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PsyCourse x Weather: the impact of weather changes on mental health

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The impacts of weather, weather changes, climate and climate change do not only affect the physical but also the mental health of humans. It ranges from (post traumatic) stress disorders, depression and anxiety to cognitive and behavioural maladaptation and disorders. Form and characteristics of the impact depend on personal and social factors. Personal predispositions like psychological disorders, gender, age and genetics can influence psychical resilience against environmental impacts.

In PsyCourse x Weather we conduct a cross-sectional study. We compare the impact of weather and weather changes on the quality of life (QOL) of people with affective and psychotic disorders, like schizophrenia and bipolar disorder, with the QOL of a healthy control group. The objective is to find out whether there are differences in the impact of weather and climate on the QOL between patients and a control group and if gender and genetic factors influence the impacts. Health data was gathered from the 17 locations in Germany and Austria of the PsyCourse study (PsyCourse 2015), like the WHOQOL, age, gender and the polygenic risk score. As predictors we use meteorological and air hygienic reanalysis data from ERA5 and CAMS. We include parameters like precipitation, air pressure, ozone, particulate matter, wet bulb globe temperature (WBGT), heat wave and cold stress wave indices, summarised to periods of 14 days and 28 days to reflect the time span of the WHO quality of life questionnaire (WHOQOL) and to include longer-term weather conditions. As a result of regression analysis using generalized additive models, we find that meteorological and air hygienic variables have a rather marginal impact. The fact of having a psychiatric disease has in general a strong influence on QOL compared to weather. The mean QOL (scale ranging from 4 to 20, the higher the number the higher the QOL) of the groups is 17 for the control group and 13.1 for the patients. Nevertheless, we find connections between atmospheric changes and the QOL. For our control group we identify heatwave and WBGT as relevant parameters. While for the patients we find ozone, precipitation and particulate matter as influencing factors. During the 14-day periods there are two significant parameters for the control group with reduced influence in the 28-day periods. In contrast, patients are impacted by more parameters with increasing impacts from the 14-day to the 28-day periods. We also identify differences between male and female. In the control group, heatwaves have negative impacts on the group, while males are more affected compared to females. Males in the patient group are also negatively impacted by heatwaves, yet not significantly, females however have increased QOL

during heatwaves.

PsyCourse (2015): Home. Available online at <http://www.psycourse.de/>, updated on 1/13/2015, checked on 8/25/2025.