Does Animacy Feature Facilitate Lexical-Semantic Processing in First-Episode Psychosis?

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Introduction
- lexical-semantic processing depends on the connectivity of the language network and can be facilitated by lexical-semantic features such as concreteness, imageability, frequency etc.
- high-imageable words have a higher number of sheared features which require less cognitive effort for activation and have a faster activation time
- greater correlations in intercategory features facilitate activation of a higher number of conceptual features of the same semantic category suggesting that activation of animate concepts co-activate a more distributed conceptual network
- studies on pathologies with structural lesions stress the importance of distinctive features and predict preservation of inanimate concepts while in neurofunctional disorders such as first episode and early-course psychosis (FEP) a higher activation of intercategory properties is expected
- the results of category fluency task have demonstrated that FEP patients have fewer automated links in all tested lexical-semantic categories, but that the category with the animacy feature was most preserved (Gabrić et al., under review)

Aims
Does activation of different types of features presuppose facilitation of lexical-semantic processing in patients with first-episode and early-course psychosis?

H1: Patients will be significantly more accurate and will have significantly faster responses on pairs of words with high imageability compared to pairs of words with low imageability.

H2: Accuracy and response times in regard to the animacy/inanimacy distinction will depend on the psychopathology profile of the patients.

Participants
- 15 Croatian-speaking patients from the University Psychiatric Hospital “Vrapče”, Zagreb, diagnosed with first-episode and early-course psychosis
- the control group: 15 healthy subjects, matched with patients by age, sex and by being right-handed
- on average the patients are 26.85 years old and have 13.6 years of education
- average time after illness onset is 9.07 months and average time after therapy initiation is 5.13 months
- all patients have been receiving antipsychotic treatment and average daily dose of antipsychotics expressed in chlorpromazine equivalents is 507.78 mg

Methods
- the lexical-semantic decision task consisted of 64 trials, that measure accuracy and reaction times
- imageability conditions on the word pairs were: high-high (15), low-low (19), low-high (13) and high-low (17), additionally, 13 target words were animate and 13 were inanimate
- the stimulus was used from the psycholinguistic database Psiholeks_HR (Erdeljac, Sekulić Sović and Miklić, 2018)
- the prime word was presented for 1000 ms, after which a 100-ms window followed and finally the target word was presented for 3000 ms

Results
- Friedman’s ANOVA showed there were no significant differences in the accuracy on pairs of words of different level of imageability in the patient group (X2(3)=0.62, p=0.892, nor in the control group (X2(3)=5.96, p=0.135) (Figure 1)
- the patients had lower level of accuracy for all pairs of words (for the high-high pair (U(19, 15)=28.00, z=-3.97, p<.001, r=-.68); for the low-low pair (U(19, 15)=31.00, z=-3.86, p<.001, r=-.66))
- nearly half of the FEP patients’ results show an animacy effect i.e. faster reaction time for animate words than for inanimate words (Figure 3)
- the patients had longer reaction time for all pairs of words (for the high-high pair (U(19, 15)=28.00, z=-3.97, p<.001, r=-.68); for the low-low pair (U(19, 15)=31.00, z=-3.86, p<.001, r=-.66))
- Friedman’s ANOVA showed there were no significant differences in the reaction time on pairs of words of different level of imageability in the patient group (X2(3)=9.76, p=0.020) (Figure 2)

Discussion
- psychopathology profile does not differ significantly between two sub-groups, which might be explained by the fact that the sample is not large enough to capture more discrete psychology pattern differences
- the differences between the two sub-groups might become obvious during longitudinal follow-ups with regards to quality of remission, overall recovery and recovery in specific areas (e.g. social functioning), as well as other outcome variables

Conclusions
- preliminary results support previous studies which suggest that current methods of assessment of pathology (symptom clusters/dimensions) and diagnostic classifications might not be optimal in elucidating underlying biological and psychological processes in schizophrenia and even more so in the broader concept of psychosis
- assessment of specific lexical-semantic processing alongside neuropsychological evaluation might be a valuable tool as an indicator and predictor of particular illness phases and/or courses

References
Erdeljac, V., Sekulić Sović, M., Miklić D. (2018) Psycholinguistic Database - Psholeks_HR, Zagreb: Department of Linguistics, Faculty of Humanities and Social Sciences, University of Zagreb.