medium-wide commitment shortage present across online platforms and pursuits. In that sense, online information-seeking may not be fundamentally different from online befriending. From "blocking" to "unfollowing", "unfriending" and "ghosting", the abundance and popularity of online relationship-terminating functions and behaviors speak to this phenomenon.

Relatedly, attention-deficit/hyperactivity disorder is very commonly diagnosed in individuals with pathological Internet use, variably defined[9]. However, with the pace of online life, competition from countless sites, visual and auditory stimuli meant to drive traffic, and difficult-to-ignore "alerts" and "notifications", one need not suffer from pathological Internet use to appreciate an Internet-inattention link that seems like an intrinsic characteristic of online psychology.

The difficulty sustaining attention online, the weakness of online bonds and the weak commitment to online content suggest an environment-wide retention challenge that would be crucial to address in two activities where focus and commitment are indispensable: psychotherapy and education. To that end, various mitigating factors that have been proposed[3] in the mental health and education literature to enhance retention would seem very relevant in the COVID-19 era.

These include nurturing a medium-defying bond between patient/student and therapist/teacher; participative goal-setting that views users as collaborative partners; a hybrid or blended approach that integrates some in-person contact into remote delivery; underscoring the credentials of remote therapists/teachers so they may be taken more seriously by users; inclusive design elements that reflect the diversity of platform users; and "gamification", which borrows from video game development to increase platform engagement.

Moving therapy and education out of their traditional, time-honored settings in response to the pandemic has allowed the continued provision of mental health care and saved the academic year. But our knowledge of Internet psychology, as well as data from studies into digital self-help platforms and MOOCs, suggest that online mental health treatment and teaching cannot yet be considered an interchangeable, quality-assured alternative to conventional practice. Well-documented challenges with retention highlight this as a real obstacle to be fully investigated and addressed before online therapy and education can be embraced as reliable long-term solutions.

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Mental health problems among COVID-19 survivors in Wuhan, China

The COVID-19 pandemic is profoundly impacting mental health worldwide[1-3]. Wuhan, China has been the first city to experience the emergency of COVID-19 and its high hospitalization and casualty rates, as well as the mandatory curfews that were strictly enforced for infection control, with their significant mental health implications[4]. Although a large number of hospitalized COVID-19 patients recovered and met the clinical criteria for discharge, we hypothesized that mental health problems would occur as major sequelae among COVID-19 survivors.

A total of 4,328 hospitalized COVID-19 patients who met relevant clinical criteria[5] were discharged between January 18 and March 29, 2020 from five hospitals in Wuhan, China (Wuhan No.1 Hospital, Wuhan Wuchang Hospital, Hubei Provincial Hospital of Traditional Chinese Medicine, Hubei Provincial Hospital of Integrated Chinese and Western Medicine, and Wuhan Pulmonary Hospital).

All these COVID-19 survivors (median age: 59 years, interquartile range, IQR: 47-68 years; 54.1% female) were followed up and assessed by mental health care specialists. The evaluation period started on the date of hospital discharge and continued through July 28, 2020. Among the survivors, 156 (3.6%) dropped out at some point of the follow-up.

The validated Chinese versions of the Patient Health Questionnaire-9 (PHQ-9)[6] and the Generalized Anxiety Disorder-7 (GAD-7)[7] were administered to evaluate post-discharge depression and anxiety.

As a reference group, 1,500 randomly selected individuals from the general population of Hubei province were assessed using the same instruments during the same time frame. Chi-square tests were used to compare the prevalence of mild-to-severe mental health problems in the two samples. Among COVID-19 survivors with depression or anxiety, logistic regression analysis was applied to test whether several variables (including age, gender, education, income level, comorbid chronic physical diseases, and retesting positive for SARS-CoV-2) influenced the severity of the mental health condition.

The study was approved by the institutional ethics board of Tongji Medical College, Huazhong University of Science and Technology. All participants provided their informed consent.

The median duration of the follow-up period was 144.0 days

(IQR: 135-157). During this period, 615 COVID-19 survivors (14.2%) were found to have clinically defined depression (i.e., a score of at least 5 on the PHQ-9) and 528 (12.2%) to have clinically defined anxiety (i.e., a score of at least 5 on the GAD-7). Four survivors attempted suicide. Compared to the reference group, the risk of both depression and anxiety in COVID-19 survivors was significantly higher (relative risk, RR=1.2, 95% CI: 1.1-1.4, p=0.002; and RR=1.4, 95% CI: 1.2-1.7, p=0.001, respectively).

Among the 615 survivors with depression, the risk for a severe condition (i.e., a score of at least 10 on the PHQ-9) was significantly higher in individuals living alone (odds ratio, OR=5.2, 95% CI: 3.6-7.1, p<0.001), in females (OR=3.4, 95% CI: 2.8-5.3, p<0.001), in those with a low income level (OR=2.4, 95% CI: 1.8-3.5, p=0.012), in those with a comorbid chronic physical disease (OR=2.8, 95% CI: 2.1-3.7, p=0.032), and in those who retested positive for SARS-CoV-2 (OR=10.4, 95% CI: 8.3-12.5, p<0.001). Age did not significantly influence the severity of depression.

Among the 528 COVID-19 survivors with anxiety, the risk for a severe condition (i.e., a score of at least 10 on the GAD-7) was significantly higher in individuals with a low educational level (OR=3.5, 95% CI: 3.1-4.2, p<0.001), in unmarried subjects (OR=1.7, 95% CI: 1.2-2.8, p=0.025), and in those who retested positive for SARS-CoV-2 (OR=4.7, 95% CI: 3.7-5.8, p<0.001). Age, gender and other social status indices did not influence the severity of anxiety.

All the four COVID-19 survivors who attempted suicide were elderly, had retested positive for SARS-CoV-2, and had experienced severe levels of depression and anxiety.

In summary, this follow-up study documents that mental health problems among COVID-19 survivors in Wuhan are significantly more common than in the general population of the Hubei province. Risk factors for more severe mental health problems include retesting positive for SARS-CoV-2, living alone, female gender, comorbid chronic physical diseases, and low education and income levels. Clinicians and policy makers should be aware of the risk of mental health sequelae in COVID-19 survivors and implement appropriate preventive and treatment measures.

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Differential impact of COVID-related lockdown on mental health in Germany

The World Health Organization declared COVID-19 outbreak a global pandemic on March 11, 2020. Following the rapid and uncontrollable course of the pandemic, many governments decided to massively restrict public and private life to prevent further spread of the virus. Especially the measures to enforce "physical distancing" during the "lockdown" can be seen as a global macrostressor affecting a major part of mankind in an unprecedented manner.

Lockdown can have manifold psychosocial consequences, including unemployment and precarious economic situations, marital and familial discord, and domestic violence. Subsequent psychological responses, such as feelings of loneliness, anger or preoccupation about the future, are likely. This was picked up by mass media as well as experts[e.g.,1], warning the public about possible negative effects of the lockdown on mental health.

While many speculations and hypothetical considerations arose, there is a paucity of empirical real-world data. Initial *ad-hoc* studies have been conducted quickly, reporting high incidence of negative mental health outcomes, such as depression and anxiety[e.g.,2]. Thereby, reports inferred detrimental consequences for the mental state of the general population.

However, those studies have several shortcomings. Most of them applied cross-sectional designs, which may capture very transient symptoms rather than long-lasting fluctuations in mental states, and do not allow comparison with pre-lockdown measures. Also, the questionnaires that were used are often only screening tools rather than in-depth assessment instruments. In contrast, more meaningful insights can be gathered from longitudinal studies built on continuous, detailed assessments of mental health before and during the lockdown.

We present here extensive data on behavioral and mental health changes in relation to the lockdown of public life in Germany. We capitalize on a population-based, prospective, longitudinal cohort study termed LORA (Longitudinal Resilience Assessment[3]), conducted in the Rhine-Main region since 2017. Its main aim is investigating resilience – i.e., the ability to maintain mental health despite difficult life circumstances – in initially healthy adults (assessed by the Mini International Neuropsychiatric Interview[4]). After an extensive baseline evaluation, major life events, micro-stressors in the form of daily hassles, and mental