

Editorial

Phenotypic Effects of Polygenic Risk for Schizophrenia: What Have We Learned So Far?

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The results of large genome-wide association studies of schizophrenia (SZ) can be used to calculate an individual's polygenic risk for SZ (e.g., [1]). This polygenic risk score (PRS) is a weighted sum of SZ risk alleles, and thus holds promise to be used in clinical care someday, e.g., in prevention, diagnosis and treatment of mental disorders (e.g., [2]). It can be used to uncover other phenotypes, such as behavioral traits or disorders, that are influenced by SZ-PRS, and this issue of the *Journal of Psychiatry and Brain Science* aims to summarize some of the knowledge that has emerged to this regard. Three reviews and two original research articles are contained in this Virtual Special Issue. Schaupp, Schulze and Budde [3] provide an excellent summary of studies researching the associations of SZ-PRS and cognition. Their finding of inconsistent results, both in patients and the general population, albeit characteristic for a developing field, points to a need for larger sample sizes when studying the genetics of cognition, and highlights further methodological problems. Adorjan and Papiol [4] review the relationship of cannabis consumption, SZ, and the SZ-PRS, and discuss accumulating evidence that a high polygenic risk for SZ may be predisposing individuals to cannabis abuse. Thus, consumption of cannabis may not only be understood as an environmental risk factor for SZ, but also as a type of gene-environment correlation/interaction. The last review article of Bengesser and Reininghaus [5] highlights the interesting finding that the SZ-PRS may be used to delineate bipolar disorder patients that respond to lithium from those who do not [6], and can be understood to emphasize the need for biologically-based diagnosis of mental disorders. The original research article of Yasmeeen, Papiol, Falkai, Schulze, & Bickeböller [7] researches effects of SZ-PRS in correlated target phenotypes, using both *in-silico* and empirical data of the PsyCourse study [8]. Results of empirical analyses show that the addition of SZ-PRS to statistical models explaining psychosocial functioning (the Global Assessment of Functioning score) improves model fit, which is further increased when current symptom status is additionally taken into account. Finally, the neuroimaging study of Eberle *et al.* [9] demonstrates that polygenic scores for SZ can be used to gain a more fundamental understanding of gene-environment interactions. In this study, the authors researched connectivity of the nucleus accumbens, a major component of the brain's reward circuitry. In healthy individuals, polygenic risk for SZ was associated with a shift towards SZ-like

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connectivity, and this change was intensified by higher levels of early life stress.

In summary, this Virtual Special Issue provides a mixed bag of findings that already indicates some of the great benefits further research on PRS may bring. I'd like to express my gratitude to all authors and reviewers who made this Virtual Special Issue possible. Also, I want to thank the editorial office of the *Journal of Psychiatry and Brain Science* for their continuous support.

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