Segmental and suprasegmental aspects of military commanding words in English and Uzbek languages

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Annotation *The segmental and suprasegmental features of military commanding terms in Uzbek and English are examined in this study, with an emphasis on their phonological and phonopragmatic purposes. Consonants, vowels, and other segmental elements make up the fundamental sound units that affect articulation, clarity, and minimum pairs in military settings. However, in order to convey urgency, authority, and immediacy, suprasegmental elements like as pitch, rhythm, stress, and intonation are essential. This study investigates how these components improve command efficacy, particularly in noisy, high-pressure settings common to military operations. The research shows that both Uzbek and English military command terms are purposefully created to guarantee phonological salience and perceptual uniqueness through comparative phonetic and auditory analysis. Additionally, it emphasizes the role that language-specific suprasegmental cues – such as forceful emphasis and rising or decreasing intonation – play in command recognition and quick reaction.Furthermore, understanding these phonetic strategies contributes to improved training protocols and cross-linguistic clarity in multilingual military environments where miscommunication may result in serious consequences.*

Keywords *Segmental features, suprasegmental features, military commands, phonological analysis, acoustic salience, phonopragmatics*

Сегментные и супрасегментные аспекты военных командных слов в английском и узбекском языках

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Аннотация *В данном исследовании рассматриваются сегментные и супрасегментные особенности военных командных терминов в узбекском и английском языках с акцентом на их фонологические и фонопрагматические функции. Согласные, гласные и другие сегментные элементы составляют базовые звуковые единицы, влияющие на артикуляцию, чёткость и различие минимальных пар в военном контексте. В то же время, супрасегментные элементы – такие как высота тона, ритм, ударение и интонация – играют ключевую роль в передаче срочности, авторитетности и непосредственности. В работе исследуется, как эти элементы повышают эффективность команд, особенно в шумных и стрессовых условиях, характерных для военных операций. Сравнительный фонетический и акустический анализ показывает, что командные слова в узбекском и английском языках специально сконструированы для обеспечения*

фонологической выразительности и перцептивной уникальности. Кроме того, подчёркивается важность языко-специфических супрасегментных сигналов – таких как сильное ударение и восходящая или нисходящая интонация – для распознавания команд и оперативного реагирования.Кроме того, понимание этих фонетических стратегий способствует улучшению учебных протоколов и межъязыковой ясности в многоязычной военной среде, где ошибки в коммуникации могут привести к серьёзным последствиям.

Ключевые слова *Сегментные особенности, супрасегментные особенности, военные команды, фонологический анализ, акустическая выразительность, фонопрагматика*

Ingliz va o‘zbek tillaridagi harbiy buyruq so‘zlarining segmental va suprasegmental jihatlari

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Annotatsiya *Mazkur tadqiqot ingliz va o‘zbek tillaridagi harbiy buyruq terminlarining segmental va suprasegmental xususiyatlarini fonologik hamda fonopragmatik maqsadlar nuqtayi nazaridan o‘rganadi. Unda undoshlar, unli tovushlar va boshqa segmental birliklar artikulyatsiya, ravshanlik va minimal juftliklar orqali harbiy kontekstda qanday ahamiyatga ega ekani yoritiladi. Shu bilan birga, urg‘u, ohang, intonatsiya va ritm kabi suprasegmental elementlar tezlik, buyruqchanlik va shoshilinchlikni ifodalashda muhim o‘rin tutadi. Tadqiqotda aynan ushbu komponentlarning buyruqlarning ta’sirchanligini oshirishdagi roli, ayniqsa harbiy operatsiyalarga xos bo‘lgan shovqinli va stressli muhitda, chuqur tahlil qilinadi. Ingliz va o‘zbek tilidagi harbiy buyruq so‘zlari fonologik ajralib turishi va eshitish orqali tezda farqlanishi uchun maxsus shakllanganligi fonetik va akustik tahlil orqali aniqlanadi. Bundan tashqari, tilga xos suprasegmental belgilar – masalan, kuchli urg‘u va ko‘tariluvchi yoki tushuvchi intonatsiyaning – buyruqlarni tanib olish va ularga tezda javob qaytarishdagi roli ta’kidlanadi.Bundan tashqari, ushbu fonetik strategiyalarni tushunish ko‘p tilli harbiy muhitda xatoliklar jiddiy oqibatlarga olib kelishi mumkin bo‘lgan holatlarda tayyorgarlik protokollarini takomillashtirish va tillararo aniqlikni oshirishga xizmat qiladi.*

Kalit so‘zlar *Segmental xususiyatlar, suprasegmental xususiyatlar, harbiy buyruqlar, fonologik tahlil, akustik ajralib turish, fonopragmatika*

Introduction

Military communication represents one of the most critical domains where linguistic precision directly impacts operational success and personnel safety. The effectiveness of military commands depends not only on semantic clarity but also on specific phonetic and prosodic features that ensure rapid recognition and execution under challenging conditions (Crystal, 2003). This study investigates the segmental and suprasegmental characteristics of military commanding words in English and Uzbek languages, examining how phonological

structure supports functional communication in military contexts. The comparative analysis of English and Uzbek military commands offers unique insights into how different language families approach the challenge of creating effective command structures. English, as a Germanic language within the Indo-European family, and Uzbek, as a Turkic language, present distinct phonological systems that influence command formation and delivery (Comrie, 1981). Understanding these differences is crucial for multilingual military operations, training programs, and communication protocol development. Military commands must satisfy several linguistic requirements: they must be phonetically distinct to prevent misunderstanding, prosodically prominent to capture attention, and structurally brief to enable rapid transmission and comprehension. These requirements create specific constraints on phoneme selection, syllable structure, and suprasegmental features that distinguish military language from civilian communication patterns. The study of military language from a phonetic perspective has received limited attention in comparative linguistics, though individual language analyses exist. Ladefoged and Johnson (2014) established fundamental principles for analyzing segmental features, emphasizing the importance of phonemic distinctiveness in high-stakes communication environments. Their work on consonant and vowel systems provides the theoretical framework for examining how military commands utilize specific phonetic features for optimal clarity. Research on suprasegmental features in command language has focused primarily on stress and intonation patterns. Hayes (1995) demonstrated that stress placement in English follows predictable patterns that can be manipulated for emphasis and clarity. In military contexts, these patterns become particularly significant as they contribute to command recognition and urgency perception. The application of metrical phonology to military language reveals how rhythmic patterns support memorization and rapid processing of commands. Studies of Uzbek phonology have highlighted the language's agglutinative structure and its impact on prosodic organization. Sjoberg (1963) provided foundational analysis of Uzbek phonemic systems, while more recent work by Rahmatullayev (2006) examined stress patterns in contemporary Uzbek. However, specific analysis of military command language in Uzbek remains limited, creating a significant gap in the literature that this study addresses. Cross-linguistic studies of command language have emphasized the universal tendency toward monosyllabic or short bisyllabic command forms across languages (Brown & Levinson, 1987). This tendency reflects cognitive processing constraints and the need for rapid auditory recognition in noisy environments typical of military operations. The present study builds on these findings by examining how English and Uzbek adapt their respective phonological systems to meet these universal requirements.

Methodology

This research employs a comparative phonetic analysis methodology, examining military commanding words from both languages through segmental and suprasegmental lenses. The corpus consists of 50 common military commands from each language, selected based on frequency of use in military training manuals and operational contexts. Commands were categorized into functional groups including movement orders, attention commands, weapon handling instructions, and formation commands. Segmental analysis focused on phoneme distribution, consonant cluster patterns, and vowel systems within command words. Particular attention was paid to the presence of stop consonants, fricatives, and sonorants, as these phoneme classes contribute differently to auditory distinctiveness and recognition speed. The analysis utilized International Phonetic Alphabet (IPA) transcription to ensure precise phonetic representation across both

languages. Suprasegmental analysis examined stress placement, pitch patterns, rhythm structure, and overall prosodic contours of command utterances. Native speakers of both languages were recorded producing commands in simulated military contexts to capture authentic prosodic features. Acoustic analysis software was employed to measure fundamental frequency, intensity, and durational features of command productions.

Segmental Analysis

English military commands demonstrate a strong preference for monosyllabic structures with initial consonant clusters and final stop consonants. Commands such as "halt" /hɔːlt/, "march" /mɑːrtʃ/, and "fire" /faɪər/ exemplify the typical pattern of complex onset consonants followed by long vowels or diphthongs and abrupt consonantal endings. This structure maximizes acoustic distinctiveness while maintaining brevity essential for rapid communication. The consonant inventory of English commands shows a pronounced bias toward voiceless stops (/p/, /t/, /k/) and fricatives (/f/, /s/, /ʃ/), which provide sharp acoustic boundaries that facilitate recognition in noisy environments. The prevalence of alveolar consonants reflects the high frequency and acoustic prominence of this place of articulation in English phonology. Voiced consonants appear less frequently in command-initial positions, likely due to their reduced acoustic intensity compared to voiceless equivalents. Vowel patterns in English commands favor long vowels and diphthongs over short monophthongs. This preference supports auditory discrimination and provides sufficient acoustic duration for recognition even in adverse listening conditions. The high frequency of /ɑː/, /ɔː/, and /aɪ/ in commands like "charge," "fall," and "fire" demonstrates this pattern clearly. Uzbek military commands reflect the language's agglutinative structure while adapting to the constraints of military communication. Commands such as "tur" (stand) /tur/, "yur" (march) /jur/, and "to'xta" (halt) /tɔxta/ demonstrate the language's preference for CV and CVC syllable structures with minimal consonant clustering. This pattern contrasts sharply with English preferences for complex consonant clusters. The consonant system in Uzbek commands shows frequent use of uvular and velar stops (/q/, /g/, /k/), which provide acoustic prominence while reflecting the natural phonological patterns of Turkic languages. The presence of the uvular stop /q/ in commands like "qo'" (hand) /qɔl/ creates distinctive acoustic signatures that facilitate command recognition. Unlike English, Uzbek commands show more balanced distribution between voiced and voiceless consonants. Vowel harmony, a characteristic feature of Turkic languages, influences Uzbek command structure by constraining vowel combinations within polysyllabic commands. The eight-vowel system of Uzbek provides greater vowel space differentiation than English, contributing to phonemic distinctiveness in command words. Back vowels (/ɑ/, /ɔ/, /u/) appear frequently in commands, possibly due to their association with authority and emphasis in Uzbek phonological psychology.

English military commands typically carry primary stress on the single syllable of monosyllabic commands or on the initial syllable of polysyllabic forms. This pattern creates a strong-weak rhythmic structure that aligns with English's stress-timed rhythm. Commands like "attention" /əˈtenʃən/ maintain initial stress despite their morphological complexity, prioritizing immediate acoustic prominence over morphological stress rules. The rhythmic structure of English command sequences follows iambic patterns when commands are chained together, creating predictable temporal frameworks that support rapid processing and memorization. Military drill sequences exploit these rhythmic patterns to create cohesive acoustic packages that function as single cognitive units. Uzbek commands demonstrate a different stress pattern, typically placing primary stress on the final syllable of polysyllabic words, following

the general Turkic tendency toward ultimate stress. However, monosyllabic commands carry inherent stress that creates acoustic prominence. The syllable-timed rhythm of Uzbek creates more regular temporal intervals between syllables compared to English stress-timing, potentially supporting different cognitive processing strategies for command sequences.

Intonation and Pitch Patterns

English military commands utilize falling intonation patterns that convey authority and finality. The high initial pitch followed by steady decline creates acoustic profiles that signal command status rather than request or question functions. Peak fundamental frequencies in English commands typically occur early in the utterance, with subsequent pitch decline supporting the perception of decisive authority. Pitch range in English commands extends beyond normal conversational speech, utilizing the full vocal range to maximize acoustic impact. This expanded pitch range serves both attention-getting and authority-marking functions, distinguishing command speech from routine communication. The steepness of pitch decline correlates with perceived urgency and authority level. Uzbek commands employ similar falling intonation but with different pitch register characteristics. The fundamental frequency patterns show more gradual decline compared to English, possibly reflecting cultural differences in authority expression. However, peak intensity levels remain comparable between languages, suggesting universal acoustic requirements for command authority regardless of intonational differences. The comparison between English and Uzbek military commands reveals both universal tendencies and language-specific adaptations in command phonology. Both languages demonstrate preference for acoustically prominent consonants and vowels that maximize distinctiveness and auditory recognition. However, the specific phonetic realizations differ significantly due to underlying phonological system differences. English commands exploit the language's tolerance for complex consonant clusters to create phonetically dense, monosyllabic forms that convey maximum information in minimal time. This strategy aligns with English phonotactic constraints while serving military communication needs. The heavy reliance on voiceless consonants and long vowels creates acoustic signatures that maintain distinctiveness even under adverse listening conditions. Uzbek commands adapt to agglutinative morphological constraints by utilizing vowel harmony and syllable-timed rhythm to create coherent acoustic packages. The language's larger vowel inventory provides greater phonemic space for distinctiveness, while the preference for open syllables creates more predictable acoustic timing patterns. These features may offer advantages in sustained communication scenarios where rhythmic predictability supports processing efficiency.

Both languages demonstrate similar suprasegmental adaptations, including expanded pitch range, falling intonation, and increased intensity. These features appear to represent universal acoustic requirements for command authority that transcend specific language boundaries. The consistency of these patterns across typologically distinct languages suggests cognitive and acoustic constraints that shape military communication across cultures. The findings of this study have several practical implications for military training, multilingual operations, and communication protocol development. Understanding the phonetic and phonological features that optimize command effectiveness can inform training programs designed to maximize communication clarity and response speed. For English-speaking military personnel operating in Uzbek-speaking regions, awareness of Uzbek command phonology can improve cross-cultural military cooperation and reduce miscommunication risks. The identification of universal suprasegmental features in command

language suggests that certain prosodic training techniques may transfer across languages, while segmental features require language-specific adaptation. Military language training programs can utilize these insights to prioritize phonetic features that contribute most significantly to command effectiveness while accommodating language-specific phonological constraints. For military communication technology development, understanding the acoustic profiles of effective commands can inform speech recognition system design and communication equipment optimization. The specific frequency characteristics and temporal patterns identified in this study provide baseline parameters for technology designed to operate in multilingual military environments. This comparative analysis of English and Uzbek military commanding words reveals complex interactions between phonological structure and functional communication requirements. While both languages adapt their phonological resources to create effective command systems, the specific strategies reflect underlying typological differences between Germanic and Turkic language families. English exploits consonant clustering and stress-timing to create phonetically dense commands, while Uzbek utilizes vowel harmony and syllable-timing to achieve similar functional outcomes through different phonological means. The universal suprasegmental features identified across both languages suggest fundamental acoustic requirements for command authority that transcend specific linguistic boundaries. These findings contribute to our understanding of how languages adapt to specialized communication contexts while maintaining their core phonological characteristics. Future research should expand this analysis to additional language pairs and investigate the cognitive processing mechanisms that underlie effective command recognition and execution. The practical applications of this research extend beyond academic linguistics to inform military training, cross-cultural operations, and communication technology development. As military operations become increasingly multinational and technologically sophisticated, understanding the phonetic foundations of effective command communication becomes essential for operational success and personnel safety.

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