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A comparative linguistic analysis of narratives produced by individuals at high- vs. low-risk for psychosis during COVID-19

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Introduction: COVID-19 has had a drastically negative effect on mental health in the general population. Increased overall levels of depression, anxiety, stress, loneliness, and psychosis-like symptoms have been documented since the start of the pandemic. In order to gain a better understanding of the elevation in psychosis-risk among the general population, we examined narratives written by both high and low psychosis risk individuals reflecting on the pandemic. Linguistic analysis has proven to be an effective method of understanding internal processing and emotions.

Methods: 430 respondents completed an anonymous, online survey evaluating mental, social, and physical wellbeing. Mental health was assessed by the Depression, Anxiety, and Stress Scale (DASS); the UCLA Loneliness Scale, and the Prodromal Questionnaire-16 (PQ-16). Social wellbeing was assessed by the Social Network Index (SNI). Respondents completed a series of questions on demographics, physical health, previous out of body experiences or auditory hallucinations, and past trauma. Participants were asked to write up to 10 lines of text reflecting on how COVID-19 has affected them, their families, friends, and communities. Resulting narratives were analyzed using the Linguistic Inquiry and Word Count Program (LIWC). LIWC generates basic linguistic variables, such as % of "I" words, social words, positive and negative emotions, and cognitive items. LIWC also generates 4 variables on writing style: analytic, clout (confidence), authenticity, and emotional tone.

Results: Of the total respondents, 18.4% met criteria as being high-risk for psychosis (Ising et al., 2012), while 81.6% were categorized as low-risk. High-risk respondents reported auditory hallucinations and out of body experiences at a significantly higher rate, further validating their elevated risk status. There was no significant difference between groups in total word count, but the two groups differed significantly in LIWC emotional tone and negative emotion scores. High-risk individuals produced more negative emotion words, and negative emotion word frequency was associated with increased PQ distress scores. The mean number of positive emotion words was inversely correlated with increased PQ distress scores. Emotional tone was correlated with increased PQ total scores as well as distress scores. There was a significantly increased report of past history of trauma in high-risk individuals ($p < 0.001$). High-risk participants also reported significantly more loneliness and reduced social networks. Finally, high-risk respondents showed increased depression, anxiety, and stress on DASS compared to the low-risk group.

Discussion: Participants at higher risk for psychosis had significantly worse mental health overall. Automated text analysis suggests there are differences in both writing style and content that reflect the inner psychological states of those suffering from symptoms of psychosis or poor mental health. Future research should explore these differences further by comparing other variables (such as word use) between those at high- and low-risk for psychosis. In addition, drawing parallels between high-risk individuals and individuals with diagnosed psychosis may also reveal important information about the relationship between linguistics and psychotic symptomatology.

Keywords:

Narratives, COVID-19, Psychosis