OMB No. 0925-0001 and 0925-0002 (Rev. 10/2021 Approved Through 09/30/2024)

BIOGRAPHICAL SKETCH

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NAME: Kotov, Roman I

eRA COMMONS USER NAME (credential, e.g., agency login): rkotov

POSITION TITLE: Professor of Psychiatry, Psychology, and Statistics

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Ohio State University, Columbus, OH	B.S.	6/2000	Physics and Psychology
University of Iowa, Iowa City, IA	Ph.D.	6/2006	Clinical Psychology
Brown Medical School, Providence, RI		6/2006	Clinical internship

A. Personal Statement

I have been PI of 9 RO1s and 14 smaller projects. All of them have been successful, meeting recruitment milestones and yielding highly visible publications. I published more than 200 papers altogether. I have been closely involved in genomics research, including genome-wide studies of SNPs, methylation, and gene expression. For the last 15 years my research program included tools of clinical neuroscience, both EEG and MRI. I also have a longstanding interest in nosology and have been leading the Hierarchical Taxonomy of Psychopathology (HiTOP) consortium to empirically identify psychiatric phenotypes.

Ongoing Research Support (4 most relevant studies):

NIOSH, U01OH011864 (Kotov & Waszczuk; M.P.I.). 07/01/2019 – 06/30/2022
Polygenic prediction of PTSD trajectories and inflammation in 9/11 responders
An RO1–equivalent grant to examine polygenic risk scores as predictors of posttraumatic stress disorder course.

NIOSH, U01OH011321 (Kotov; P.I.). 09/01/2016 – 08/31/2022
Personality-informed care model for 9/11-related comorbid conditions
An RO1–equivalent grant to examine personality predictors of WTC-related health conditions over two years using ambulatory monitoring technology

NIMH, R01MH110434 (Kotov; P.I.) 08/1/2016 – 07/31/2022
Trajectories of Aging in Psychotic Disorders Over 27 Years
To test for presence of predictors of accelerated aging in patients with psychotic disorders who were followed 27 years after first admission.

NIH, R01MH122537 (Kotov & Simms; M.P.I.). 04/01/2021 – 03/31/2025
Development of Negative Valence Measures
Develop psychological measures (self-report and interview) for Research Domain Criteria (RDoC) domain of Negative Valence and for the Hierarchical Taxonomy of Psychopathology (HiTOP).

B. Positions, Scientific Appointments, and Honors

Positions and Scientific Appointments:

2019-present Professor, Department of Psychiatry, Stony Brook Univ, New York
2017-present Adjunct faculty, Department of Applied Math & Statistics, Stony Brook Univ., New York
2007-present Adjunct faculty, Department of Psychology, Stony Brook Univ., New York
2014-2019 Associate Professor, Department of Psychiatry, Stony Brook Univ, New York
2011-2014 Assistant Professor, Department of Psychiatry, Stony Brook Univ., New York
2006-2011 Research Assistant Professor, Department of Psychiatry, Stony Brook Univ., New York

Honors:

2021 Research Achievement Award, Department of Psychiatry, Stony Brook University.
2018 Mentor of Smadar Levin Award winner, Jingwen Jin, Society for Research in Psychopathology
2017 Mentor of Rising Star Award winner, Daniel Kopala-Sibley, Association for Research in Personality
2013 Betty Simon Memorial Lecture speaker, Department of Psychiatry, University of Iowa
2010 Mentor of URECA (university-wide undergraduate research program) Researcher of the Month, Lynne Lieberman, Stony Brook University
2006 Winner of the Spence Award, Department of Psychology, University of Iowa

C. Contribution to Science (‡denotes graduate student author)

1. *Genetic signatures of psychopathology*. I pursue questions on specific SNPs, polygenic risk scores, epigenome-wide, and transcriptome-wide analyses. We genotyped >8,000 responders to WTC disaster and described polygenic signature of PTSD in the first batch of these data (Waszczuk, et al., 2020). In people with psychotic disorders, we found that schizophrenia polygenic risk score predicts 20-year trajectories of symptoms, functional and cognitive impairment, as well as diagnostic change from affective to non-affective psychosis (Jonas et al., 2019). Our transcriptome-wide study revealed a robust RNA signature of PTSD in whole blood (Kuan et al., 2017). To begin addressing limitations of peripheral blood, we subtyped blood cells and determined that gene expression signal for PTSD comes primarily from monocytes (Kuan et al., 2019).
    a. Jonas, K. G., Lencz, T., Li, K., Malhotra, A. K., Perlman, G., Fochtmann, L. J., ... & **Kotov, R.** (2019). Schizophrenia polygenic risk score and 20-Year course of illness in psychotic disorders. *Translational Psychiatry, 9*, 1-8 (PMC6856168).
    b. Kuan, P-F., Waszczuk, M. A., **Kotov, R.,** Clouston, S., Yang, X., Singh, P. K., Glenn, S. T., Wang, J., Bromet, E. J. & Luft, B. J. (2017). Gene expression associated with PTSD in World Trade Center responders: An RNA sequencing study. *Translational Psychiatry, 7*, 1297 (PMC5802695).
    c. Kuan, P. F., Yang, X., Clouston, S., Ren, X., **Kotov, R.,** Waszczuk, M., Singh, P. K., Glenn, S. T., Gomez, E. C., Wang, J., Bromet, E., & Luft, B. (2019). Cell type-specific gene expression patterns associated with posttraumatic stress disorder in World Trade Center responders. *Translational Psychiatry,* 9, 1 (PMC6341096).
    d. Waszczuk, M. A., Docherty, A. R., Shabalin, A. A., ... **Kotov, R**., & Luft, B. J. (2020). Polygenic prediction of PTSD trajectories in 9/11 responders. Psychological Medicine, 1-9 (PMC8186149).

2. *Neural markers of psychopathology*. Numerous biological abnormalities have been observed in schizophrenia relative to healthy comparison groups, but very few studies have included other psychotic disorders as a comparison, and thus it is largely unknown whether these markers are specific to schizophrenia. We considered a variety of EEG-based and fMRI-based markers, finding several that clearly distinguish schizophrenia from mood disorders with psychosis, with sensitivity and specificity approaching 80% (Foti et al., 2012; Mukherjee et al., 2016), which suggests that they are potential candidates for biomarker development. We also found that neural markers can effectivity predict first onset of a psychiatric disorder. For instance, reduced reward positivity predicted first onset of depression during the next 18 months (Nelson et al., 2016). A DTI study found that dysconnectivity between prefrontal cortex and amygdala also predicts depression onset (Jin et al., 2022).

a. ‡Foti, D., **Kotov, R.,** Bromet, E.J., & Hajcak, G. (2012). Beyond the broken error-related negativity: functional and diagnostic correlates of error processing in psychosis. *Biological Psychiatry*, *71*, 864-72 (PMC3334442).
b. ‡Jin, J., Delaparte, L., Chen, H. W., DeLorenzo, C., Perlman, G., Klein, D. N., ... & **Kotov, R.** (2022). Structural connectivity between rostral Anterior Cingulate Cortex and Amygdala predicts first onset of depressive disorders in adolescence. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging, 7*, 249-255.
c. Mukherjee, P., Sabharwal, A., **Kotov, R.,** Szekely, A., Parsey, R., Barch, D. M., & Mohanty, A. (2016). Disconnection between amygdala and medial prefrontal cortex in psychotic disorders. *Schizophrenia Bulletin, 42*, 1056-1067 (PMC4903065).
d. Nelson, B. D., Perlman, G., Klein, D. N., **Kotov, R.,** & Hajcak, G. (2016). Blunted neural response to rewards as a prospective predictor of the development of depression in adolescent girls*. American Journal of Psychiatry, 173,* 1223-1230 (PMID: 27363510).

3. *New phenotypes*. The DSM does not provide clear guidance for understanding extensive comorbidity among mental disorders. Structural analyses of comorbidity have consistently converged on the internalizing and externalizing dimensions, but almost none of these studies considered rare disorders (e.g., schizophrenia and bipolar disorder). I have done some of the first studies of this topic in adults and found evidence of five spectra (Kotov, Ruggero et al., 2011). To facilitate further progress, I organized a consortium of 151 experts in the field to outline this Hierarchical Taxonomy Of Psychopathology (HiTOP; Kotov et al., 2017). I continue to lead the effort, and the consortium is working on numerous aspects of new nosology (Kotov et al., 2020, 2021).
    a. **Kotov, R.,** Jonas, K. G., Carpenter, W. T., Dretsch, M. N., Eaton, N. R., Forbes, M. K., ... & South, S. C. (2020). Validity and utility of Hierarchical Taxonomy of Psychopathology (HiTOP): I. Psychosis superspectrum. *World Psychiatry, 19*, 151-172. (PMC7214958).
    b. **Kotov, R.,** Krueger, R. F., Watson, D., Achenbach, T. M., Althoff, R. R., Bagby, M., … & Zimmerman, M. (2017). The Hierarchical Taxonomy Of Psychopathology (HiTOP): A dimensional alternative to traditional nosologies. *Journal of Abnormal Psychology, 126*, 454-477. (PMID: 28333488)
    c. **Kotov, R.,** Krueger, R. F., Watson, D., Cicero, D. C., Conway, C. C., DeYoung, C. G., ... & Wright, A. G. (2021). The Hierarchical Taxonomy of Psychopathology (HiTOP): A quantitative nosology based on consensus of evidence. *Annual Review of Clinical Psychology, 17*, 83-108. (PMID: 33577350)
    d. **Kotov, R.,** Ruggero, C. J., Krueger, R. F., Watson, D., ‡Yuan, Q., & Zimmerman, M. (2011). New dimensions in the quantitative classification of mental illness. *Archives of General Psychiatry*, *68*, 1003-1011 (PMID: 21969458).

4. *Long-term course of psychotic disorders*. Few studies have been able to track representative samples of psychotic disorders from first episode long-term. Almost all existing prospective studies used special samples (e.g., patients in an academic hospital) or ended after several years. In an epidemiologic cohort followed for 25 years after first hospitalization, we found worsening illness course (Kotov et al., 2017). Moreover, social functioning showed no improvement over the two decades (Velhorst et al., 2017). Surprisingly, duration of untreated psychosis did not influence illness course, but rather was a product of a lead-time bias, which may be the result of limited care available in the community (Jonas et al., 2020). Long-term course enabled us to evaluate validity diagnostic entities, which revealed a qualitative difference between schizophrenia spectrum and mood disorders with psychosis, with schizoaffective disorder falling entirely into the former class (Kotov et al., 2013).
    a. Jonas, K. G., Fochtmann, L. J., Perlman, G., Tian, Y., Kane, J., Bromet, E. J., & **Kotov, R.** (2020). Lead-time bias confounds association between duration of untreated psychosis and illness course in schizophrenia. *American Journal of Psychiatry*, *177*, 327-334 (PMID: 32046533).
    b. **Kotov, R.,** Fochtmann, L., Li, K., Tanenberg-Karant, M., Constantino, E. A., Rubinstein, J., Perlman, G., Velthorst, E., Fett, A.-K. J., Carlson, G., & Bromet, E. J. (2017). Declining clinical course of psychotic disorders over the two decades following first hospitalization: Evidence from the Suffolk County Mental Health Project. *American Journal of Psychiatry, 174*, 1064-1074 (PMC5767161).

c. **Kotov, R.,** Leong, S. H., Mojtabai, R., Erlanger, A. C. E., Fochtmann, L. J., Constantino, E., ... & Bromet, E. J. (2013). Boundaries of schizoaffective disorder: revisiting Kraepelin. *JAMA Psychiatry, 70*, 1276-1286 (PMID: 24089086).
d. Velthorst, E., Fett, A. K., Reichenberg, A., Perlman, G., van Os, J., Bromet, E., & **Kotov R.** (2017). The 20-year longitudinal trajectories of social functioning in individuals with psychotic disorders. *American Journal of Psychiatry, 174*, 1075-1085 (PMC5474222).

5. *Illness course in World Trade Center responders*. I have been studying the impact of trauma on the trajectories of mental and physical health of WTC responders. My research demonstrated that PTSD, depression, physical problems often run chronic course in WTC responders, and maladaptive personality underpins much of this chronicity (Waszczuk et al., 2018). We found that PTSD and associated impairments are substantially exacerbated by stressful life events (Zvolensky et al., 2015). We also found that PTSD contributes to onset of other health problems, such as lower respiratory symptoms and cognitive impairment (Clouston et al., 2016; Kotov et al., 2015). Overall, this work has characterized course of mental health in WTC responders and identified substantial health care and research needs.
    a. **Kotov, R.,** Bromet, E. J., Schechter, C. B., Broihier, J., Feder, A., .., & Luft, B. J. (2015). Posttraumatic stress disorder and the risk of respiratory problems in World Trade Center responders: Longitudinal test of a pathway. *Psychosomatic Medicine, 77*, 438–448 (PMID: 25919367).
    b. Clouston, S., **Kotov, R.,** Pietrzak, R. H., Luft, B. J., Gonzalez, A., Richards, M., …, & Bromet, E. (2016). Mild cognitive impairment among World Trade Center responders: Long-term implications of re-experiencing the 9/11 terrorist attacks. A*lzheimers & Dementia: Diagnosis, Assessment, and Disease Monitoring*, *4*, 67-75. (PMCID: PMC5011166).
    c. Waszczuk, M. A., Li, K., Ruggero, C. J., Clouston, S. A., Luft, B. J., & **Kotov, R.** (2018). Maladaptive personality traits and 10-Year course of psychiatric and medical symptoms and functional impairment following trauma. *Annals of Behavioral Medicine, 52,* 697–712. (PMID: 30010707).
    d. Zvolensky, M. J., **Kotov, R.,** Schechter, C. B., Gonzalez, A., Vujanovic, A., Pietrzak, R., …, & Luft, B. J. (2015). Post-disaster stressful life events and WTC-related posttraumatic stress, depressive symptoms, and overall functioning among responders to the World Trade Center disaster. *Journal of Psychiatric Research, 61*, 97-105. (PMID: 25499737).

Complete List of Published Work in Google Scholar (over 200 peer-reviewed papers):

PubMed: https://www.ncbi.nlm.nih.gov/pubmed/?term=Roman+Kotov