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PREFACE

Between two issues of the Bulletin, the Institute of Mental Health has received a significant donation and two special acknowledgements for its work.

On November 13, 2023, the Institute of Mental Health and representatives of the Government of Japan signed a donation agreement whereby Japan will provide financial assistance for the purchase of transcranial magnetic stimulation (rTMS) equipment as an important non-pharmacological approach to psychiatric treatment. The total investment value exceeds 70,000 euros, and the donation is part of the POPOS program of assistance from the Government of Japan. During the signing of the medical equipment procurement agreement, Ambassador of Japan Akira Imamura stated that Japan has so far assisted 23 healthcare



institutions in Belgrade, with the value of these donations amounting to 1.58 million euros. He added that this donation differs from previous ones as it is the first aimed at supporting mental health treatment. The signing ceremony was attended by the Minister of Health, Prof. Danica Grujičić.

On January 27, 2024, Director Prof. Dr. Milica Pejović Milovančević received, on behalf of the Institute of Mental Health, a significant national recognition – Svetosavska nagrada (the Svetosavski Award) for the year 2023. As stated in the justification, „The Clinic for Children and Youth of the Institute of Mental Health has been providing long-standing support to children and young people, both in the school environment and beyond. The Institute actively supports educational institutions in the process of adapting educational programs, as well as providing advisory support in working with students with various mental difficulties. Even before their obligations in responding to crisis events were defined, psychiatrists and psychologists from the Institute volunteered to assist those in greatest



need, by daily presence in schools affected by crisis events and by establishing a psychosocial support system in Belgrade, Mladenovac, Smederevo, Mali Orašac, Lazarevac, and Pančevo. They organized forums and workshops for parents, participated in the development of the „Protocol for Dealing with Societal Crisis Situations,“ mobilized the „Mobile Team for Mental Health and Safety of Children and Youth,“ connected with trauma experts from Norway and the United States, and prepared publications to improve mental health in response to crisis events.“ In this issue of the Bulletin, an important project will be announced, which will for the first time investigate the prevalence of certain mental disorders in children and adolescents in Serbia, and the works of two doctoral students from the Institute related to childhood psychopathology will be presented.

The second important recognition was awarded to the Institute on the Statehood Day of the Republic of Serbia, on February 15, 2024. On behalf of the Institute, prof. Dr. Olivera Vuković received Sretenjski orden (the Sretenje Order, Second Degree). This order was awarded for 60 years of successful work of our institution, which will celebrate its 61st birthday on April 14, 2024, and on this occasion, on behalf of the Bulletin editorial board, we congratulate all employees, everyone whom the Institute helps and who help the Institute.

MD, PhD Nađa Marić Bojović



OUR RESEARCH

Sanja Leštarević, M.D,
and colleagues

In the July 2023 edition of the *Journal of Autism and Developmental Disorders*, Sanja Leštarević from the Institute of Mental Health and colleagues published original research titled „Internal Consistency of the Serbian Translation of the Stanford Social Dimensions Scale and Association to Strengths and Difficulties Questionnaire Scores in Male and Female Individuals on the Autism Spectrum and Non-autistic Individuals“

The authors emphasize that social functioning is a crucial aspect of mental well-being, especially during childhood and adolescence. Difficulties in maintaining positive peer relationships can negatively impact development and lead to various emotional and behavioural problems. Difficulties in social functioning are present in various psychiatric disorders, including Autism Spectrum Disorder (ASD), where a deficit in socio-emotional reciprocity is one of the key characteristics.

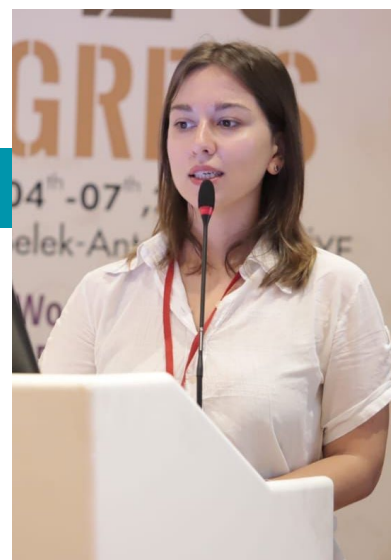
The social motivation theory of autism suggests that the desire for social interaction and connection differs between individuals with ASD and those without ASD. Due to a reduced preference for social signals, individuals with ASD are less inclined to engage in social interactions, leading to difficulties in acquiring social competence, and persisting and deep challenges in

social functioning. Experimental studies have shown that children with ASD exhibit lower social motivation compared to their non-ASD peers.

However, there are relatively few instruments suitable for assessing social functioning within ASD. The Stanford Social Dimensions Scale (SSDS), developed by researchers at Stanford University, addresses this gap. The instrument, filled out by parents or guardians consists of 58 questions rated on a Likert scale from 1 (never) to 5 (always), grouped into 5 subscales: Social Motivation, Social Affiliation, Social Recognition, Expressive Social Communication, and Unusual Approach. Higher scores on these scales correspond to better social functioning.

This study aimed to translate the Stanford Social Dimensions Scale into Serbian and assess the internal consistency of this version in a mixed sample of children with ASD and children without ASD. The study also investigated differences in scores between the two groups on the SSDS subscales and the Strengths and Difficulties Questionnaire, as well as the association between SSDS subscales and prosocial behaviour and overall measures of psychopathological phenomena in both groups.

The sample comprised 200 patients from the Clinic for Children and Youth at the Institute of



Mental Health, aged 1-18 years. Individuals with ASD constituted 32% of the sample (n=64). The rest of the sample consisted of children without ASD but with other disorders, primarily behavioural and anxiety disorders, as well as neurodevelopmental disorders (excluding ASD), such as intellectual developmental disorders and attention-deficit/hyperactivity disorder.

Results of the study indicated significantly better social functioning, measured through SSDS subscale scores, in the group of children without ASD compared to those with ASD. Within the Strengths and Difficulties Questionnaire, children with ASD showed significantly higher levels of hyperactivity and attention problems compared to the other group, while children without ASD exhibited more pronounced prosocial behaviour than those with ASD.

The authors acknowledged some limitations of the study, including the absence of a test-retest reliability assessment, incomplete consideration of participants' cognitive profiles, the potential non-representativeness of the sample for the Serbian ASD and non-autistic populations, and the

lack of detailed exploration of the psychometric properties of the SSDS.

In conclusion, the authors suggest that this research provides an opportunity to use the Stanford Social Dimensions Scale as a tool for assessing social functioning and identifying individual strengths and difficulties in the Serbian-speaking population with ASD. This could further aid in directing targeted interventions and support strategies. The authors highlight the significance of individual differences in social functioning dimensions, enabling the formulation of different social phenotypes for individuals with ASD and facilitating a personalized approach to meet specific needs.

**Clin. assist. Roberto Grujičić, MD,
and colleagues**

Clin. asist. dr. Roberto Grujičić and colleagues from the Institute of Mental Health published a paper in January 2022 titled „How are parental practices and attitudes towards corporal punishment related to child academic, developmental, or psychological-emotional dysfunctioning?“ in the European Child & Adolescent Psychiatry journal.

In this study, researchers chose to explore the relationship between parental attitudes towards corporal punishment (CP), expected outcomes of CP, disciplinary practices, and various forms of dysfunction in children. The research utilized a representative sample of 1186 parents from Serbia, whose children were between 0 to 18 years old at the time of the interviews. Data was collected through face-to-face interviews at the participants' homes. The instruments used included a questionnaire gathering general information about parents and potential dysfunction in their children, the Conflict Tactics Scales: Parent-Child Version for assessing discipline and child abuse, the Attitudes toward Physical Punishment questionnaire, and the Outcomes of Physical Punishment Scale for expected attitudes toward CP.

The most reported form of dysfunction in children was academic dysfunction, reported by just over a quarter (27.2%) of parents. The prevalence in this study was higher compared to other studies on the same topic. The second most common form was developmental dysfunction (20%), while psychological-emotional dysfunction was reported by the smallest percentage of parents (3.9%), potentially indicating insufficient recognition or stigma within the cultural context.

Parents of children reporting dysfunction, especially of the academic and psychological-emotional types, more frequently believed in positive outcomes of CP compared to parents not reporting dysfunction. This positive attitude toward CP was reflected in parenting practices, with children experiencing reported problems being more frequently subjected to various forms of punishment.

The study revealed that parental expectations of positive outcomes from CP and the actual use of physical violence were significant predictors of developmental dysfunction in children. Specifically, problems in school were mostly preceded by verbal aggression, mild physical punishment, or neglect by parents. Significant predictors of psychological-emotional dysfunction were any form of physical punishment, ranging from mild to extreme.

The authors noted several significant limitations, including the inability to exclude bidirectionality due to the study's design, difficulty establishing a causal relationship between variables, reliance on self-reporting through questionnaires, and potential recall bias among participants. Additionally, relying on parental reports of dysfunction in children could lead to false-negative/positive results.

In conclusion, the authors emphasize the need for close collaboration between researchers and decision-makers to provide comprehensive support and education systems aimed at preventing child abuse. These systems should be particularly directed towards families caring for children with noted dysfunction due to their increased vulnerability. The authors also highlight the need to educate parents about „positive parenting“ and the potential consequences of various disciplinary measures.



● THE PROMISING PROJECT

MD, PhD Milica Pejović
Milovančević

To the best of our knowledge, in the Republic of Serbia, there have been no studies conducted on the general population of children and adolescents utilizing a methodology where the prevalence of psychiatric disorders in childhood and adolescence is examined through the application of in-depth clinical interviews based on operationalized criteria of psychiatric disorders. We spoke with Prof. Dr. Milica Pejović Milovančević about this topic and the possibility of conducting such a study in our country.

Which studies do you consider the most significant regarding the prevalence of psychiatric disorders in children and adolescents in Europe and worldwide?

In the last 30 years, certain studies have provided valuable assessments of the mental health of children and adolescents. The most well-known are studies by Kessler et al. (2005) and Ford et al. (1999). Also, large studies from China are becoming more common. However, the studies conducted so far are characterized by methodological heterogeneity, making it challenging to compare results and integrate data. Methodological heterogeneity contributes to variability regarding sample selection methods (children, parents, teachers, age range, etc.), approaches to ensuring representativeness, variations in study design, different diagnostic criteria, mismatched instruments, and so on. Compared to studies focusing on adults, there are significantly fewer studies on the prevalence of psychiatric disorders in child and adolescent psychiatry. The reasons are numerous, from the fact that a much smaller number of professionals specialize in child and adolescent psychiatry to less investment in research in this field, as we all know that such studies are very demanding and, for some environments, very expensive.

Are there similar studies in the Balkans, in countries in our surroundings?

In the Republic of Serbia, there have been no studies on the general population of children and adolescents using a methodology where the prevalence of psychiatric disorders in childhood and adolescence is examined through structured interviews based on international operationalized criteria. The large-scale prevalence study of psychiatric disorders in the Republic of Serbia, CoV2Soul.rs, conducted on the adult population during the pandemic, highlighted the importance of focusing on the young population; namely, 25.9% of all psychiatric disorders identified in this study were in the youngest age group (18-29 years). However, no such study has been conducted for the age group under 18 years old.

How do you plan the first epidemiological study on the prevalence of psychiatric disorders in children and adolescents in the Republic of Serbia, and what are the main goals of this large project?

Preparations for this research are underway. Funding has been secured for the procurement of the MINI Kid questionnaire within the Project of Psychosocial Support of the Government of the Republic of Serbia, and the questionnaire has been translated and approved for use in Serbia. Subsequently, certification was conducted, and 10 colleagues from the Institute of Mental Health were trained to administer this instrument. We expect approval from the Ethics Committee of the Faculty of Medicine in Belgrade, and we have already received support from the Ministry of Education of the Republic of Serbia.

This research will represent a cross-sectional study on a nationally representative sample of primary and secondary school students (11-19 years old). The study is planned to focus on schools throughout Serbia. The sample is de-

signed as clustered, with 80 primary and 65 secondary schools sampled from the database of all primary and secondary schools. The number of schools is determined so that, considering the average class size in each of the sampled schools, the planned sample size of 5000 respondents is reached by surveying two classes from each school. The planned sample size is determined so that, considering the minimum estimated prevalence of more severe psychiatric disorders of around 1%, the survey includes approximately 50 individuals with specific diagnoses.

After defining the sample, the next phase of the research will involve training professionals (educational-psychological service professionals) to conduct structured interviews using the MINI-KID questionnaire, by trained professionals from the Institute of Mental Health in Belgrade. In addition to MINI Kid, other questionnaires will be used to objectively assess the current mental state of the surveyed students.

Who will you collaborate with on the project?

As with previous national studies we have conducted (Adverse Childhood Experiences - ACE-Study - in Serbia, or Research on the Application of Parenting Discipline on Children in Families in Serbia), we will collaborate with the Institute of Psychology and with the Faculty of Medicine in Belgrade.

What do you consider the main challenges, and when can results be expected?

One of the major challenges we expect is the motivation of children, adolescents, and their parents to give consent and participate in this research. When we organized focus groups with young people, they advised us to ask concise questions, without excessive need for written responses, and to provide some form of reward for participation – a certificate, gratitude, free period, or easing of curriculum. Additionally, adequate briefing on the importance of research and how it is communicated.

We believe we will obtain results in line with global trends; for example, ADHD ranging from 2% to 5.7%; conduct disorders from 4% to 16% depending on the study; depression approximately 4%; and anxiety disorders from 0.3% to 9.4%, substance abuse around 5%, etc. If everything goes according to plan, the pilot study will be conducted by the end of this school year, i.e., by June 2024, and the rest of the planned sample will be conducted at the beginning of the next school year. So, the first preliminary results from the pilot study could be expected during the summer. We believe that the results of this research could guide decision-makers to assess the needs of the developmental population for psychosocial and psychiatric support at the state level and facilitate the planning and implementation of various preventive activities.



● DOKTORSKA TEZA

Olivera Sbutega Filipović, MD, PhD
Special Hospital for Addiction Diseases in
Belgrade



Olivera Sbutega Filipović, MD, PhD is a psychiatrist at the Special Hospital for Addiction in Belgrade - Day Hospital for Chemical and Non-Chemical Addictions. Recently, she defended her doctoral thesis entitled „Assessment of the quality of life of opiate and alcohol addicts and their caregivers“ at the Faculty of Medicine, University of Belgrade, under the mentorship of Professor Jadranka Maksimović (Institute of Epidemiology, Faculty of Medicine, University of Belgrade) and Professor Aleksandar Jovanović (retired professor, Clinic for Psychiatry, Faculty of Medicine, University of Belgrade). The research preceding this doctoral thesis was published in 2022 in the journal *Medicine*.

How did you decide to examine the quality of life among opiate and alcohol addicts and their caregivers?

Disorders associated with alcohol and opiate addiction lead to physical, mental, and socioeconomic deterioration not only in patients but also in their families and caregivers. Based on years of experience working with individuals with alcohol and opiate addiction, I witnessed the significance of caregivers in supporting and influencing the initiation of addiction treatment, compliance,

participation in treatment, and treatment outcomes. Considering that addictive disorders arise and are treated within the family, I believe that the focus on quality of life should not only be directed towards patients but also their caregivers.

What was the main research question in your research thesis?

The main objective of the doctoral thesis was to analyze the quality of life of individuals with opiate and alcohol dependence and to examine whether there is a difference in the quality of life between individuals with alcohol and opiate dependence. The study also investigated predictors contributing to better quality of life in patients and their caregivers.

What was the study design and how was the sample collected?

During this research, a cross-sectional study was conducted. The study included 136 patients undergoing treatment at the Special Hospital for Addiction in Belgrade due to psychoactive substance addictions (opioids, opiates, or alcohol), and 136 of their caregivers. In addition to a general questionnaire examining sociodemographic characteristics, addic-

tion characteristics, types of treatment, and participant's lifestyle habits of the participants, specific questionnaires were also used: for assessing the quality of life (36-item Short-Form Health Survey - SF-36), the Beck Depression Inventory (BDI), and the Pittsburgh Sleep Quality Index (PSQI).

What were the main results obtained, and did you observe the difference in quality of life between alcohol and opiate addicts and their caregivers?

The results indicated that individuals with addiction were more frequently males, in comparison to their caregivers who were predominantly females (mothers). The results also showed that the patients' and their caregivers' mean SF-36 scores on eight domains ranged from 57.1 to 65.3, except for physical functioning and bodily pain - which were statistically significantly lower among caregivers. Patients more frequently reported better health status compared to the previous year, while car-

egivers reported their health status as the same or worse, which was statistically significant between-group difference. The results also suggest that individuals with opiate or alcohol addiction more frequently exhibit depressive symptoms compared to their caregivers. Sleep quality was assessed using the Pittsburgh Sleep Quality Index, showing a statistically significant difference in subjective sleep quality reported by caregivers as poorer compared to patients, as well as shorter total sleep duration among caregivers.

Which predictors were found to contribute to better quality of life among patients with addiction and their caregivers?

The results indicated that predictors of better quality of life in patients included younger age and better socioeconomic status. Predictors of better quality of life among caregivers included male sex, younger

age, and better socioeconomic status. Our study did not find an association between lifestyle habits and predictors of quality of life.

What would you like to focus on in your future work on this research problem?

In our region, there is insufficient research focusing on the health status of caregivers of individuals with chronic mental disorders, including addiction disorders. Being a caregiver and caring for a person with a mental disorder involves a lot of activities and responsibilities. The burden of addictive disorders affects not only the individuals but also the entire system around them, primarily referring to their caregivers. Considering that this research applied a cross-sectional design, the conclusions are limited in terms of causality. I would focus on longitudinal studies in my further research on this topic, to examine lifestyle habits as predictors of

quality of life among patients and their caregivers.

What message would you like to convey to young researchers interested in similar research problems?

Considering the increasing trend in both chemical and behavioural dependencies, there is a necessity for continuous education and active research in this field. Scientific findings would have a significant impact on implementing adequate strategies and preventive measures for improving the quality of life of individuals with dependencies and their caregivers.

● FROM THE BOSTON POSTDOC PERSPECTIVE

Assist. prof. Milutin Kostić

The stay in Boston has reached its half, five months have passed, and five more months to go. As the highlight so far, I would mention the lecture I gave at the course for general practitioners (Cambridge Health Alliance Family Medicine Grand Rounds, at the invitation of Prof. Shaughnessy from the Department of Family Medicine of Tufts University School of Medicine, Boston). The topic was the factors that we must take into account when prescribing antidepressants - effectiveness, side effects, withdrawal crisis when switching off and medicalization of normal suffering. It was especially encouraging for me that this opportunity opened additional

doors for me, and I was invited to give a lecture for a group dealing with social justice in medicine, as well as for the master's and doctoral studies at UMass Boston (<https://www.umb.edu/>) in psychology, and an additional guest appearance on the *Mad in America* podcast.

Since most of the projects I am currently busy with are in the working phase and I don't have many results and conclusions in the scientific sense, I would like to use this posting to share some general impressions about the US and its medical model.

The first impression, of course, is the direct marketing of drugs. The largest number of commercials on television are related to medicines and medical insurance, and it is a constant bombardment with stories about diseases that a person may have - to ask the doctor if he/she has that disease and to inquire whether that medicine can help him/her. And if you were not a hypochondriac, you would become one (in the colloquial, not medical sense). It is interesting to note that in the USA the state does not have the right to negotiate the prices of most medicines. By the way, this is something that absolutely every single country in the world does specifically aiming not to bankrupt their healthcare system (1).

For example, a new postpartum depression drug called zuranolone (2) costs \$15,900 for two weeks of treatment. By comparison, most benzodiazepines that have virtually the same mechanism of action cost less than \$10. This is made possible by legalized corruption in the US system. This means that companies have the right to have „lobbyists“ in Congress and the Senate who influence the decisions of elected government representatives through donations to their campaigns. This is where you can see the amount of money in relation to this industry, given that the pharmaceutical industry is the absolute top industry in terms of the amount of money donated to politicians, while the private medical insurance industry holds second place (3). Far behind are the military, oil and similar industries that we often think of leaders in this context. This is why the USA is the only country, along with New Zealand, where it is allowed to advertise drugs directly to the general population. And because of that the US politicians always find some absurd reasons why it would be very dangerous for the US government to negotiate drug prices. This has also led to the fact that although, in comparison with all other Western countries, the US invest most in healthcare costs, it nevertheless has poorer results than many countries that invest much less (4).

The second is that this has led to an extremely relaxed attitude towards medicines. As many as 89% of Americans over the age of 65 take at least one medicine, but even more interestingly, 54% take 4 or more medicines (5). This relationship is not limited to the oldest age group. Even more shocking is that almost half of the population, which should be the healthiest and in their physical and mental prime, 18-44 years old, take at least one drug (6). In a conversation with a doctor who works here in general practice, I learned that she often meets people who have between 18-20 prescribed medicines. Of course, this amount of medication is not beneficial for a

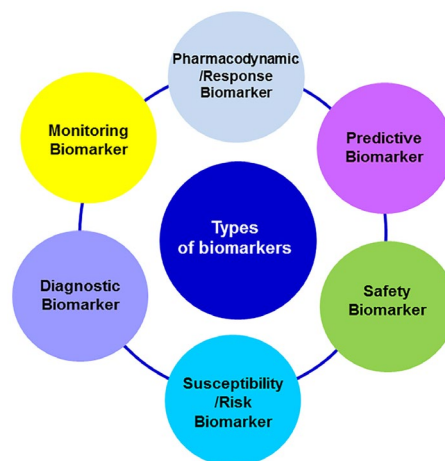
large number of people, and most likely it is directly harmful. This attitude towards drugs and complete neglect of potential harmful effects has also led to the opioid epidemic. Due to the promotion of opioid analgesics in the US, drugs that work through the same receptors as heroin, as „safe“ and the marketing message that these drugs are not (magically) addictive, unlike heroin, many people have developed addiction. At the beginning of the 21st century in the USA, the number of deaths from drug overdose was less than 20,000 per year, and due to the uncontrolled prescription of these drugs, that number exceeded 100,000 in 2021 (7). I recommend watching the series *Dopesick* with Michael Keaton in the leading role, which is about this tragedy. The ease with which pharmacotherapy is accessed in the US was most impressive to me personally through a local commercial in Boston that I often hear on the radio. The ad is for life insurance by an independent entrepreneur named Lou. The commercial begins with the sentence: „Diabetes, hypertension, anti-anxiety meds, everyone’s on them“ and ends with „Big Lou is like you, and he’s on meds too“ (8).

During my stay in the USA, my goal is to see what is good, and what should be implemented in Serbia, what can make our people and patients have a better quality of life and better healthcare. Likewise, it is important to see what is wrong and how to prevent some negative examples from taking root in our country. Unfortunately, one can imagine that these models could be increasingly present in our country because the financial pressure of companies that can profit from this approach will be increasingly present in our country, as it already is in the European area.



INTERNATIONAL NEWS

Diagnostic biomarkers of neurodevelopmental disorders: a systematic review of the literature



As the prevalence of neurodevelopmental disorders is increasing, there is a greater need to understand the aetiology and pathophysiological processes, but also to find specific biomarkers that would represent a more objective way in the timely diagnosis and development of targeted treatment modalities. In the most prestigious psychiatric journal *World Psychiatry* in February 2023, a systematic review of the literature was published under the title „*Candidate diagnostic biomarkers for neurodevelopmental disorders in children and adolescents: a systematic review*“, Cortese and associates. This is the first and so far the most comprehensive systematic review that covered a wide range of potential diagnostic biomarkers and the entire group of neurodevelopmental disorders (including behavioural disorders as frequent comorbidities).

The primary objective was to identify biomarkers that have been found in previous studies as being significantly associated with diagnoses from the group of neurodevelopmental disorders, and then select among them those that would be identified as possible markers, based on a sensitivity and specificity of at least 80% in two or more independent studies. Also, the goal was to see if there is internal and external validation, positive and negative predictive value (PPV, NPV) and area under the ROC curve (ROC AUC) for them, with an assessment of cost-effectiveness. The final objective was to determine whether and to what extent possible biomarkers are specific vs. transdiagnostic. All available studies of children and adolescents under the age of 18, with any (one or more) neurodevelopmental and behavioural disorders that included a control group and were published until April 2022 were included (a total of 780 studies with a total of approximately

120,000 cases and 176,000 controls). The largest number of studies dealt with the examination of biochemical parameters (374 studies with a total of 1427 markers), followed by neurovisual markers (203 studies), neurophysiological markers (133 studies), neuropsychological markers (65 studies) and genome studies (five studies). In all these studies, no single biomarker has yet been found that would be labelled as possible for any particular disorder (when the evidence we have today is required to be consistent, to come from two or more independent studies with a sensitivity and specificity greater than 80% and evidence of acceptable PPV, NPV and ROC AUC). It was also noted that the important parameters of validity, PPV and NPV, were rarely determined, and interestingly, no cost-effectiveness studies were found.

One of the methodological problems is that only 4.6% of the included studies used a longitudinal design, with a small sample, poor reproducibility, and lack of standardization. It was pointed out that in clinical practice it would make more sense to base on the integration of several models rather than on the model of an individual biomarker and phenotype (such as direct association of clinical phenotype with neuroimaging results, molecular and neurophysiological parameters). The authors explain that diagnostic biomarkers are unlikely to replace clinical assessment in the future, but would be important to support clinical decision-making and further research is needed using multimodal approaches within the same study, designs comparing two or more neurodevelopmental disorders and focusing on an improved methodology.

INTERNATIONAL NEWS – The „L-factor“: Language as a transdiagnostic dimension in psychopathology

Speech is an unassailable window into the human mind and its inherent dynamics, as hinted by Vernike in the late 19th century, emphasizing that aphasia might be a starting point which leads to an understanding of mental disorders. Slight modulations in the tone of voice, its melody (prosody), the choice of certain words, and the way they are connected through grammar can reveal much about someone's attitudes and subtle changes in the domain of emotions and cognition in real time. Language is a more complex construct that, in addition to speech articulation and perception, prosody and syntactic complexity, also involves a system of encoding meaning as its primary purpose.

Using neurodevelopmental disorders as an example, characterized by impaired speech development and childhood-onset, language has proven to be a crucial factor in cognitive development. Although serving communication, it is not merely an instrument for externalizing thoughts, but also a cognitive factor restructuring cognition creatively and being inherently integrated with other cognitive domains such as memory, social cognition, and executive functions. Since the impairment across these cognitive domains forms an essential part of major psychiatric disorders, it is reasonable to assume that such disorders should bear on language function. However, language in psychiatry is still often conceptualized in a limited neuropsychological perspective - merely as forming one neurocognitive domain among others.

In the January 2024 issue of the journal „Progress in Neuropsychopharmacology & Biological Psychiatry“, a review article entitled „The 'L-factor': Language as a transdiagnostic dimension in psychopathology“ was published, where the authors (Hinzen & Palaniyappan) systematically explain the claim that language, viewed as an integrator of cortical functions and particularly vulnerable neurocognitive system (the so-called L-factor), currently represents the best single candidate for a transdiagnostic approach to psychopathology (compared to previously

proposed factors of general psychopathology, the so-called P-factor, and cognition, the so-called C-factor). Language is the key medium through which mental disorders are conveyed to clinicians, and its clinical role goes far beyond mere reporting of symptoms. Alterations in various dimensions of language manifest through symptoms such as prosodic abnormalities and rumination in depressive disorders, specific lexical choices associated with suicidal ideation, pressured speech in mania and anxiety disorders, distortions of speech perception in verbal hallucinations, distortion meaning and content of language in delusions, or disorganized speech in formal thought disorders in schizophrenia spectrum disorders, and so on. All of the above allows for the detection of clinically significant information (signs and symptoms) without the patient necessarily being aware of their presence and reporting them. Language-based signs of mental disorders often significantly predate diagnosis (as in autism spectrum disorders) and constitute prodromal features (as in schizophrenia spectrum disorders). Studies comparing children and adolescents at high risk for schizophrenia to peers with no such risk have shown that the former display deficits in verbal working memory, vocabulary, reading and writing among other cognitive functions. It is also worth noting that in addition to its role in diagnostic assessment, language can function as a therapeutic tool – as when psychotherapy involves linguistic tactics such as „reframing“, aimed at changing perception and shaping different/desirable perspectives.

Disturbances across multiple language dimensions are pervasive across mental disorders. The authors conclude that spontaneous speech is an easily accessible bio-behavioural marker and that the proposed transdiagnostic L-factor could be a substrate for the previously proposed latent general factors of psychopathology (P-factor) and cognitive functioning (C-factor). Rapidly advancing natural language processing (NLP) technologies based on artificial intelligence and the availability of abundant data soon could enable precise quantification of the L-factor and examination of its relationships with assumed neural substrates and dynamics in various mental disorders - paving the way for a new era of translational clinical psychiatry in which both language and psychopathology may be rethought together.

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Institute of Mental Health, Milana Kašanina 3,
11000 Belgrade; Telephone: +381 11 3307500;
Web: www.imh.org.rs

Editor:

Nađa P. Marić

Assistant editors:

Milutin Kostić, Sanja Andrić-Petrović
Ivan Ristić and Petar Vuković

Technical support:

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