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RUNNING HEAD In-out in Slavic and Turkic Phonations

# Oral approach-avoidance: A Replication and Extension for Slavic and Turkic Phonations

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**Abstract**

Words whose articulation resembles ingestion movements are preferred to words mimicking expectoration movements. This so called in-out effect, suggesting that the oral movements caused by consonantal-articulation automatically activate concordant motivational states, was already replicated in languages belonging to Germanic (e.g., German and English) and Italic (e.g., Portuguese) branches of the Indo-European family. However, it remains unknown whether such preference extends to the Indo-European branches whose writing system is based on the Cyrillic rather than Latin alphabet (e.g., Ukrainian), or whether it occurs in languages not belonging to the Indo-European family (e.g., Turkish). We replicated the in-out effect in two high-powered experiments ($N = 274$), with Ukrainian and Turkish native speakers, further supporting an embodied explanation for this intriguing preference.

*Keywords*: in-out effect, oral kinematics, approach-avoidance, embodiment

Oral approach-avoidance: A Replication and Extension for Slavic and Turkic Phonations

Words combining consonantal sounds featuring front-to-back wanderings in the mouth (inward e.g., BENOKA) are preferred to words with the opposite, back-to-front, consonantal-wandering (outward, e.g., KENOBA). This intriguing phenomenon called in-out effect (Topolinski, Maschmann, Pecher, & Winkielman, 2014), suggests that the similarity between the movement of the oral muscles when articulating words, and when ingesting food or expectorating harmful substances, triggers approach-avoidance affective states, respectively.

This motor-to-affect link has been firmly established (e.g., Bakhtiari, Körner, & Topolinski, 2016; Godinho, Garrido, 2017; Kronrod, Lowrey, & Ackerman, 2014), its boundary conditions examined (e.g., Garrido, Godinho, & Semin, 2019; Gerten & Topolinski, 2018; Godinho, Garrido, Zürn, & Topolinski, 2018; Lindau, & Topolinski, 2018; Topolinski & Boecker, 2016a; Topolinski & Boecker, 2016b), and replications were made in Indo-European family languages, namely in those belonging to the Germanic (see Silva & Topolinski, 2018; Topolinski, Boecker, Erle, Bakhtiari, & Pecher, 2017, for a replication in German and English, respectively) and Italic branches (see Godinho & Garrido, 2016, for a replication in European Portuguese).

There is an ongoing debate about the mechanism causing such a small, but robust effect (Bakhtiari et al., 2016; Körner, Bakhtiari, & Topolinski, 2018; Godinho & Garrido, 2019). Nevertheless, according to the seminal work where the effect was first demonstrated (Topolinski et al., 2014), the preference for inward wandering consonantal strings results from the functional overlap among oro-facial peripheral nerves and musculature. Since they share communication and alimentation functions, language understanding is believed to be contaminated by the affective (and survival) meanings of swallowing aliments and spiting

toxic substances. This reasoning therefore suggests that the in-out effect relies on an approach-avoidance mechanism that ultimately occurs because cognition is embodied.

Previous research suggests that cross-cultural and language variations can affect pre-wired embodiments (e.g., approach-avoidance behavioural tendencies, Elliot, Chirkov, Kim, & Sheldon, 2001; or colour perception, Özgen, 2000). Indeed, linguistic and cognitive research often underestimate linguistic diversity (Majid & Levinson, 2010; Majid, 2012) which may give rise to misleading conclusions about language-specific sound-emotion regularities (e.g., Taylor & Taylor, 1965). The present work examines whether the preference for inward wandering words (over outward words) varies across different cultural contexts, such as the Eastern Europe and Middle-east, and across languages with different roots. To the best of our knowledge the in-out effect was never examined with (a) a language within a different branch of the Indo-European family; (b) a language using a non-Latin alphabet; and, (c) a language from a different family.

A language family refers to a group of languages, related and descent from a common ancestral language, that is, the proto-language of that family. For instance, the Indo-European languages used so far in the in-out research share the same alphabet, some vocabulary, grammatical features, and arguably cultural and geographic backgrounds. Given the striking nature of the in-out effect, heavily dependent upon small phonetic nuances, its replication in languages that do not belong, as in the previous experiments (Godinho & Garrido, 2016; Topolinski et al., 2014), to the same family, constitutes a valuable conceptual replication.

While direct replications use the same materials and/or procedures and control for eventual sampling errors to make assumptions about the veracity of seminal scientific reports, conceptual replication studies fulfil the previous, but provide simultaneously new stimulus pools (Westfall, Judd, & Kenny, 2015) that may contribute to endorse (or refute) the universality of the effects. Moreover, these new stimulus pools are also relevant for future

research endeavours, promoting ecologically sound experiments that overcome potential sampling limitations (Henrich, Heine, & Norenzayan, 2010; Speed, Wnuk, & Majid, 2018).

Since our research efforts were focused on the Black Sea region, it was possible to examine the in-out effect in the Slavic branch of the Indo-European language family, in the Turkic branch of Altaic language family (for a review about the controversy on the Altaic family, see Starostin, 2016) and with a different writing system. Thus, the present work not only presents a cross-language replication (e.g., Shrum, Lowrey, Luna, Lerman, & Liu, 2012), but also contributes to further establish the universality of the phonetic effect as independent from particular cultural settings, grammar characteristics or even visual effects derived from the written alphabet.

## Method

### Power Analysis and Sampling Plan

Using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) and the estimate of the effect size from Experiment 2 by Godinho and Garrido (2016), Cohen's $d_z$= .24, the required sample size to detect the in-out effect with a power of 0.85 (Cohen, 1992) was $N$ = 126. To account for potential dropout, data collection was set to stop at the end of the day it reached the number of participants defined. This strategy resulted in sample sizes that do not exactly correspond to the initial estimate. All the manipulations, measures used, and data exclusions are reported.

### Participants

Two independent replications were conducted. In Experiment 1, six participants that were not Ukrainian native speakers were excluded. In Experiment 2, five participants were excluded (three for being bilingual and two for not being Turkish native speakers). One

hundred and fifty Ukrainian native speakers ($M_{age}$ = 21, *SD* = 6.71; 115 female) and 124 Turkish native speakers ($M_{age}$ = 25, *SD* = 6.88; 88 female) were classified as valid participants and included in the data analysis.

**Design**

Both experiments featured a simple 2 (Consonantal articulation direction: inward vs. outward; within) design. The dependent variable was participants' evaluation of a given target word (Topolinski et al., 2014) and the independent variable was the sagittal direction of consonantal wanderings either front-to-back in the oral cavity rear (inward) or back-to-front (outward).

**Materials and Procedure**

**Word stimulus pools**. Given that the in-out effect depends on the exact manipulation of consonantal articulation spots, language-specific letter-to-phonation correspondence, and phonetic articulation (Cho & Ladefoged, 1999), we recruited native speakers to assist stimuli development. Therefore, the words for each experiment were created by two social scientists, native-speakers of each language. To create the set of stimuli, consonants with distinct articulation spots were selected and subsequently ordered either in an inward or outward wandering direction (Topolinski et al., 2014; Godinho & Garrido, 2016). Consonantal selection as well as the detailed explanation on how the two lists of words were created will be presented next.

Ukrainian language belongs to the Slavic branch of the Indo-European proto-language, being spoken both in Ukraine and Transnistria. Written Ukrainian uses a variant of the Cyrillic alphabet that comprises 33 letters, representing thirty-eight phonemes. There are 23 letters representing consonants (К, М, Т, Б, В, Г, Ґ, Д, З, Й, Л, Н, П, С, Ф, Ж, Ц, Ч, Ш, Щ, Р, Х, Дж), and 10 representing vowels (А, Е, Є, И, І, Ї, О, У, Ю, Я). For the Ukrainian

set of words, we chose consonants articulated in three clearly anatomically distinct places in the mouth: frontal labial [Б(B), П(P), В(V)], middle [Ч(CH), Ш(Sh)], and for the back a velar and a uvular [К(K), Ґ(G)]. Inward wandering words were created merging all combinations of these consonants in the front-to-back order [e.g., Б(B), Ч(CH), К(K)], and outward words by reversing the same consonants [(e.g., К(K), Ч(Ch), Б(B)]. Then we randomly inserted vowels [e.g., А(A), Е(E), И(I), О(O), У(U)] after the first, second and third consonants (not allowing for repetitions). By using this method, we created a list with 196 words (98 inward and 98 outward).

Altaic is the name of the family of languages spread across Central Asia and the Far East that includes five language branches: Turkic, Mongolic, Manchu-Tungusic and (arguably) Japonic and Korean (Starostin, 2016). Within the Turkic branch, Turkish is the foremost spoken language and shares with the proto-language characteristics such as vowel harmony, extensive agglutination, lack of noun classes and grammatical gender. Turkish speakers use a Latin-script alphabet with 29 letters, being eight vowels (A, E, I, İ, O, Ö, U, Ü) and the remaining consonants (B, C, Ç, D, F, G, Ğ, H, J, K, L, M, N, P, R, S, Ş, T, V, Y, Z). Please note that because the Turkish language has specific phonetic requirements it uses seven letters (Ç, Ş, Ğ, I, İ, Ö, Ü) that were modified from the original Latin-script alphabet (as Germanic languages use it). Such letters were not used in the present work, though.

For the Turkish words we selected as frontal labial consonants (F, V), middle (N) and for the back a velar (K). Similar to the method used to create the previous words, consonants were ordered in both wandering directions (e.g., inward F, N, K; outward K, N, F) and vowels (a, E, O) were randomly inserted after the first and second consonants (without repetition). This resulted in a total of 24 words (12 inward and 12 outward). Due to the particular characteristics of the Turkish language a smaller number of consonants were

chosen for each position (front, middle and back). Thus, the final list for Turkish has fewer words (24) than the Ukrainian (196). We will discuss this aspect further in the discussion.

The final lists of words are presented as supplementary material.

**Procedure**. The procedure was similar in both experiments. University professors received an email requesting them to forward our message to their students. Participants then received and email from their professors, asking them to participate in an online survey aiming to understand how people from different languages understand and rate nonsense words. After agreeing to join the survey, participants were directed to the Qualtrics platform and agreed to the informed consent. Finally, they were instructed to read the target words silently and to rate each word as fast as possible on a scale from 1- *do not like it at all* to 10 – *like it very much*.

The Turkish participants rated the entire list of stimuli created, 24 words (12 inward and 12 outward). Given that the Ukrainian stimuli list included 196 words, each Ukrainian participant was asked to rate a random subset of 20 words (10 inward and 10 outward).

Following the procedure of our previous experiments (Godinho & Garrido, 2016; 2017; Godinho et al., 2018) each trial was presented on a single page with the word centred at the top, and the rating scale below. Also, the same demographic variables used in previous studies (native language, gender and age) were collected. Lastly, participants were asked to explain which criteria they used to rate the words.

## Results

None of the participants reported a valid suspicion of the word manipulations. Raw data may be found at https://osf.io/xfzh9/.

**Subject-level analysis**

Ukrainian participants in Experiment 1 preferred inward words ($M$ = 4.36, $SD$ = 1.66) over outward words ($M$ = 4.20, $SD$ = 1.70), $t(149) = 2.43$, $p = .016$, $d_z = .20$, mean difference 95% CI [.04, .36].

Results from the Turkish sample (Experiment 2) revealed again significant differences between ratings of words with inward ($M$ = 4.37, $SD$ = 1.76) and outward-wanderings ($M$ = 3.93, $SD$ = 1.59), $t(123) = 3.82$, $p < .001$, $d_z = .34$, mean difference 95% CI [.19, .49].

**Item-level analysis**

Since item-based analyses are recommended (e.g., Clark, 1973) to test the robustness of the effects against item-level variations, we designed an item-level analysis featuring a simple 2 (Test word: inwards vs. outwards; between) independent samples t-test for each data set.

While a marginal main effect of articulation direction concordant with the in-out effect was observed with the 196 words developed for the Ukrainian phonation, being inward words ($M$ = 4.36, $SD$ = .70) preferred to outward ($M$ = 4.20, $SD$ = .64), $t(194) = 1.69$, $p = .092$, $d_z = .12$, mean difference 95% CI [-.02, .26]; a main effect of test words was observed for the 24 words developed for the Turkish phonation, being again inward words ($M$ = 4.37, $SD$ = .06) preferred to outward ones ($M$ = 3.93, $SD$ = .18), $t(22) = 2.36$, $p = .028$, $d_z = .49$, mean difference 95% CI [.05, .92].

## Discussion

Topolinski and colleagues (2014) found a preference for words whose consonantal-articulation dynamic mimics ingestion movements, compared to expectoration movements. This so-called in-out effect has been replicated in more than 15 papers, but these replications

occurred exclusively in the Germanic and Italic branches of the Indo-European language family.

In two high-powered independent experiments, we replicated the effect in the Slavic branch of the Indo-European family, Ukrainian, and in a language from a different family, Turkish - Altaic. Furthermore, the effect was for the first time replicated with a different written alphabet, Cyrillic. In both replications there was a statistically significant main effect of consonantal articulation direction, being inward-words preferred over outward.

The item-based analysis supported the reproducibility of the effect, both with the Turkish words and with the larger, more heterogenous, list of Ukrainian words (although, marginally significant because of the increased item-variance). The asymmetry between the sizes of the word lists created (the Turkish list had fewer words than the Ukrainian) seems to cause the differential effect-sizes found in the item-based analysis.

By providing stimulus sets adapted to different languages, these replications present a noteworthy contribution for current experimental practice on oral kinematics and will surely trigger more geographically diverse and ecologically sound research. Moreover, this evidence is also conceptually relevant. The successful replication in such distinct linguistic and cultural contexts endorses phonetic embodiment theory as a casual mechanism, demonstrating that the link between the oral-muscles movements made to articulate words and approach-avoidance affective states is deeply rooted. These repeated demonstrations of an oral motor-to-affect link support the hypothesis that cognition can be directly shaped by muscular activity, without mediation of any higher cognitive mechanism, cultural or linguistic distinctions.

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The Authors declare that there is no conflict of interest.

## Electronic Supplementary Materials

The supplementary material of the article is available at

https://osf.io/xfzh9/?view_only=a9a6e3eb1a134988ae952b5e889198c2

## References


Bakhtiari, G., Körner, A., & Topolinski, S. (2016). The role of fluency in preferences for inward over outward words. *Acta Psychologica*, *171*, 110-117. doi:10.1016/j.actpsy.2016.10.006

Cho, T., & Ladefoged, P. (1999). Variation and universals in VOT: evidence from 18 languages. *Journal of Phonetics, 27*, 207-229. doi.org/10.1006/jpho.1999.0094

Clark, H. H. (1973). The language-as-fixed-effect fallacy: A critique of language statistics in psychological research. *Journal of Verbal Learning & Verbal Behavior, 12*, 335–359. doi:10.1016/S0022-5371(73)80014-3

Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*(1), 155-159. doi: 10.1037/0033-2909.112.1.155

Elliot, A. J., Chirkov, V. I., Kim, Y., & Sheldon, K. M. (2001). A cross-cultural analysis of avoidance (relative to approach) personal goals. *Psychological Science*, *12*(6), 505-510. doi: 10.1177/0146167208329512

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*(2), 175-191. doi: 10.3758/BF03193146

Garrido, M. V., Godinho, S., & Semin, G. R. (2019). The “ins” and “outs” of person perception: The influence of consonant wanderings in judgments of warmth and competence. *Journal of Experimental Social Psychology*, *82*, 1-5. doi: 10.1016/j.jesp.2018.11.004

Gerten, J., & Topolinski, S. (2018). Exploring the temporal boundary conditions of the articulatory in–out preference effect. *Psychological Research*, 1-10. doi: 10.1007/s00426-018-1095-3

Godinho, S., & Garrido, M. V. (2016). Oral approach-avoidance: A replication and extension for European–Portuguese phonation. *European Journal of Social Psychology*, *46*, 260–264. doi:10.1002/ejsp.2172

Godinho, S., & Garrido, M. V. (2017). Branding with the in–out effect: The impact of consonantal articulation on brand evaluation. *Psychology & Marketing*, *34*(9), 904-911. doi:10.1002/mar.21031

Godinho, S., & Garrido, M. V. (2019). The in-out effect: Re-examining the impact of training in the preference for words with inward-wandering consonantal articulation. Manuscript submitted for publication.

Godinho, S., & Garrido, M. V., Zürn, M., & Topolisnki, S. (2018). Oral kinematics: Examining the role of edibility and valence in the in-out effect. *Cognition & Emotion*,*33*(5), 1094-1098. doi: 10.1080/02699931.2018.1532874

Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world?. *Behavioral and Brain Sciences*, *33*(2-3), 61-83. doi: 10.1017/S0140525X0999152XPubli

Körner, A., Bakhtiari, G., & Topolinski, S. (2018). Training articulation sequences: A first systematic modulation of the articulatory in–out effect. *Journal of Experimental Psychology: Learning, Memory, and Cognition*. Advance online publication. doi: 10.1037/xlm0000669

Kronrod, A., Lowrey, T., & Ackerman, J. (2014). The effect of phonetic embodiment on attitudes towards brand names. *ACR North American Advances*, *42*, 139-140.

Lindau, B., & Topolinski, S. (2018). The articulatory in-out effect resists oral motor-interference. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *44*(2), 209–220. doi:10.1037/xlm0000443

Majid, A. (2012). The role of language in a science of emotion. *Emotion Review*, *4*(4), 380-381. doi: 10.1177/1754073912445819

Majid, A., & Levinson, S. C. (2010). WEIRD languages have misled us, too. *Behavioral and Brain Sciences*, *33*(2-3), 103-103. doi: 10.1017/S0140525X1000018X

Özgen, E. (2000). *Language, learning, and colour categorisation* (Doctoral Dissertation). University of Surrey, United Kingdom.

Silva, R. R., & Topolinski, S. (2018). My username is IN! The influence of inward vs. outward wandering usernames on judgments of online seller trustworthiness. *Psychology & Marketing*, *35*(4), 307-319. doi: 10.1002/mar.21088.

Speed, L. J., Wnuk, E., & Majid, A. (2018). Studying psycholinguistics out of the lab. In A. De Groot, & P. Hagoort (Eds.), *Research methods in psycholinguistics and the neurobiology of language: A practical guide* (pp. 190-207). Hoboken: Wiley.

Starostin, G. (2016, April). Altaic Languages. http://linguistics.oxfordre.com/view/10.1093/acrefore/9780199384655.001.0001/acrefore-9780199384655-e-35

Shrum, L. J., Lowrey, T. M., Luna, D., Lerman, D. B., & Liu, M. (2012). Sound symbolism effects across languages: Implications for global brand names. *International Journal of Research in Marketing*, *29*(3), 275-279. doi: 10.1016/j.ijresmar.2012.03.002

Taylor, I. K., & Taylor, M. M. (1965). Another look at phonetic symbolism. *Psychological Bulletin*, 64(6), 413. doi: 10.1037/h0022737

Topolinski, S., & Boecker, L. (2016a). Mouth-watering words: Articulatory inductions of eating-like mouth movements increase perceived food palatability. *Appetite*, *99*, 112-120. doi:10.1016/j.appet.2016.01.018.

Topolinski, S., & Boecker, L. (2016b). Minimal conditions of motor inductions of approach-avoidance states: The case of oral movements. *Journal of Experimental Psychology: General*, *145*(12), 1589-1603. doi:10.1037/xge0000217.

Topolinski, S., Boecker, L., Erle, T. M., Bakhtiari, G., & Pecher, D. (2017). Matching between oral inward–outward movements of object names and oral movements associated with denoted objects. *Cognition and Emotion*, *31*(1), 3-18. doi:10.1080/02699931.2015.1073692.

Topolinski, S., Maschmann, I. T., Pecher, D., & Winkielman, P. (2014). Oral approach–avoidance: Affective consequences of muscular articulation dynamics. *Journal of Personality and Social Psychology*, *106*, 885-896. doi:10.1037/a0036477.

Westfall, J., Judd, C. M., & Kenny, D. A. (2015). Replicating studies in which samples of participants respond to samples of stimuli. *Perspectives on Psychological Science, 10*, 390-399. doi.org/10.1177/1745691614564879

**Supplemental material**

List of words for Ukrainian phonation

| Inward words | Outward words |
|---|---|
| БАШЕҐО | ҐАШЕБО |
| БЕШОҐА | ҐЕШОБА |
| БОШАҐЕ | ҐОШАБЕ |
| БЕШАҐО | ҐЕШАБО |
| БАШОҐЕ | ҐАШОБЕ |
| БОШЕҐА | ҐОШЕБА |
| БУШИҐЕ | ҐУШИБЕ |
| БИШЕҐУ | ҐИШЕБУ |
| БЕШУҐИ | ҐЕШУБИ |
| БЕШИҐУ | ҐЕШИБУ |
| БУШЕҐО | ҐУШЕБО |
| БИШУҐЕ | ҐИШУБЕ |
| БАШУҐИ | ҐАШУБИ |
| БАШИҐУ | ҐАШИБУ |
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| БУШАҐО | ҐУШАБО |
| БИШАҐО | ҐИШАБО |
| ПАЧЕҐО | ҐАЧЕПО |

| | |
|---|---|
| ПЕЧОҐА | ҐЕЧОПА |
| ПОЧАҐЕ | ҐОЧАПЕ |
| ПЕЧАҐО | ҐЕЧАПО |
| ПАЧОҐЕ | ҐАЧОПЕ |
| ПОЧЕҐА | ҐОЧЕПА |
| ПУЧИҐЕ | ҐУЧИПЕ |
| ПИЧЕҐУ | ҐИЧЕПУ |
| ПЕЧУҐИ | ҐЕЧУПИ |
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| ПУЧАҐО | ҐУЧАПО |
| ПИЧАГО | ҐИЧАПО |
| ВАЧЕКО | КАЧЕВО |
| ВЕЧОКА | КЕЧОВА |
| ВОЧАКЕ | КОЧАВЕ |
| ВЕЧАКО | КЕЧАВО |
| ВАЧОКЕ | КАЧОВЕ |
| ВОЧЕКА | КОЧЕВА |

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| ВИЧЕКУ | КИЧЕВУ |
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| ПЕШАКО | КЕШАПО |
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| ПОШЕКА | КОШЕПА |
| ПУШИКЕ | КУШИПЕ |
| ПИШЕКУ | КИШЕПУ |
| ПЕШУКИ | КЕШУПИ |
| ПЕШИКУ | КЕШИПУ |
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| ПОШИКА | КОШИПА |
| ПУШОКИ | КУШОПИ |
| ПИШОКА | КИШОПА |
| ПУШАКО | КУШАПО |
| БАЧЕКО | КАЧЕБО |
| БЕЧОКА | КЕЧОБА |
| БОЧАКЕ | КОЧАБЕ |
| БЕЧАКО | КЕЧАБО |
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| БОЧИКА | КОЧИБА |
| БОЧУКИ | КОЧУБИ |
| БУЧОКИ | КУЧОБИ |
| БИЧОКА | КУЧОБА |

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|---|---|
| БУЧОКЕ | КУЧАБЕ |
| БИЧАКО | КИЧАБО |

List of words for Turkish phonation

| Inward words | Outward words |
|---|---|
| BENOK | KENOB |
| BENAK | KENAB |
| BANEK | KANEB |
| BANOK | KANOB |
| BONAK | KONAB |
| BONEK | KONEB |
| VENOK | KENOV |
| VENAK | KENAV |
| VANEK | KANEV |
| VANOK | KANOV |
| VONAK | KONAV |
| VONEK | KONEV |