Does animacy feature facilitate lexical-semantic processing in first-episode psychosis?

Sekulić Sović, Martina; Erdeljac, Vlasta; Kužina, Iva; Vandek, Mija; Gabrić, Petar; Mimica, Ninoslav; Savić, Aleksandar

Conference presentation / Izlaganje na skupu

https://doi.org/10.5281/zenodo.4678253

Faculty of Humanities and Social Sciences | University of Zagreb | University Psychiatric Hospital Vrapče | School of Medicine

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

Martina Sekulić Sović[1], Vlasta Erdeljac[1], Iva Kužina[1], Mija Vandek[1], Petar Gabrić[1], Ninoslav Mimica[2,3], Aleksandar Savić[2,3]

[1]University of Zagreb, Faculty of Humanities and Social Sciences, Department of Linguistics, Zagreb, Croatia
[2]University of Zagreb, School of Medicine, Chair of Psychiatry and Psychological Medicine
[3]University Psychiatric Hospital „Vrapče", Zagreb, Croatia

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 that there were no significant differences in the accuracy on pairs of words of different level of imageability in the patient group ($X^2(3)=0.62$, p=.892), nor in the control group ($X^2(3)=5.96$, p=.1135) (*Figure 1*)
- the patients had lower level of accuracy for all pairs of words (for the high-high pair (U(19, 15)=69.50, z=2.85, p=.004, r=.49); for the low-low pair (U(19, 15)=62.00, z=3.09, p=.002, r=.53)
- Friedman's ANOVA showed that there were no significant differences in the reaction time on pairs of words of different level of imageability in the patient group ($X^2(3)=.52$, p=.9145) there was a significant difference in the control group ($X^2(3)=9.76$, p=.0207) (*Figure 2*)

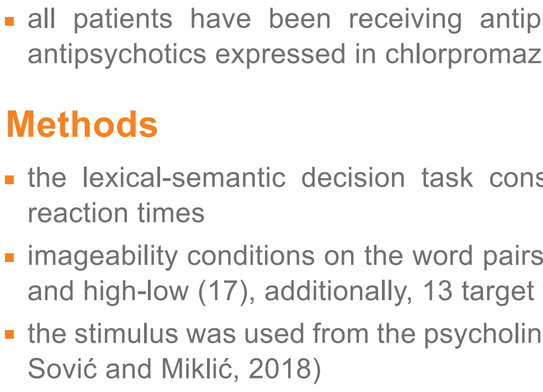

Figure 1

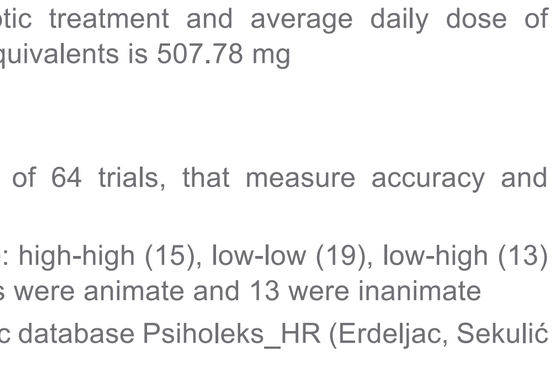

Figure 2

- 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))
- 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*)

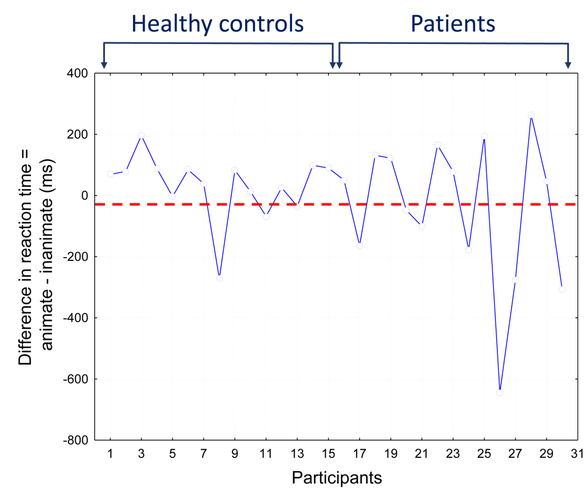

Figure 3

- the patients had longer and more variable reaction times than the control group (*Figure 4*)
- among the patients whose results showed an animacy effect there were no differences in clinical variables such as illness and therapy duration, illness phase and pharmacological dosage nor in sociodemographic variables such as age, sex, handedness and education

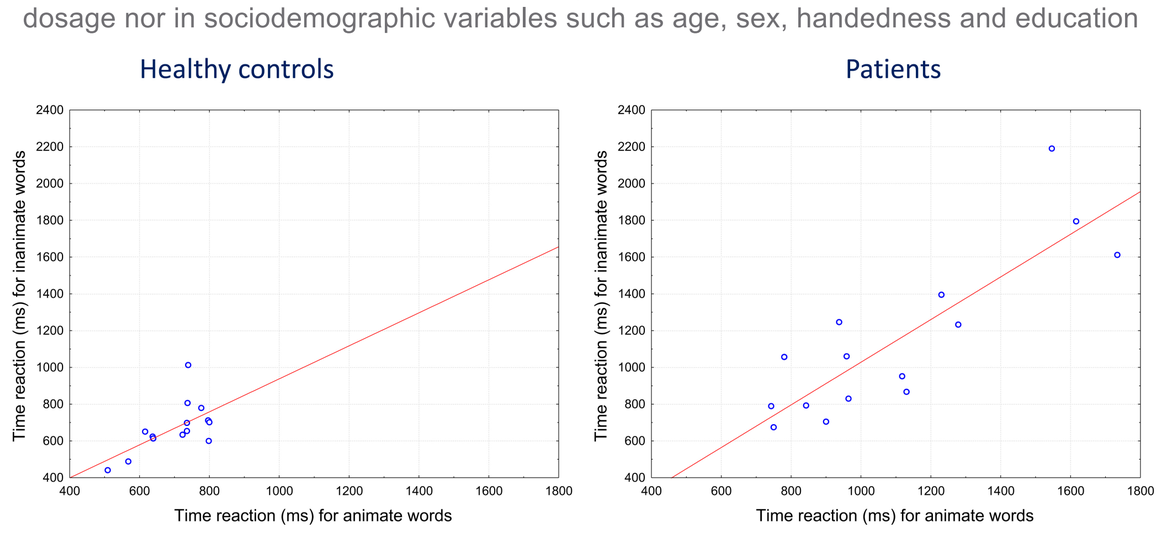

Figure 4

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) Psycholingustic Database - Psiholex_HR. Zagreb: Department of Linguistics, Faculty of Humanities and Social Sciences, University of Zagreb.

Gabrić, P., Kužina, I., Vandek, M., Sekulić Sović, M., Mimica, N., Savić, A. (under review). "Category fluency in Croatian-speaking patients with first-episode psychosis with schizophrenia features/symptoms".In: Language and Mind: Proceedings from the CALS conference 2018.Frankfurt am Main: Peter Lang.

Riecher-Rössler A. and McGorry P.D. (2016) Early Detection and Intervention in Psychosis. Riecher-Rössler A, McGorry P.D. (eds): Early Detection and Intervention in Psychosis: State of the Art and Future Perspectives. Key Issues Ment Health. Basel, Karger, 2016, vol 181, pp 179-189