 main clauses from semi-structured interviews with 180 speakers (60 per region: northern, central, southern), stratified by age (18-30, 61+), gender, and education (primary, secondary, university). Speakers were recruited via snowball sampling in Amman, Irbid, and Karak, ensuring representation of urban-rural divides. Interviews covered narrative and conversational topics to elicit natural speech.

**Variables and Analysis** Dependent variables included:

- Word order (VSO vs. SVO).
- Double object constructions (V + IO + DO vs. V + DO + IO).
- Clitic doubling (presence/absence for definite objects).

Independent variables encompassed linguistic factors (subject type, verb class, discourse context) and social factors (region, age, education, gender). We used mixed-effects logistic regression (R package lme4) to model constraints, with speaker as a random effect. Apparent-time analysis tracked change, and GIS (ArcGIS) mapped regional distributions. Reliability was ensured via inter-coder agreement (Kappa = 0.92).

**Ethical Considerations** Informed consent was obtained, with anonymity preserved. The study was approved by the University of Jordan's IRB.

**Results Word Order Variation** Overall, SVO predominates (62%), but varies regionally: central Jordan shows 65% SVO, northern 60%, and southern 55%. Apparent-time data indicate a shift toward SVO, with younger speakers (18-30) at 70% vs. 50% for older (61+). Regression reveals significant constraints: pronominal subjects favor SVO (OR = 4.2,  $p < .001$ ), unaccusative verbs favor VSO (OR = 0.3,  $p < .01$ ), and narrative contexts increase VSO (OR = 2.1,  $p < .05$ ). Education interacts with age: university-educated youth show 75% SVO.

Table 1: Word Order by Region and Age (Percentages, N=2,847)

Region/Age	VSO	SVO	Other
Northern 18-30	25	70	5
Northern 61+	45	50	5
Central 18-30	20	75	5
Central 61+	40	55	5
Southern 18-30	35	60	5
Southern 61+	50	45	5

**Object Constructions and Clitic Placement** In ditransitive verbs, traditional V + IO + DO prevails (50%), but innovative V + DO + IO rises among youth (35%). "Give-type" verbs favor IO-DO (OR = 1.8,  $p < .01$ ). Clitic doubling occurs in 30% of definite direct objects, higher in northern Jordan (35%) due to Syrian contact. Definiteness strongly conditions doubling (OR = 3.5,  $p < .001$  for definite vs. indefinite).

GIS mapping shows clitic doubling clustering near Syrian borders, suggesting diffusion.

**Sociolinguistic Correlations** Gender effects: women favor innovative SVO (68% vs. men's 56%,  $p < .05$ ), aligning with prestige leadership (Labov, 2001). Education correlates positively with syntactic complexity (deeper embedding in university speakers, average 2.8 levels). Network density moderates: dense rural networks preserve VSO.

**Discussion Sociolinguistic Implications** Syntactic variation in Jordanian Arabic reflects identity negotiation: conservative VSO signals traditional authenticity, while SVO marks modernity (Milroy, 1987). Regional patterns underscore contact: northern variants align with Syrian (e.g., extended clitic use), central with Palestinian (e.g., SVO dominance). This supports Heine and Kuteva's (2005) contact-induced change model, where urbanization accelerates diffusion.

Gender and age interactions highlight "third-wave" sociolinguistics (Eckert, 2012): women lead innovations in public contexts, reinforcing social mobility. Education fosters register differentiation, linking syntactic sophistication to Standard Arabic influence (Ferguson, 1959).

**Comparative Levantine Context** Jordanian syntax occupies an intermediate position: more conservative than Lebanese (80% SVO) but innovative compared to rural Syrian (65% SVO) (Table 2). This gradient supports feature-based classification over binary dialect boundaries (Jastrow, 1978).

Table 2: SVO Rates Across Levantine Varieties

Variety	SVO Rate (%)
Jordanian Urban	70
Palestinian Urban	75
Syrian Urban	65
Lebanese Urban	80

**Applications for Language Technology** Variation poses challenges for NLP: parsers must handle probabilistic word orders (Habash & Rambow, 2005). We recommend adaptive models incorporating social metadata (e.g., region-based SVO priors), improving ASR accuracy by 15-20% (Table 9.1 from related studies). For machine translation, mapping variants to Standard Arabic enhances cross-dialectal tools (Bouamor et al., 2014).

Policy implications include dialect-aware education: curricula contrasting variants with Standard Arabic reduce stigma (Ryding, 2013).

**Limitations and Future Research** The corpus focuses on spoken data; written genres warrant study. Longitudinal designs could confirm real-time changes (Sankoff, 2006). Future work might integrate ML for large-scale social media analysis (Salameh et al., 2018).

## Conclusion

This study illuminates syntactic variation in Jordanian Arabic as a systematic, socially embedded phenomenon, driven by contact and discourse needs. Findings refine Levantine dialectology and advocate for technology that accommodates diversity, fostering inclusive policies and tools.

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