



NEUROSCIENCE LAB

COVID-19

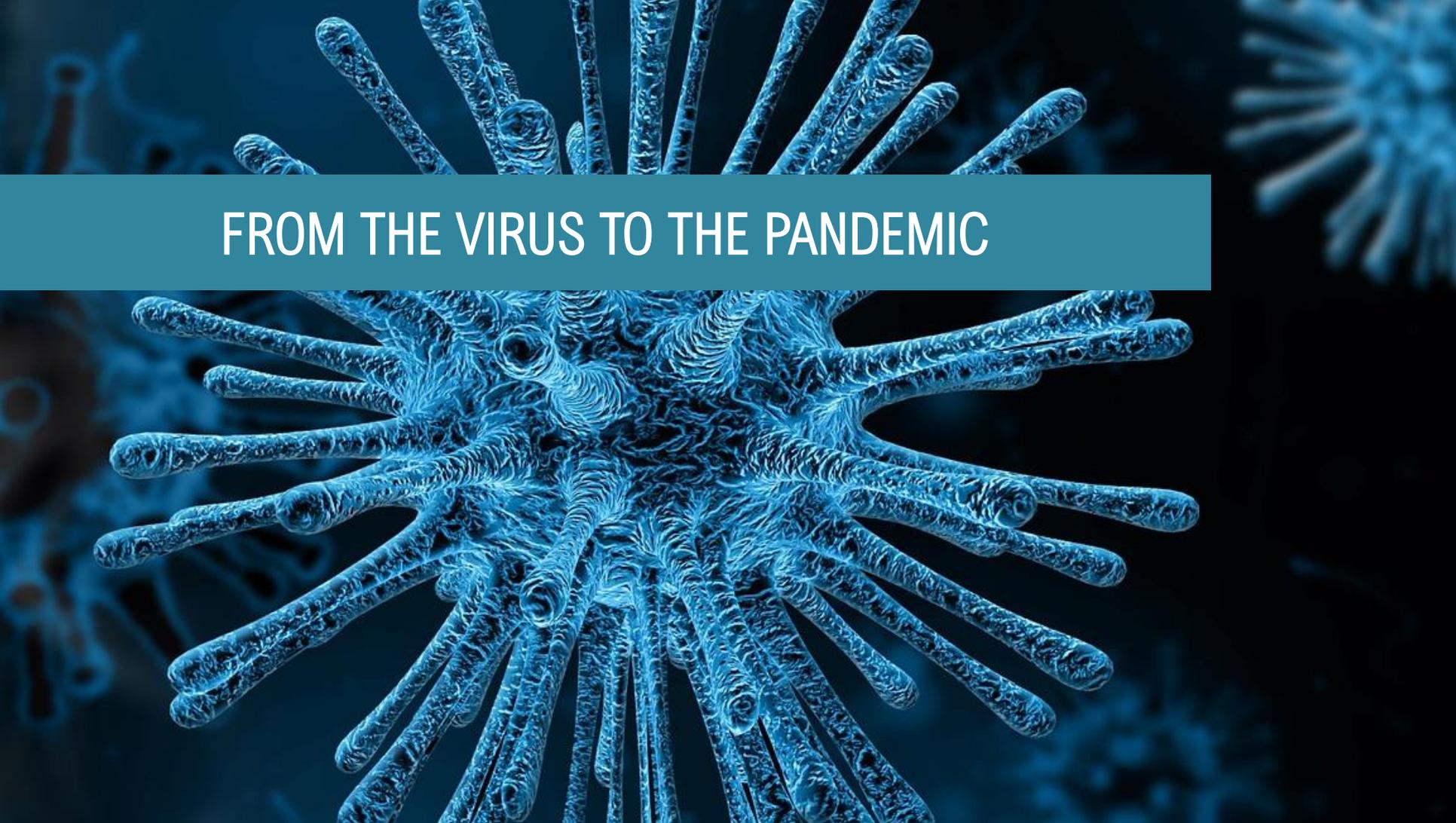
COVID-19 pandemic: the impact on socio-emotional well-being in a neuroscientific perspective

June 2020



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A detailed scanning electron micrograph of a coronavirus particle. The virus has a central, roughly spherical core with a textured surface. From this core, numerous long, thin, and slightly curved spikes radiate outwards, giving the virus a crown-like appearance. The entire structure is rendered in shades of blue and cyan against a dark background. A semi-transparent teal banner is overlaid across the middle of the image, containing the title text.

FROM THE VIRUS TO THE PANDEMIC

From the virus to the pandemic

March 11th 2020

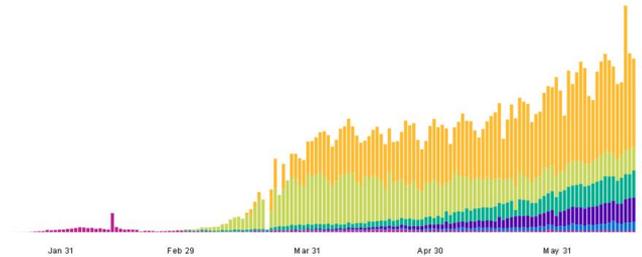
The new COVID-19 (or 2019-nCoV) coronavirus was first identified in Wuhan, China, in [December 2019](#).

In just a few weeks, the number of COVID-19 cases has undergone a dramatic increase in many other cities in China, [and then spread all over the planet](#), so much so that on January 30, 2020 the World Health Organization (WHO) declared COVID-19 "an international public health emergency".

Subsequently, on 11 March 2020, the WHO itself raised the alarm level by officially defining COVID-19 [as a pandemic](#).

COVID-19 belongs to the same family as SARS and MERS-CoV, i.e. zoonotic infections. The rapid spread of the virus is attributable to its characteristics: genetic originality compared to other known viruses, high contagiousness, ease of transmission, relative independence from climatic conditions.

Case Comparison WHO Regions



Number of confirmed cases worldwide (<https://covid19.who.int>)

Just the high contagiousness and the serious impact on the health system have led all countries to adopt [containment measures](#), including social isolation, the use of safety devices and extraordinary personal and environmental hygiene measures, the lockdown of companies .

Chronology of events in Italy

A dense succession of events in Italy

January 31: the **first two cases confirmed in Rome**, a 66- and 67-year-old Chinese tourist couple from the province of Hubei

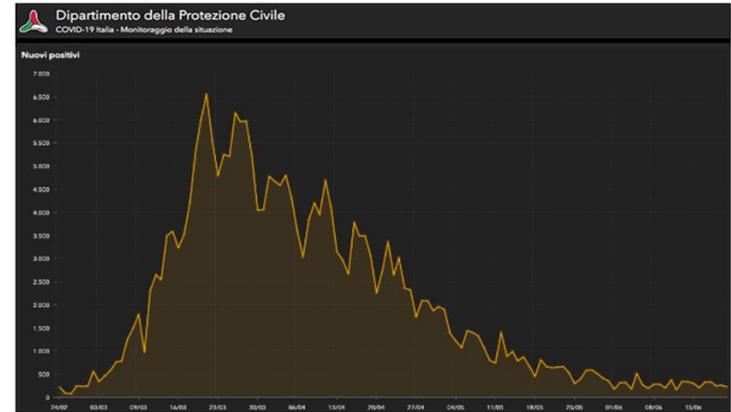
February 2: virologists isolate the genomic sequence of the virus

February 3: 56 Italian citizens residing in Wuhan are repatriated from China with a special flight of the Italian Air Force

February 20: **first confirmed case of an Italian patient** in Codogno

February 23: the Council of Ministers issues the decree-law which sanctions **the total closure of the municipalities with active outbreaks** and the suspension of demonstrations and EVENTS in the same municipalities

February 25: with a decree of the President of the Council of Ministers relating to the regions of Emilia-Romagna, Friuli-Venezia Giulia, Lombardy, Veneto, Piedmont and Liguria, government measures are extended in addition to the 11 municipalities epicenter of coronavirus outbreaks



La situazione in Italia: 21 giugno 2020, ore 18.00

ATTUALMENTE POSITIVI

20972

DECEDUTI

34634

GUARITI

182893

Number of positive cases in Italy, updated to 21 June 2020

<http://www.salute.gov.it/portale/nuovocoronavirus/dettaglioContenutiNuovoCoronavirus.jsp?area=nuovoCoronavirus&id=5351&lingua=italiano&menu=vuoto>

March 1: a new decree of the Prime Minister extends some of the previous measures and introduces further ones, to guarantee uniformity throughout the national territory

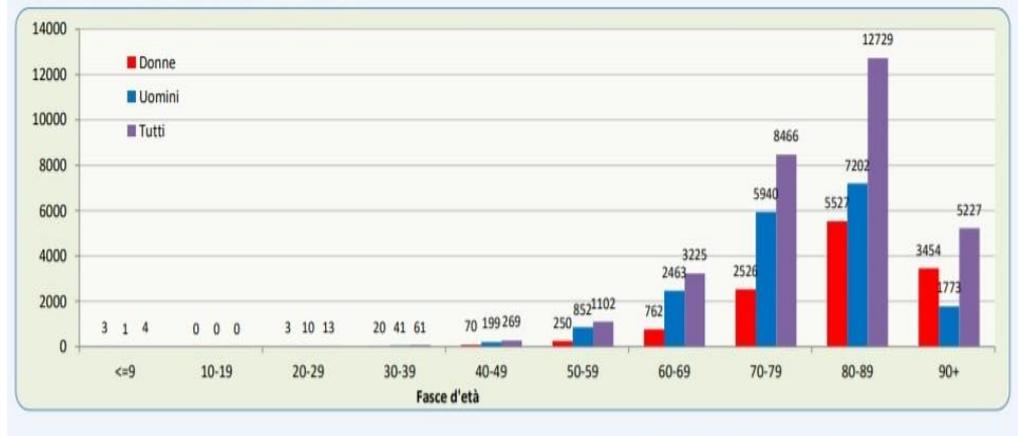
Chronology of events in Italy

#IoRestoaCasa decree

March 4: a further presidential decree announces measures valid **throughout the national territory**: the suspension of teaching activities in all schools of all levels and universities until the following March 15

March 7: the Prime Minister issues a new decree with restrictive measures that apply to Lombardy and 14 provinces of the Center-North for a total of 16 million people, and others that affect all of Italy

March 11: the "**#IoRestoaCasa Decree**" is published, a provision that extends to all the national territory the provisions of the decree of March 8: common retail commercial activities, educational activities, restaurant services are suspended. gatherings of people in public places or open to the public



Number of deaths in Italy by age group (https://www.epicentro.iss.it/coronavirus/bollettino/Report-COVID-2019_21_maggio.pdf)

March 21: the Prime Minister Giuseppe Conte announces the implementation of more stringent measures in national broadcasting which foresee **the closure of all those activities not deemed necessary** for the Italian production chain in relation to the contingent situation

Chronology of events in Italy

DPCM Phase 2

March 22: a new ordinance is adopted that prohibits all natural persons from moving or moving with public or private means of transport in a municipality other than that in which they are located, except for proven work needs, of absolute urgency or for reasons of health. The measures adopted were further extended until May 3rd

April 26: Prime Minister Giuseppe Conte has announced a new Prime Minister's Decree in force since May 4th, 2020, which has foreseen the start of the so-called "**Phase 2**", that is, a gradual relaxation of the previous containment measures



PROTEZIONE CIVILE
Presidenza del Consiglio dei Ministri
Dipartimento della Protezione Civile

For further information:
<http://www.governo.it/it/coronavirus-misure-del-governo>

PCM-DPC dati forniti dal Ministero della Salute

AGGIORNAMENTO 23/06/2020 ORE 17.00

Regione	POSITIVI AL nCoV				DIMESSI/ GUARITI	DECEDU TI	CASI TOTALI	INCREMENTO CASI TOTALI (rispetto al giorno precedente)	TAMPONI	CASI TESTATI
	Ricoverati con sintomi	Terapia intensiva	Isolamento domiciliare	Totale attualmente positivi						
Lombardia	910	51	11.942	12.903	63.691	16.579	93.173	+62	971.721	580.317
Piemonte	330	18	1.522	1.870	25.325	4.059	31.254	+6	394.940	247.598
Emilia	121	12	956	1.089	22.935	4.236	28.260	+17	460.600	273.800
Veneto	30	1	533	564	16.682	2.004	19.250	+3	888.273	392.124
Toscana	20	6	311	337	8.780	1.100	10.217	+6	316.933	219.565
Liguria	61	1	193	255	8.131	1.553	9.939	+4	138.694	74.514
Lazio	184	16	686	886	6.315	832	8.033	+8	322.341	263.506
Marche	11	0	482	493	5.288	994	6.775	+1	130.121	78.583
Campania	47	0	94	141	4.062	431	4.634	+10	267.306	128.347
Puglia	32	0	158	190	3.797	542	4.529	+2	165.598	109.358
Trento	0	0	51	51	3.948	466	4.465	+1	113.091	59.170
Friuli V.G.	14	0	57	71	2.890	344	3.305	0	176.470	102.267
Abruzzo	46	3	342	391	2.431	460	3.282	0	99.976	67.151
Sicilia	17	5	110	132	2.661	280	3.073	+1	194.935	161.423
Bolzano	3	1	85	89	2.252	292	2.633	0	80.538	38.949
Umbria	4	1	7	12	1.348	78	1.438	0	89.831	61.929
Sardegna	7	0	8	15	1.213	132	1360*	0	77.129	65.151
Valle d'Aosta	3	0	2	5	1.042	146	1.193	0	17589**	13.474
Calabria	9	0	19	28	1.050	97	1.175	+1	89.226	87.180
Molise	3	0	40	43	378	23	444	0	20.902	19.888
Basilicata	1	0	7	8	366	27	401	0	37.613	36.833
TOTALE	1.853	115	17.605	19.573	184.585	34.675	238.833	+122	5.053.827	3.081.127

Data updated to 23 June 2020 (<https://github.com/pcm-dpc/COVID-19/blob/master/schede-riepilogative/regioni/dpc-covid-19-ita-scheda-regioni-20200623.pdf>)

SOCIO-PSYCHOLOGICAL REACTIONS

Q₁₀ U₁ A₁ R₁ A₁ N₁ T₁ I₁ N₁ E₁

The pandemic and the social alarm

Investigations into the state of worry and fear

The alarm generated worldwide by the pandemic from COVID-19 has been so invasive as to raise a state of concern and fear spread among citizens, so much so that some experts have coined **the term "Coronaphobia"**¹.

Research conducted **in Canada** in early February 2020 indicates

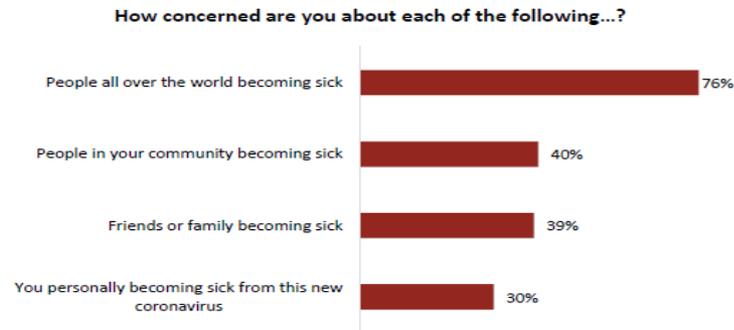


Fig. A - (http://angusreid.org/wp-content/uploads/2020/02/2020.02.04_Coronavirus.pdf)

that 76% of respondents were concerned about the spread of the virus worldwide and 30% were very afraid of the idea of getting sick. Actually, in that period, only 4 Canadian citizens (out of a population of about 37 million people) were infected (Fig. A).

Are you concerned about the spread of coronavirus in the U.S.?

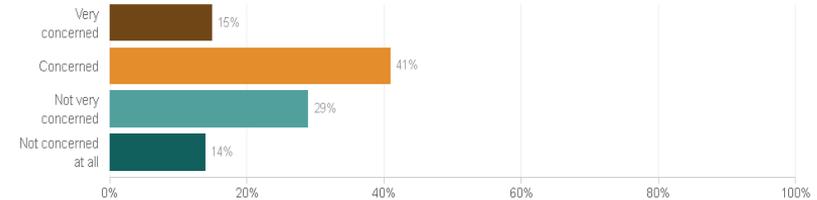


Fig. B - (<https://www.npr.org/sections/healthshots/2020/02/04/802387025/poll-most-americans-say-u-s-doing-enough-to-prevent-coronavirus-spread>)

In the United States, a survey was conducted on more than 2000 people in the period between 24 and 26 January. **37% of respondents** said they were seriously concerned about the spread of the virus, and 25% said they were even more alarmed about the coronavirus than it was about the 2014 Ebola case.

Another survey also conducted **in the USA** (Fig. B), found that at the beginning of February **66% of the respondents** thought that COVID-19 was a real threat and 56% were seriously worried. 26% said they did **not consider sufficient** the measures taken by the government to prevent the spread of the virus.

¹Coronaphobia: Fear and the 2019-nCoV outbreak. Asmundson JGG. Journal of Anxiety Disorders 70 (2020)

²https://morningconsult.com/wp-content/uploads/2020/01/200164_crosstabs_CORONAVIRUS_Adults_v1.pdf.

NS LAB | A global mental health issue

The historical record and the real possibility of psychological sequelae

When there is an **obvious threat** to our health and that of our loved ones, for our country, for the economy, for education and for employment, well-being and mental health can be severely impacted.

Previous experiences teach us that psychological sequelae represent a concrete possibility.



In **SARS-CoV-1** survivors over 40% of cases of Post-Traumatic Stress Disorder (PTSD), and between 30% and 40% of cases of depression, somatization disorders, panic attacks, and around 15% of cases of obsessive-compulsive disorder, up to 31-50 months after the onset of the infection. In addition, quarantined individuals, who worked in high-risk locations, or had friends or relatives who had contracted SARS, had a double, if not triple chance of developing high levels of PTSD compared to those who had not been exposed to virus.

During the Korean **MERS-CoV** epidemic in **2015**, patients hospitalized in isolation, after two weeks, had a higher probability

to report a significant delay in the normalization of neurophysiological parameters related to psychophysiological stress.



A 3-4-fold increase in the incidence of neurological symptoms was also found after the city lockdown after **the attack on the Boston Marathon**.

NS | A global mental health issue

LAB | COVID-19 pandemic: fear of getting sick and uncertainty about the future

In addition to the real risk to physical health, COVID-19 has also led to other repercussions: the adaptation of the family organization, the closure of schools, public places, work and places of worship, changes in working methods, and social isolation. All aspects, these, which can induce feelings of helplessness and resignation, a high sense of economic precariousness, with relative large-scale social consequences.

For these reasons, the COVID-19 pandemic has represented and represents a very strong psychological stressor.



Fear of getting sick and uncertainty about the future can cause individuals to fall into states of anxiety, depression and stress-related disorders.

This is why it is essential to understand and analyze the impact of an event of this magnitude, unprecedented in recent history, on the psychological health and well-being of individuals and communities.



NS | Socio-psychological reactions to the pandemic

LAB

The possible consequences of a hypervigilance reaction

Among the most impacting aspects from a psychological point of view, **the uncertainty and fear of the unknown stand out**, the consequent **fear of losing control**, which trigger an escalation of the sense of alarm, or of hyper-vigilance. This type of reactions, in addition to emotional malaise, also involve **cognitive difficulties**, such as attention, judgment and evaluation processes and decision-making processes. Nonetheless, on a social level, dysfunctional reactions can occur.



The psychological consequences and the most widespread social behaviors connected to this hypervigilance reaction can be:

ANXIETY, DEPRESSION AND OBSESSIVE-COMPULSIVE SYMPTOMS:

in an irrational attempt to maintain control over external reality, the obsessive thought of contamination, the discomfort with respect to one's personal hygiene and the constant need to wash or sterilize objects can become expressions of psychological suffering.

INSOMNIA AND SLEEPING DISORDERS:

the strong sense of alarm induces a hypervigilance reaction that also negatively affects the regulation of the sleep-wake rhythm.

INCREASE OF FRUSTRATION AND CONSEQUENTLY OF VERBAL, OR EVEN PHYSICAL, AGGRESSION :

the concrete risk of an increase in cases of domestic violence has been underlined, in particular on women, partly due to the coercion to cohabitation, partly due to the greater difficulty in asking for help (<https://www.amnesty.it/covid-19-in-italia-in-aumento-casi-di-violenza-domestica-nei-confronti-delle-donne>).

NS LAB | Socio-psychological reactions to the pandemic

The possible consequences of a hypervigilance reaction

STIGMATIZATION:

as highlighted also by the WHO, and by an article published in the USA¹ (February 2020), the stigma and the search for a scapegoat against, for example, people affected by the virus, doctors and authorities, up to actual racist attitudes towards citizens of other countries, are rather frequent phenomena during epidemics. This type of mechanism originates from the need to find an explanation, albeit irrational, to the impacting event and therefore to bring it back illusively under its control.

DIFFIDENCE AND COMLOTIST THEORIES:

the paroxysmal hypervigilance reaction can stimulate distrust towards the world of experts and medicine in general, or even persecutory or openly paranoid convictions, with the development of more or less imaginative conspiracy and hidden powers theories. This in turn may lead to contact with figures of doubtful competence or to undertake unnecessary if not harmful treatments.



ADDICTION BEHAVIORS:

Canadian statistics report that 20% of people aged 15 to 49 increased alcohol consumption during the pandemic. A similar phenomenon had been observed following the collapse of the Twin Towers in New York. But online compulsive shopping and online pathological gambling should also not be underestimated.

¹“Xenophobia 'Is A Pre-Existing Condition.' How Harmful Stereotypes and Racism are Spreading Around the Coronavirus”

<https://time.com/5775716/xenophobia-racism-stereotypes-coronavirus/>

NS LAB | Psychological repercussions of isolation

A completely new experience

Various studies on the consequences of quarantine in situations prior to Coronavirus have shown emotional reactions, including stress, low mood, irritability, insomnia, fear, confusion, anger, frustration, boredom and stigma, **many of which tended to persist** even after the end of the quarantine.

In general, factors that can aggravate the picture are the length of the isolation period, the lack of sufficient resources, limited and / or overcrowded living spaces, the difficulty in ensuring adequate medical care and, finally, economic insecurity .



The impact of the COVID-19 pandemic risked being further amplified **by social isolation and a sense of loneliness**, experienced closely associated with anxiety and depression reactions.

The confinement measures at home constituted **a completely new experience** for most western

citizens. The interruption of relationships with social support structures, the loss of everyday habits lived up to the day before, and the need to revolutionize the ways in which we performed our routine activities (from work to school, to sports, to shopping) have placed individuals in front of an abrupt need for adaptation.

NS LAB | Media and social network

The role of news in the development of symptoms of psychological distress

REACTIONS

Most of the studies conducted so far have shown that people with higher educational level represent a segment of the population most at risk of developing symptoms of psychological distress during the pandemic. This is also because they are the people with the easiest access to information.

In fact, on the one hand the search for information through the media can constitute a positive and constructive attitude, because **it feeds awareness**.



However, on the other hand, news about the virus is often characterized by alarmist tones, which can fuel **a social anxiety reaction**. To this must be added the role of social media, with the high risk of fake news. Frequent exposure to the media and news about the virus can exacerbate stress responses and amplify concern.

In turn, the increase in anxiety, uncertainty and confusion, further push to seek information, news, services, giving rise to a rather **insidious vicious circle**. The alarm generated by an **overexposure** to the media can lead to harmful behavior, both for the individual and for the health and social system in general (unmotivated visits to the emergency room, improper food supplies, stash of masks and disinfectant gel, improper movements on the national territory, etc.).

WHAT HAPPENS TO OUR BODY



NS | Isolation and social distancing

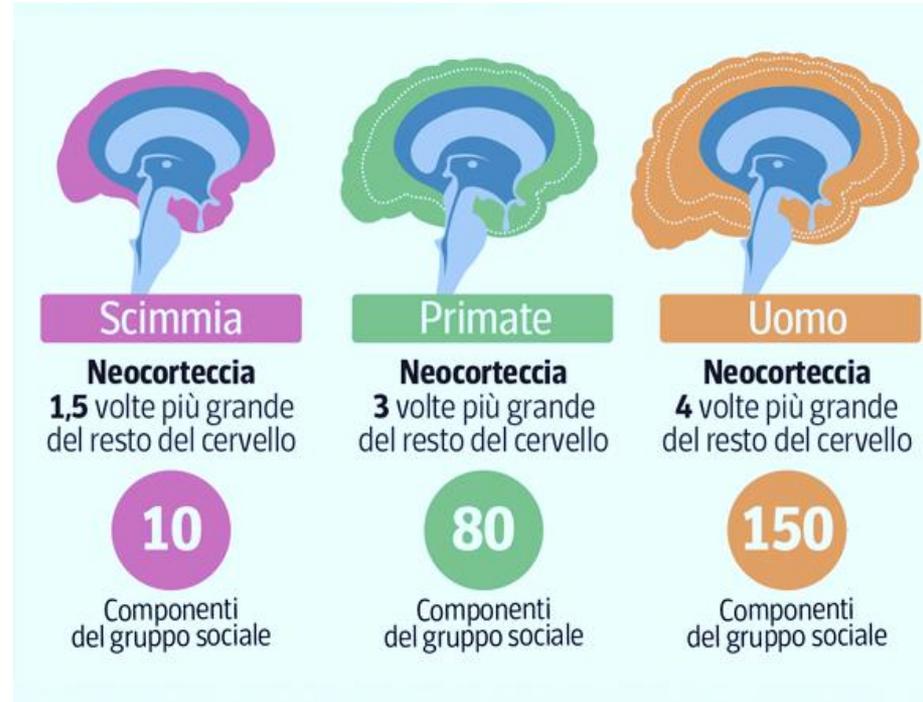
LAB | An "unnatural" condition

Isolation and social distancing represent an "unnatural" condition for human beings, in fact, Homo sapiens belongs to an animal group that stands out for its **marked social skills**, that of primates. Compared to other mammals of the same size, primates have larger brains: a feature related to survival needs, but also to **the ability to manage social relationships** within a group. The dimensions of the brain (in particular of the orbital prefrontal cortex) are linearly associated with the extension of one's social network.

Although challenging, living in a group has always been very beneficial for humans: to ward

off predators, to get food, to find the most suitable partner or someone who could look after the little ones in our place. For puppies, growing up in a group means having more opportunities to learn in a protected context. For everyone, it means greater ability to produce, remember and transmit knowledge.

This is why the spacing measures that were taken in Phase 1 **may have seemed surreal or aroused a sense of loneliness and uneasiness**.



(Illustration by Mirco Tangherlini)

Pandemic and social isolation

What happens in our organism?

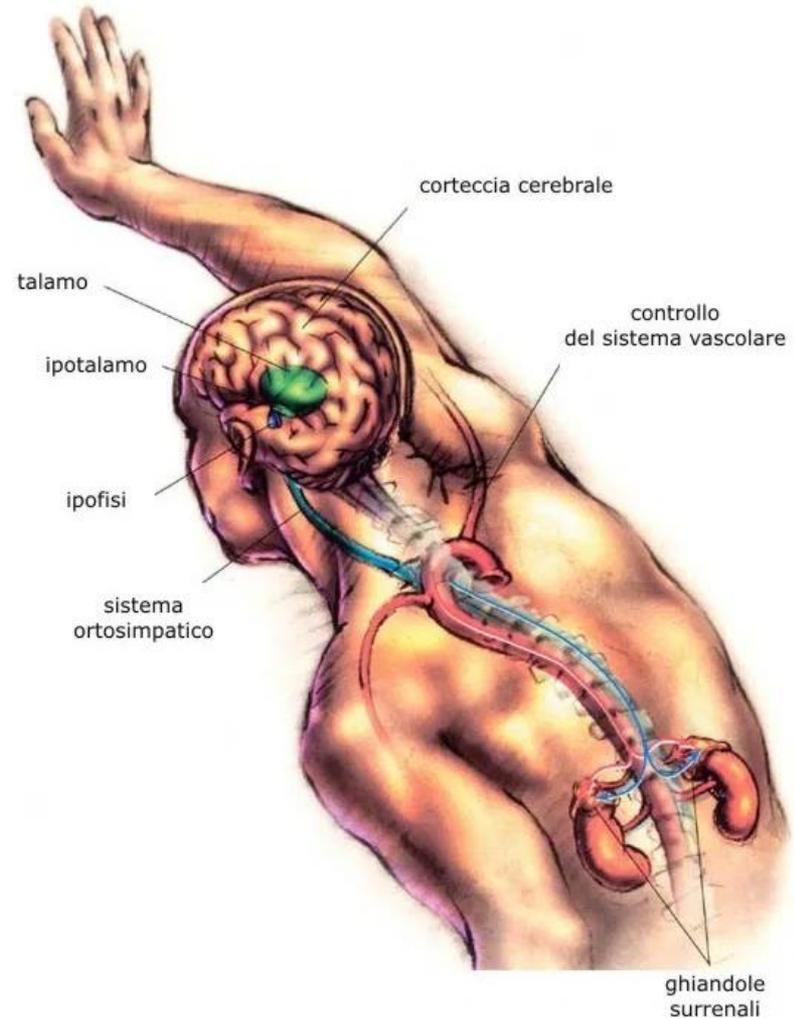
Psycho-neuro-endocrine-immunology (PNEI) is the science that investigates the relationships between the

psyche, the nervous system, the endocrine system and the immune system.

The highly stressful situations of external threat and social isolation (and the consequent sense of loneliness) **stimulate an increase in the activity of the hypothalamic-pituitary-adrenal (HPA) axis**, i.e. the neuro-endocrine system that is specifically responsible for the production of reactions of stress. This increase intensifies as the perceived threat and the isolation period continue, promoting the activation of possible **inflammatory processes and other phenomena to the detriment of the immune system**.

On the contrary, it has been shown that being in company and mutual help promote a reduction in HPA activity, in part

by affecting the release of oxytocin by the hypothalamus.



NS | Pandemic and social isolation

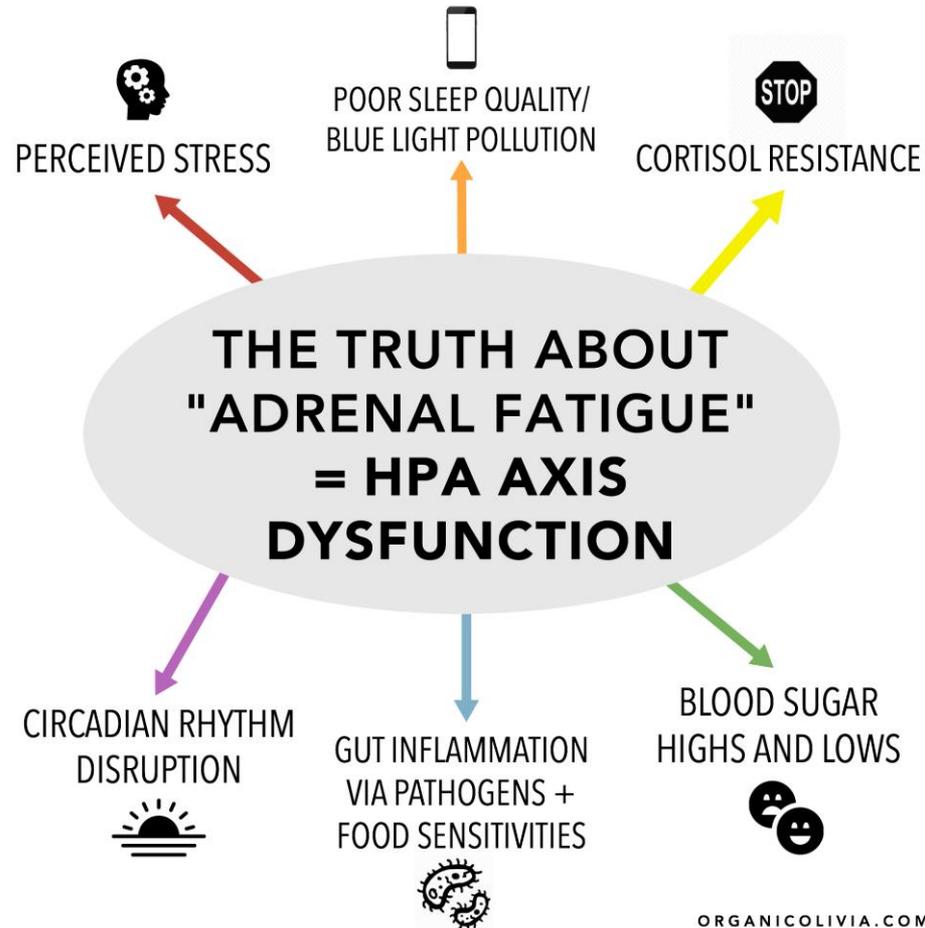
LAB | The effects on the central nervous system

PHYSICAL REACTIONS

Experimental studies have shown that the **subjective feeling** of loneliness and the experience of isolation and loss of social relationships can constitute **a risk factor for a wide range of symptoms (see figure) and pathologies**, both physically and psychologically, and increase the risk of cardiovascular and neurodegenerative diseases, as

well as promoting immunosuppression. This is explained by the fact that the prefrontal cortex in humans, which also deals with assigning meanings and interpreting experiences and environmental signals, also plays a leading role in managing neural, hormonal and behavioral responses.

Therefore, not only the "real" presence / absence of other people is able to modulate the HPA activity, but **much also depends on the subjective interpretation and psychological elaboration by the brain of this situation.**



NS LAB | The experience of danger and the symptoms of anxiety

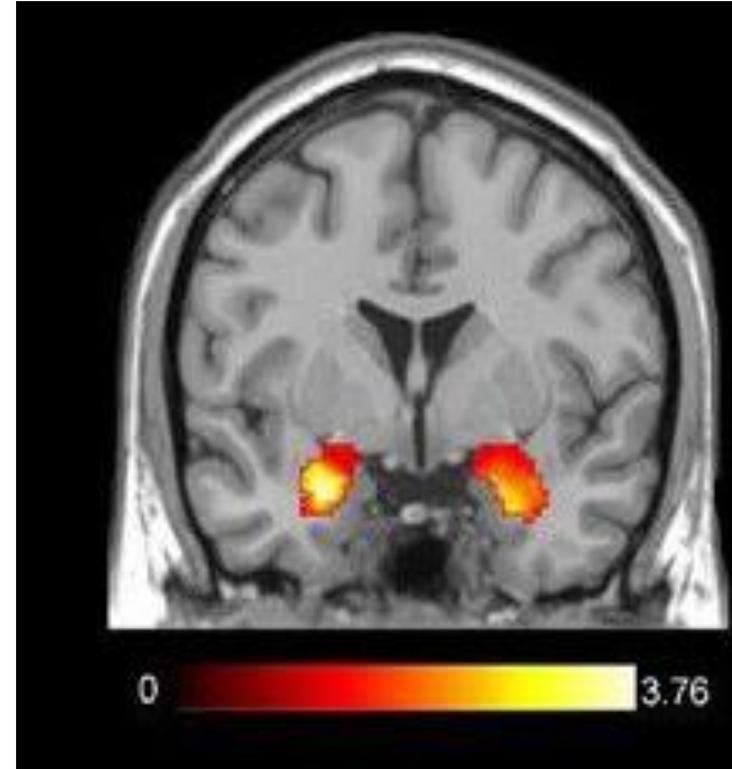
The limbic system and the amygdala

Similarly, experiences of threat, of danger and the consequent alarm and anxiety reactions, such as those that may have occurred during the pandemic, are related to **an intense flow of signals that travels through the prefrontal cortex and the regions of the limbic system**, in particular the amygdala and the terminal stria, to reach the brainstem and the hypothalamus.

The areas of the limbic system

involved in this circuit are precisely **those responsible for managing alarm, fear and anxiety reactions**, which then re-project to HPA.

The more threatening and long-lasting the stimulus situations, the more this neural network can induce a wide range of behavioral and physiological responses, even very intense, **so as to turn into symptoms**, as is happening in the context of the pandemic.



Activation of the amygdala in response to fear stimuli - Author: G.KONSTANTINA, 2017

NS LAB | The blockade of rationality and the dominance of fear

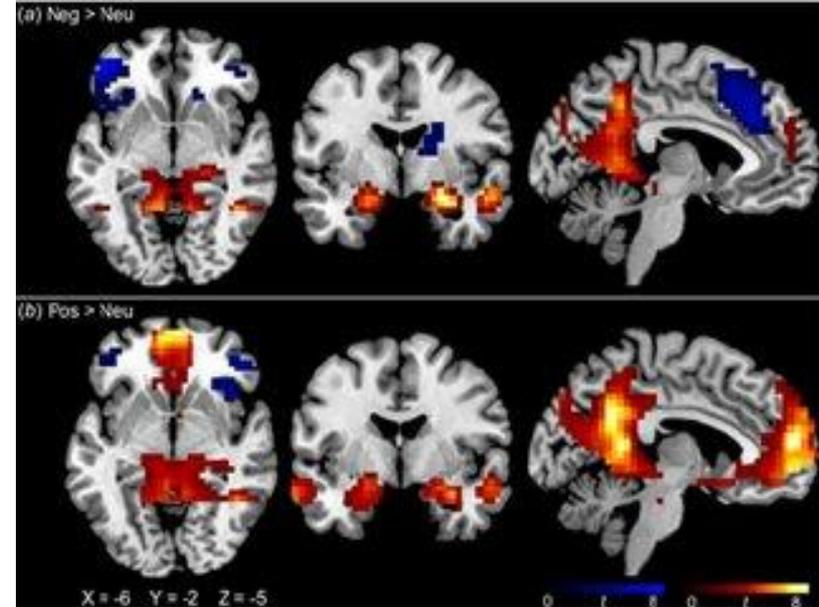
Post Traumatic Stress Disorder (PTSD) and the alarm and brain protection reaction

In the past also called war neurosis, **Post-Traumatic Stress Disorder (PTSD)** is a disorder that usually manifests its symptoms following a particularly traumatic event, **an event that has endangered health and physical or psychological integrity of the subject**, an event that interrupts the continuous flow of a subject's natural life.

Being exposed to an experience interpreted as traumatic involves an intense activation of the amygdala, which in turn excites the brain neurotransmitters in cascade, causing

a functional blockage of the prefrontal cortex, which therefore can no longer perform work memory, decision making and adherence to reality processes. Furthermore, always in the prefrontal cortex there is **a "deactivation" of the mechanisms normally assigned to control and reduce** the activity of the amygdala itself. The amygdala thus ends up predominating with its defense responses (increased blood pressure and heart rate, intense activation of HPA) at the expense of rationality.

In other words, the brain is totally occupied in its alarm and self-protection reaction, so much so that it is no longer able to adequately process and interpret the information, as it is always blocked in the same scene, even after some time from the end of the traumatic event.



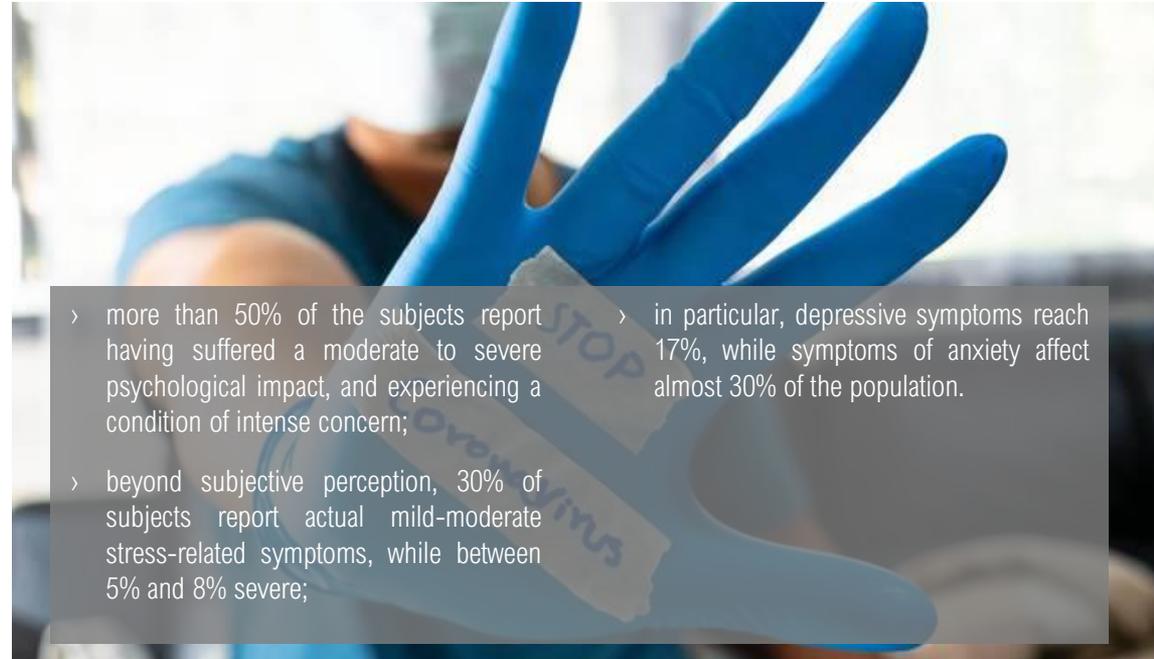
In the figure, the hyperactivated brain areas in subjects with PTSD (above) are highlighted in warm colors, and the hypoactive areas in cold colors, compared to subjects without PTSD (below). Psychological Medicine, 2014

Manifestations of psychological suffering

The first data of the repercussions on the psychological well-being of the Covid-19 pandemic

In recent months, several researches have been published, **mostly conducted in China** and recently also in other countries (India, Turkey, Australia, USA, Canada), through the administration, even on very large samples, of questionnaires and investigation tools specific to investigate the **impact on psychological well-being** following the COVID-19 pandemic.

The variables most frequently taken into consideration concerned the incidence of anxious and depressive symptoms, phobias, cognitive difficulties, avoidance behaviors, obsessive behaviors, somatization and worsening of interpersonal relationships, the appearance of which was attributable to the pandemic. By comparing and summarizing the data of these studies, it is clear that:



- › more than 50% of the subjects report having suffered a moderate to severe psychological impact, and experiencing a condition of intense concern;
- › in particular, depressive symptoms reach 17%, while symptoms of anxiety affect almost 30% of the population.
- › beyond subjective perception, 30% of subjects report actual mild-moderate stress-related symptoms, while between 5% and 8% severe;

Reactions to the pandemic after some time: what changes?

An initial assessment of the psychological effects of the pandemic

Longitudinal studies on the psychological effects of the pandemic are still few. Data from a study conducted in China showed that at an initial assessment:

- › stress symptoms affected 8% of the subjects;
- › anxiety symptoms related to 29% of the subjects;
- › moderate to severe depression symptoms affected approximately 17% of subjects.

Four weeks after the first survey, the data remained constant¹.

Protective factors favoring less discomfort and milder symptoms appeared to be trust in doctors, the perception of survival and low risk of infection, the perception of reliable information and the use of protective measures.



¹A longitudinal study on the mental health of general population during the COVID-19 epidemic in China – C.Wang et al. Brain, Behavior, and Immunity <https://doi.org/10.1016/j.bbi.2020.04.028>

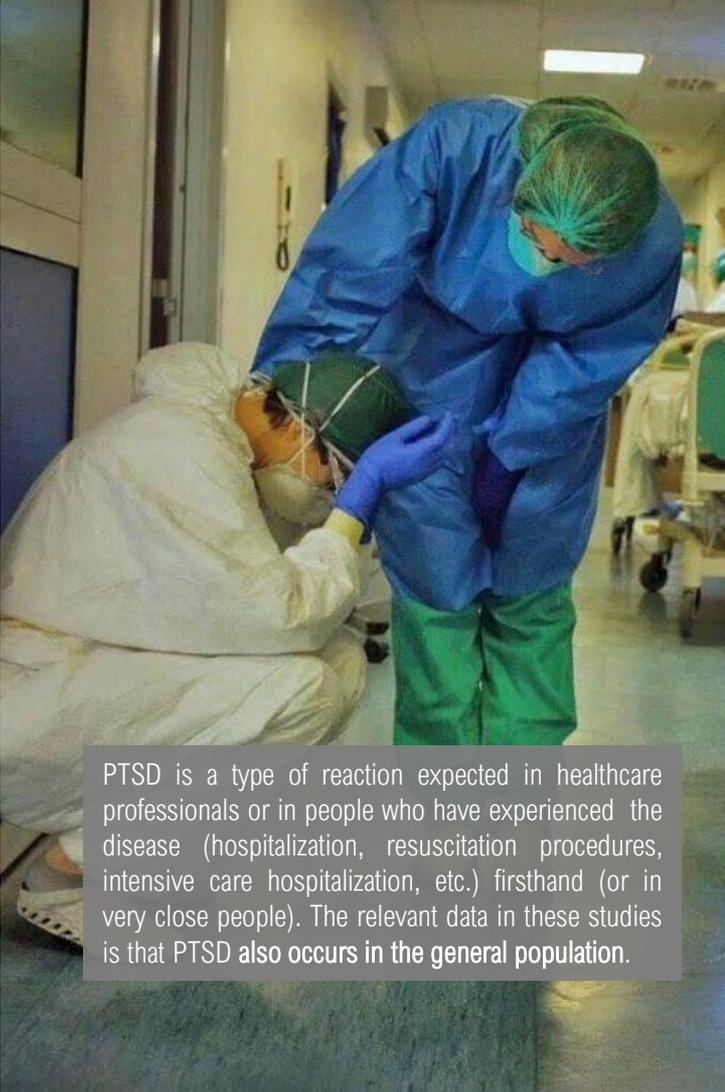
The traumatic experience of the pandemic

High percentages of subjects with PTSD symptoms also in the general population

During the pandemic, **symptoms of Post-Traumatic Stress Disorder (PTSD)** were found in China in **5-7% of the population**, persisting even 1 month after the onset of the pandemic. In this case, however, the symptoms, after some time, although decreasing in intensity, remained **above the clinical attention threshold**. Women appeared more vulnerable to this

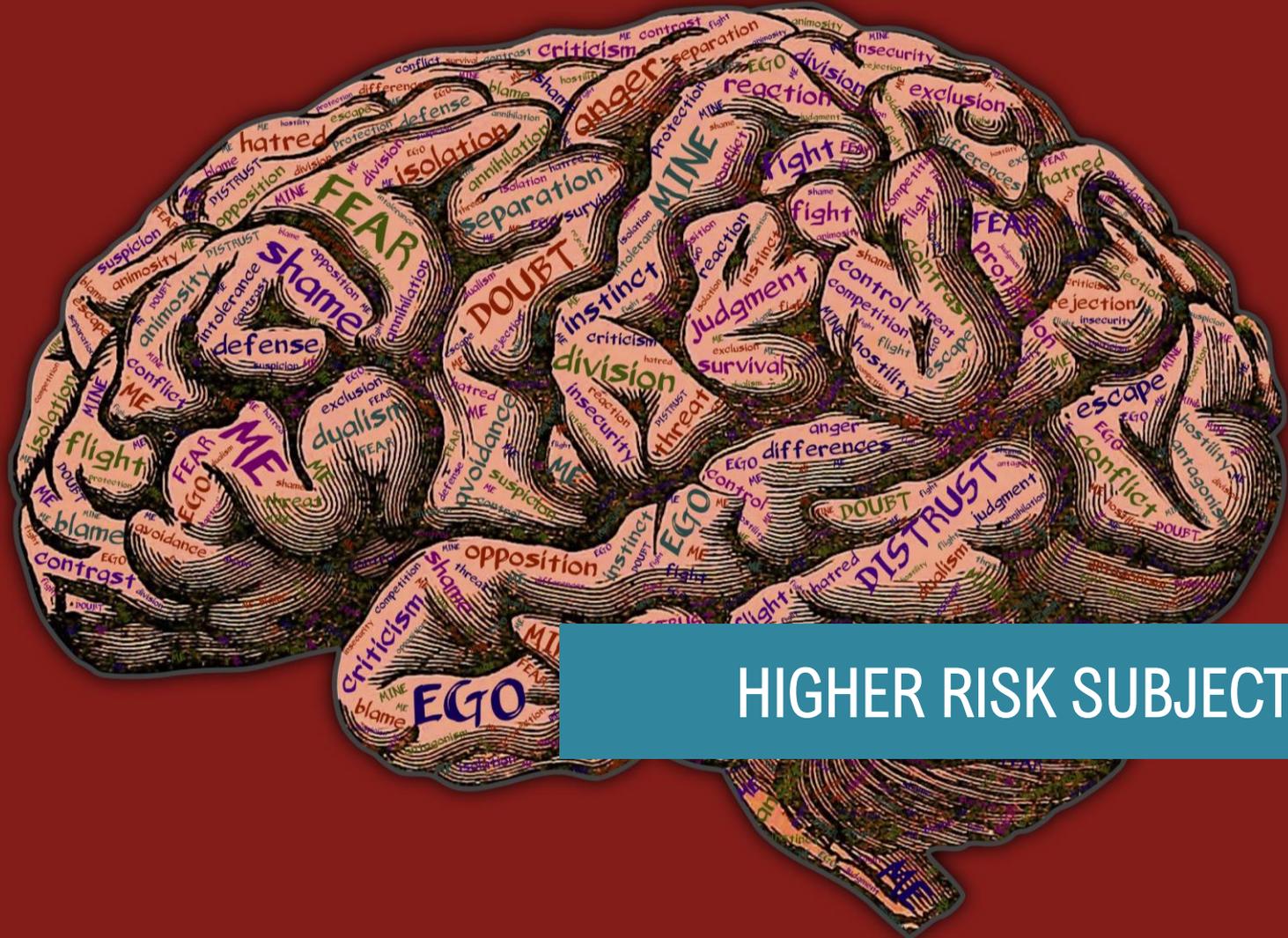
type of reactive phenomenon, in particular with manifestations of hypervigilance (for example insomnia, wincing, tachycardia, etc.).

A study conducted **in Spain** also reported higher percentages of PTSD symptoms, with a frequency of over 15% ¹.



PTSD is a type of reaction expected in healthcare professionals or in people who have experienced the disease (hospitalization, resuscitation procedures, intensive care hospitalization, etc.) firsthand (or in very close people). The relevant data in these studies is that PTSD also occurs in the general population.

¹ Mental Health Consequences During the Initial Stage of the 2020 Coronavirus Pandemic (COVID-19) in Spain. González-Sanguino C. et al. . Brain, Behavior, and Immunity . 2020 May 13;S0889-1591(20)30812-6. doi: 10.1016/j.bbi.2020.05.040



HIGHER RISK SUBJECTS

NS | Psychological suffering: who is most at risk?

LAB | Emerging needs different from age groups

AGE GROUPS

Certain segments of the population appeared, and continue to be, particularly **vulnerable from a psychological point of view** during the pandemic:

- › elderly
- › immunosuppressed
- › subjects with previous psychological or psychiatric problems
- › family members of infected people
- › residents in areas at high risk of contagion and mortality
- › immigrants
- › minors
- › women
- › most schooled subjects
- › subjects with other previous pathologies, in need of rehabilitation or other treatments



A study of the Order of Psychologists of Lazio reported that the emerging needs among people who asked for psychological help in Phase 1 changed significantly **according to the age group** they belong to:

- › the younger ones reported **anxious reactions** more frequently;
- › adults between 30 and 39 years of age more frequently testified **anger emotions**, along with concern for their relationships;
- › between 40 and 49 years of age, **relationships have become the focus of concern**;
- › after 50 years **isolation and a sense of solitude** have been the subject of greater attention.

NS LAB | Individuals exposed to risk of psychological suffering

Senior citizens

A constant figure in the studies published so far concerns the elderly as a fragile group, with a higher probability of reporting forms of psychological distress following the

pandemic and isolation. For the elderly, factors with a high psychological impact have been revealed:

- > the greatest risk of getting sick;
- > the high incidence of mortality;
- > the stress induced by avoiding behaviors that promote contagion;
- > social distancing and quarantine.



At the same time, strong emotional stress can lead to the activation of inflammatory processes which in turn induce a greater vulnerability to cardiovascular, neurological and neurodegenerative diseases.

In a population in which the sense of solitude and the restriction of interpersonal relationships has a considerable weight already in normal conditions, in a phase of isolation and social distancing it is necessary to take into consideration the possible consequences of having had to

give up one's routine (for example going out to shop, to religious services etc.) and contact with relatives or other caregivers (for example, carers), with consequent reactions of destabilization, depressive forms and even suicidal risk.

NS LAB | Individuals exposed to risk of psychological suffering

Children and teenagers

Research conducted in China two weeks after the announcement of the emergency COVID-19 by WHO, on subjects aged between 14 and 35 years, showed that about **40% of the subjects** showed psychological problems, with highest scores in the 14-20 age range.

In Italy, Sicupp (Italian Society of Primary Pediatric Care) launched a survey among its 2000 members: **98% of the family pediatricians** who joined, report having received reports of **illness and problematic behavior in minors**.

In particular, with respect to the data collected by Sicupp, it emerged that:

- › anger behaviors, outbursts of aggression, episodes of inconsolable crying, strong attachment, even physical, to adults, loss of appetite, sleep disturbances have been described in younger children;
- › anger, verbal aggression, somatization, anxiety, decreased self-esteem, difficulty in concentrating appeared in adolescents.



The interruption of everyday life, relationships with reference figures, including grandparents, teachers, peer group, restrictions on movement, in some cases in apartments with limited space, can represent factors of considerable impact on children and adolescents. In fact, although statistically less at risk of contracting the virus or otherwise suffering from violent forms, this segment of the population is also the most defenseless and the one with the least tools for managing and psychological processing of the pandemic event.

A person in a dark suit is holding a newspaper. The newspaper's front page features a large, empty rectangular box, suggesting a missing image or a placeholder. The headline above the box reads "THE WORLD IS CHANGING". Below the box, there are several columns of text, with the first column starting with the headline "World Bank's stock at all-time high".

THE WORLD IS CHANGING

**World Bank's stock at
all-time high**

ADAPTABILITY AND SOCIAL CHANGE

NS LAB | The education during COVID-19

Remote Learning

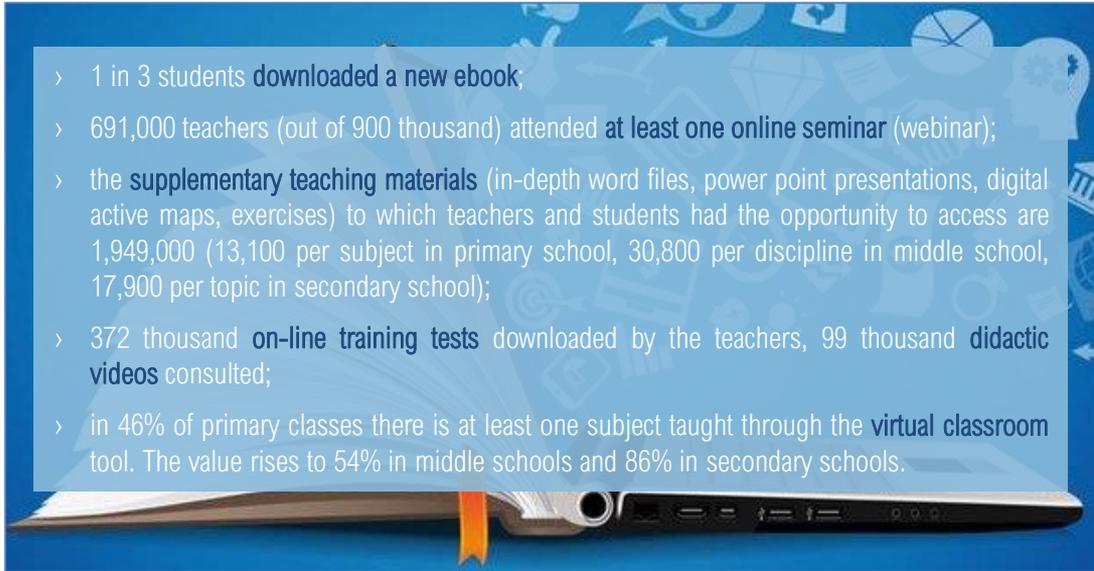
One of the challenges posed by the pandemic from COVID-19 has been the interruption of usual school activities, **replaced by the Remote Learning**.

The digital technologies available in the current era have presented themselves as a potential effective compensation for the lack of face-to-face lessons, thanks to the possibility of exchanging teaching materials and video-conference lessons, thanks to the use of dedicated platforms.



The Italian Publishers Association has carried out research relating to the period February 24-April 7, in which it emerged that:

- > 1 in 3 students **downloaded a new ebook**;
- > 691,000 teachers (out of 900 thousand) attended **at least one online seminar** (webinar);
- > the **supplementary teaching materials** (in-depth word files, power point presentations, digital active maps, exercises) to which teachers and students had the opportunity to access are 1,949,000 (13,100 per subject in primary school, 30,800 per discipline in middle school, 17,900 per topic in secondary school);
- > 372 thousand **on-line training tests** downloaded by the teachers, 99 thousand **didactic videos** consulted;
- > in 46% of primary classes there is at least one subject taught through the **virtual classroom** tool. The value rises to 54% in middle schools and 86% in secondary schools.



NS LAB | The education during COVID-19

The critical issues that emerged and the psychological impact on the students

However, as highlighted also by an investigation **by the University of Bordeaux** on 31,000 French families, with children attending kindergartens in high school, **numerous critical issues emerged** in the DAD, including the disparities between families of humble social class and those educated and wealthy . Computer lessons amplify the disparities that school would be able to smooth out. In the cited research it emerged that:



- > 11.4% of low-income families have network problems, compared to 7.9% of wealthy ones;
- > 24% of the wealthiest families do not have adequate electronic media, compared to 17% of the less wealthy families;
- > 45% of the most advantaged extraction families have the technical skills to manage the connections, against 31% of the most disadvantaged ones;
- > problems of sharing spaces and electronic devices, especially in families with multiple children;
- > concern for money, and a sense of frustration in parents for not being able to help their children as they would like;
- > the increase in stress and conflict due to the overlapping of roles and responsibilities in the parents.

In Italy a survey conducted by Skuola.net. highlighted that the psychological impact of Remote Learning on students has contributed widely to:

- > deterioration of school effort;
- > detachment from emotions related to school;
- > lack of interest in the type of work proposed and anxiety crisis;
- > uncertainty and sense of precariousness due to conflicting news;
- > disappointment and disorientation for those who must and have had to take exams, even at university level.

Finally, the Remote Learning proved to be limited in its current form, **lacking in supporting students with learning difficulties or disabled people.**

The education during COVID-19

The lack of school and the effect on emotions

"Without school our kids don't just miss lessons. They lose the mirror that allows them to understand who they are, how their emotions work. This mirror is the others: the only way a child and a boy have to know themselves ... a child isolated from peers does not learn to know himself. He does not learn to manage his emotions based on the social context in which he finds himself. Do not learn to build relationships with others. Then, of course, he doesn't learn math and geography. But maybe video lessons can make up for that, not the rest.... And a teenager, if he had a tendency to fall back on himself, will have an incentive to do so. If he tended towards social phobia, he will lock himself more and more in his room. He will rely on virtual relationships, which do not require you to get involved as much as real ones. You will temporarily enjoy the absence of competition or the request for performance. But then going back to the old life will be much more difficult for him than a child "



Stefano Vicari, chief of Neuropsychiatry at the Bambino Gesù pediatric hospital in Rome and full professor at the Catholic University¹

¹https://rep.repubblica.it/pwa/intervista/2020/05/05/news/coronavirus_ecco_il_prezzo_pagato_dai_bambini_vicari_i_ragazzi_non_sono_meno_importanti_delle_fabbriche_-255756559/

NS LAB | Pandemic reactions

The role of work activities

The COVID-19 pandemic has also led to huge repercussions in the world of work.

A study conducted in China one month after the start of the lockdown¹, investigated the psychological adaptation of 369 subjects, of whom 27% had continued to go to work in the office, 38% worked in smart working and 25% had interrupted his work.



- › The people who had been able to continue working, both by going to the office and in smart working, showed a better balance both psychological and physical, compared to those who had stopped;
- › those who were not working and those engaged in smart working did not differ in terms of psychosomatic symptoms and discomfort due to physical limitation;
- › those who could continue working outside the home reported lower levels of stress and a higher degree of satisfaction and perceived quality of life.

¹Unprecedented disruption of lives and work: Health, distress and life satisfaction of working adults in China one month into the COVID-19 outbreak"- S.X. Zhanga, Y.Wangb, A. Rauchc, F.Weib. Psychiatry Research, 288 (2020)

NS LAB | The psychological impact of smart working

The smart working in Italy

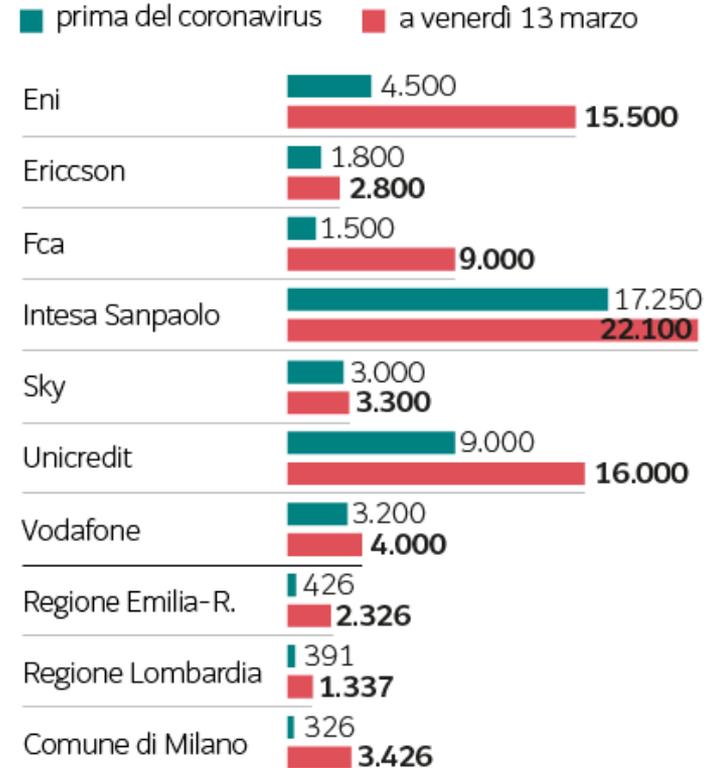
In **Italy**, smart working has been strongly promoted as a virus containment measure. During #ItaliaSmart, the virtual panel organized by Cassa Depositi e Prestiti (Cdp) in collaboration with Luiss Business School, Talent Garden and Partners4Innovation, held in early April, it was emphasized that in Cdp there were usually a few hundred people who they did one agile day of work per week, while under the pressure of the COVID emergency, 100% and more than 2,000 people worked in smart working. Furthermore, videos and calls have increased by 1,700% compared to February, the messages exchanged in chats have grown by 1,100% 1.

Numerous companies are providing for the creation of "virtual workspaces" where people can work and connect via video platforms, to encourage fluidity in productivity, but also **to reduce the sense of isolation**. This is also because some studies have shown that being reachable through audio and video achieves decidedly superior effects both psychological and productive compared to simply sending emails and written text messages.

However, while on the one hand smart working has proven to be an easy solution both individually and socially, it has **also led to negative consequences**.

I numeri del telelavoro in emergenza (alcuni esempi)

Smart worker:



Indagine Corriere Dataroom- Politecnico Milano

NS LAB | The psychological impact of smart working

The burnout risk

LinkedIn, the social network created for the world of work, conducted a survey on **2,000 Italians** during the lockdown¹. It emerged that one in five workers had a negative impact on their mental health. Working from home has led **22% of Italians to have to respond more quickly** to the needs of the company and **to be available online** longer than normal.

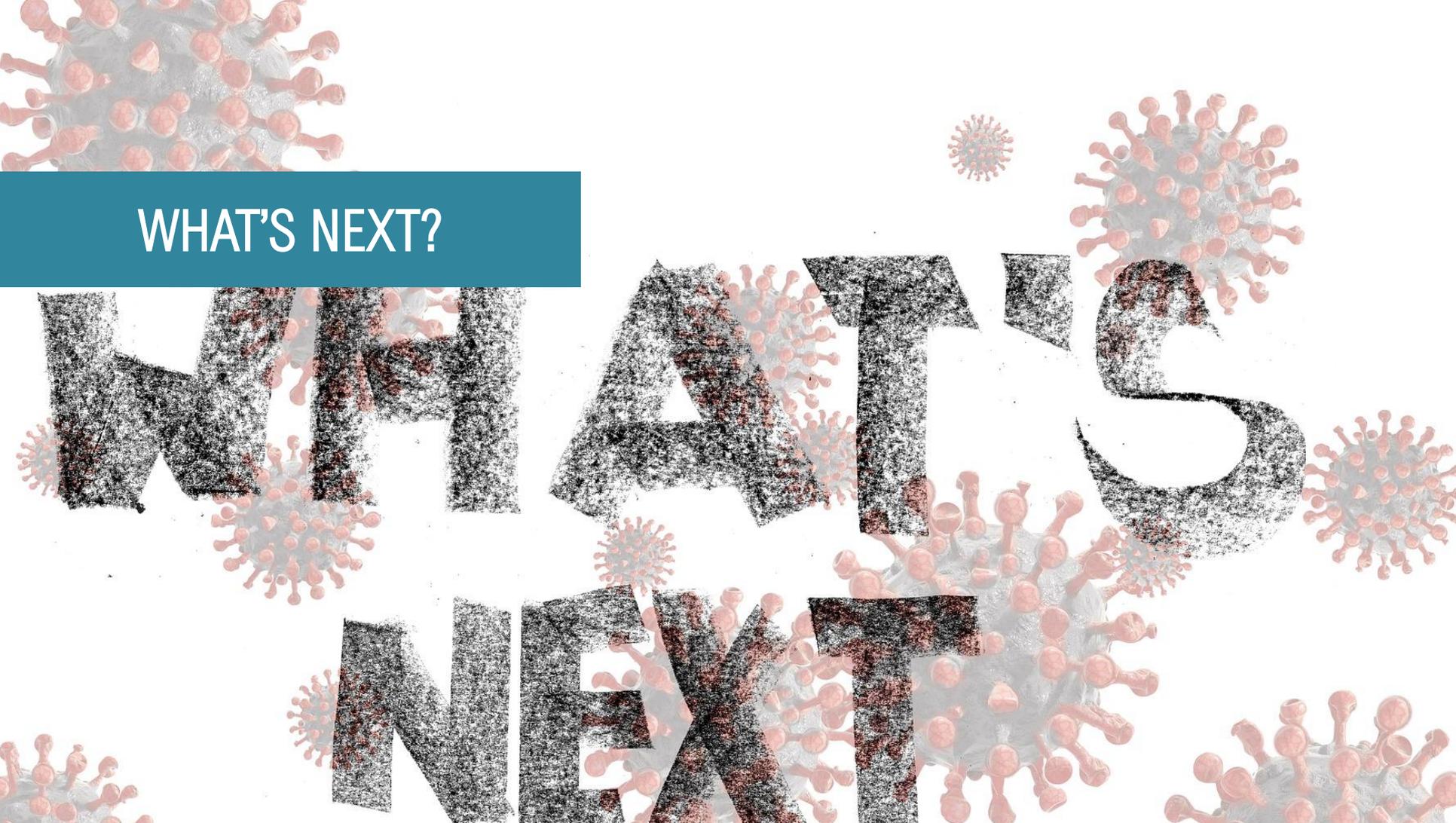


These effects could be due both to the feeling of not having control over the working situation as it could have in the classic working setting, and to the physical and psychological overlapping of work and family tasks, with the consequent **risk of burnout**. A phenomenon that seems to involve women even more.

- › 46% of workers feel **more anxious or stressed**;
- › 19% experience a **feeling of discomfort** related to the survival of their company;
- › 18% found a negative impact on their **mental health**;
- › 27% of workers developed **sleep difficulties**;
- › 22% describe a state of **constant anxiety**;
- › 26% had **concentration problems** during the day.

¹<https://www.agi.it/cronaca/news/2020-05-14/smart-working-conseguenze-lavoratori-8611222/>;
https://www.repubblica.it/tecnologia/2020/05/14/news/che_effetto_fa_lo_smart_working_stress_ansia_e_almeno_un_ora_di_lavoro_in_piu_al_giorno-256601448/

WHAT'S NEXT?



NS LAB

New behavioral modalities

Phase 1, 2 and 3

A report from the WHO mental health department (May 2020) warned of another looming crisis: "Isolation, fear, uncertainty, economic unrest may cause widespread psychological distress," said the director of the department, Devora Kestel¹. "The mental health and well-being of entire societies have been seriously affected by this crisis and are a **priority to be addressed urgently.**"



Phases 2 and 3 require **new behavioral modalities**, in all contexts, both personal and working, including the use of masks and gloves, social distances, the conduct of holidays etc., to which we will have to learn to adapt.

AIP, the **Italian Association of Psychology**, has proposed a contribution from the scientific community of psychology to the definition of Phase 2 of the COVID-192 emergency. More specifically, the document highlights the psychological aspects that need to be taken into account for effective crisis management, and advances lines of action and useful measures in this regard, also considering the conditions for exiting the first phase which requires a careful evaluation of the psychological factors involved. Also the CNOP (National Council of Psychologists Order) participated in the General States of the Economy, reiterating the need to promote a "network" for development and psychological assistance.

¹https://www.ansa.it/sito/notizie/topnews/2020/05/14/oms-salute-mentale-a-rischio_d2cf4d64-3a59-4f21-aa29-6c167e57fa19.html

²<https://www.psy.it/un-documento-sul-sostegno-psicologico-nel-covid-19-del-ministero-dellinterno.html>

FASE 2
dal 04/05/2020
al 17/05/2020

Il Comune di Caselleto informa i cittadini su cosa si può fare e cosa no dal 4 al 17 maggio, in base alle disposizioni nazionali e regionali in vigore e alle circolari esplicative.



SPOSTAMENTI CONSENTITI

All'interno della Regione. Solo per lavoro, motivi di salute, situazioni di necessità, attività motoria, visita a congiunti.



OBBLIGO DISTANZIAMENTO FISICO

Minimo 1 metro (nell'attività sportiva 2 metri)



SPESA ALIMENTARE E ACQUISTI

Possibile acquistare in tutti gli esercizi aperti sul territorio regionale. Si consiglia, comunque, di evitare luoghi affollati e di privilegiare gli esercizi commerciali più vicini all'abitazione.



OBBLIGO DELLA MASCHERINA NEI LUOGHI CHIUSI

In tutti i luoghi pubblici o privati al chiuso è obbligatorio l'uso di mascherina, ad eccezione dei bambini minori di 6 anni e dei disabili.



DIVIETO DI ASSEMBRAMENTO NEI LUOGHI PUBBLICI E PRIVATI

No a riunioni o feste con amici e parenti



OBBLIGO DI RESTARE A CASA PER CHI HA SINTOMI

Con sintomi o febbre da 37,5° DIVIETO di uscire di casa



PARCHI E GIARDINI

Consentito l'accesso ai parchi di Piazza Cays ("Gemellaggio Caselleto-Ricce") e di Via Martiri della Libertà, ~~ma non alle aree giochi~~, mantenendo le distanze ed evitando assembramenti. Vietato l'accesso al parco giochi di Via Aismese o alla **Piastra Polivalente**. Consentita attività motoria sul Musinò (da soli o un adulto che accompagna uno o più minori).



The «hut syndrome»

The anxiety to resume the previous rhythms and the fear of not adapting to the new ones

The resumption of activities and the return, if not to normality, to a condition of greater freedom, **is not characterized only by obvious advantages and positive psychological reactions.**

A first reaction observed since the beginning of Phase 2 is called "**hut syndrome**" and is affecting over a million Italians.

It is a wave of anxiety and frustration from returning to normal, as happened after the collapse of the Twin Towers. The Italian Society of Psychiatry (SIP) sounded the alarm: a huge number of people found themselves in difficulty **because of the fear of facing their previous life, going out again and leaving the house which has become a refuge** that protected and kept them safe from Coronavirus.

After two months of quarantine, in fact, a substantial share of the population, who previously had no disturbances, has lived and is experiencing a return to normal **with the anxiety of resuming the previous rhythms and the fear of not adapting to the new ones.**

It can be a normal reaction, however, especially in subjects more susceptible to anxiety or depressive reactions, **if the discomfort lasts for more than three weeks** and is exacerbated by uncertainty about the future, concern for the economic situation and for the job insecurity, significantly increases the risk of developing depressive symptoms, panic attacks and adaptation disorders.

#RESISTIAMOINSIEME

ACQUISTI IN SICUREZZA

LE REGOLE PER GLI ESERCIZI COMMERCIALI



DISTANZA

Assicurare il mantenimento di almeno 1 metro di distanza in tutte le attività



PULIZIA

Garantire l'igiene ambientale con una frequenza di almeno due volte al giorno



ARIA

Mantenere adeguata areazione naturale e ricambio d'aria



MANI

Mettere a disposizione gel igienizzante per la disinfezione delle mani



MASCHERINE

Utilizzare le mascherine negli ambienti chiusi e dove non sia possibile il distanziamento minimo



GUANTI

Usare guanti "usa e getta" nelle attività di acquisto, in particolare in caso di alimenti e bevande



ACCESSI

Regolamentare gli accessi in base alle dimensioni del locale e, ove necessario, ampliando le fasce orarie



INFORMAZIONI

Dare adeguata comunicazione alla clientela per garantire il distanziamento durante l'attesa



Ministero della Salute


www.salute.gov.it/nuovocoronavirus

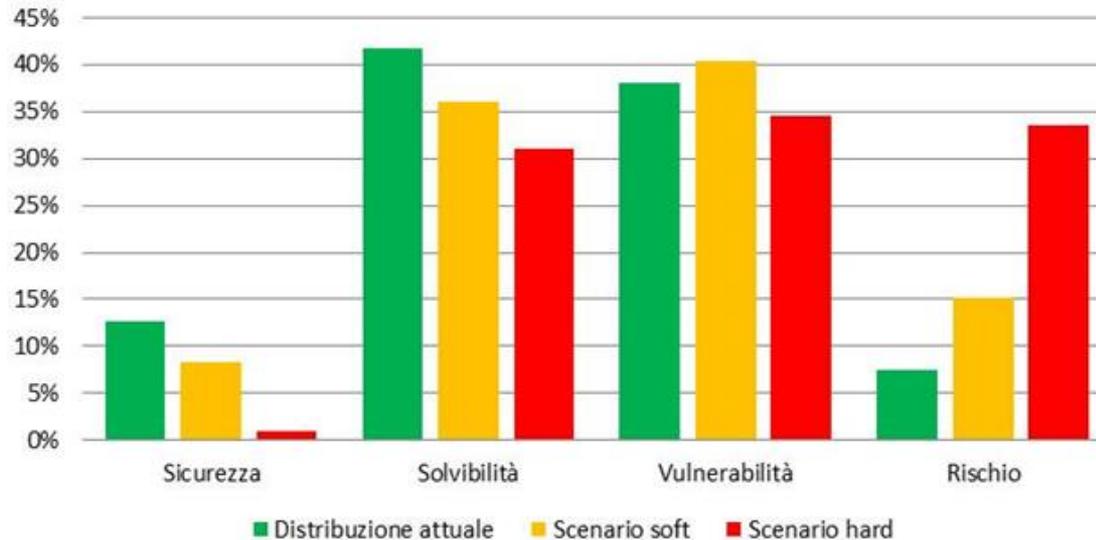
NS LAB | From Phase 1 to Phase 2 and 3: suicidal risk

The risk of a highly dramatic effect

In these weeks, in the coming months and probably in the coming years, it will be necessary to foresee, and possibly prevent, a highly dramatic effect of the pandemic, that is, the implementation of **suicidal behaviors**.

The desperation for quarantines and lockdowns, but also the repercussions of the worst economic crisis of the last seventy years could probably cause an increase in self-injurious acts.

The alarm was launched in the United States: a study prepared by the Well Being Trust and researchers from the American Academy of Family Physicians¹, estimates 75,000 victims of the coronavirus crisis for the next decade, classified as "dead from desperation". They include both suicides and deaths from drug abuse. It is a huge figure, close to the 80,000 official US victims of Covid-19. Considering that unemployment estimates in the US are close to 33 million, three times the Great Depression, the alert seems more than justified. Forecasts supported worldwide also by a study by the University of Zurich²

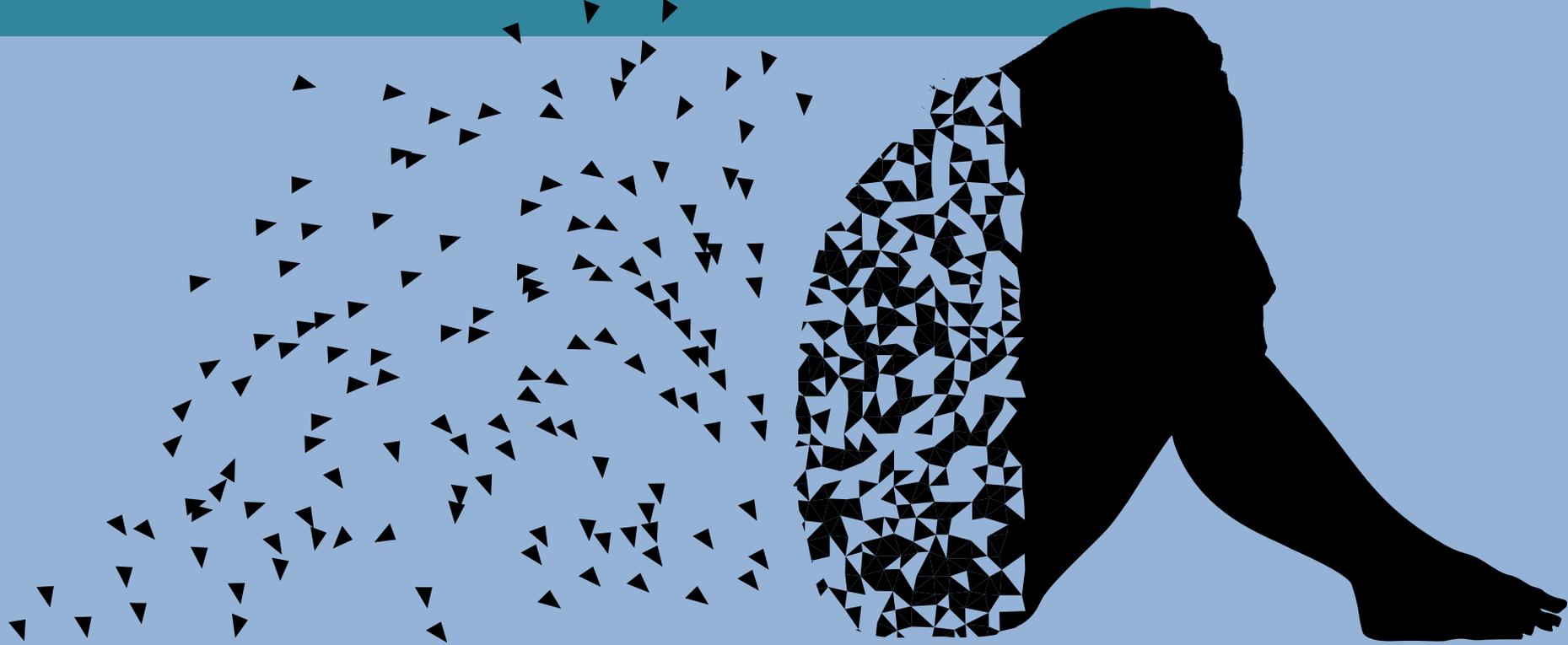


Starting from the current distribution of companies in safety, solvent, vulnerable and risky, the rating agency Cervel Rating Agency estimates the following transitions in the two scenarios: the so-called "at risk" companies would increase by 8% in the soft case and even by 26% in the hard case, with almost unpredictable consequences for the local and national economic fabric, with inevitable bankruptcies and closures of the companies involved.

¹<https://wellbeingtrust.org/news/new-wbt-robert-graham-center-analysis-the-covid-pandemic-could-lead-to-75000-additional-deaths-from-alcohol-and-drug-misuse-and-suicide/>

²COVID-19:unemployment, and suicide. W. Kawhol, C. Nordt. The Lancet, May 2020

HOW TO PREVENT AND MANAGE THE DISTRESS



NS | A model of psychological emergency intervention

LAB

Medium and long term prevention and interventions

INTERVENTION

In China, the level of psychological distress in the population has significantly decreased over time. In addition to effective virus prevention and containment measures, a **psychological emergency intervention model** was developed. This model provides for the synergy between different professional figures, doctors, psychiatrists, psychologists and social workers in communication with each other via internet platforms, so as to be able to support patients, their families and medical staff. A model that aims **to combine prevention with medium and long-term interventions.**

To date, numerous international publications highlight the guidelines to be applied in the event of natural disasters or in emergency situations to contain psycho-social sequelae, in this case of COVID-19.

Of course, great attention should be paid to the most vulnerable groups. An organization in the territory of first psychological help during events such as these, must be strategically based on telemedicine, for example with the establishment of toll-free numbers to contact, advertised through the media.

Ansia, confusione, stress, solitudine, nervosismo, paura.

800.833.833
Supporto Psicologico Covid-19

**Tutti i giorni dalle 8 alle 24
professionale, sicuro, gratuito**

Ministero della Salute
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www.salute.gov.it/nuovocoronavirus

In Italy, both the National Order of Psychologists and the various regional Category Orders have set up a free service to contact, by telephone contact or on the online platform. The Ministry of Health also sponsored a psychological intervention campaign.

Moreover, psychologists, as health workers, were authorized, during the lockdown, to continue their professional activity also through online sessions.

NS | Institutional interventions for the management of distress

LAB

Key factors for the development of institutional interventions

The development of institutional interventions to support mental health during an emergency, such as that due to the Covid-19 pandemic, must be centered on three factors:

1. **The establishment of multidisciplinary teams** of mental health experts (psychiatrists, clinical psychologists, etc.).



2. **The establishment of psychological counseling services, also accessible online and through apps.** It is necessary to plan interventions aimed at containing the sense of solitude. The contribution of technology today can prove essential to overcome spatial limits and social distance.

Social media can be a vehicle for encouraging groups to stay in touch and for guiding people towards resources and services dedicated to mental health.

These platforms can also be used for forms of periodic control of more vulnerable or at risk subjects, as well as for sharing information.

The interventions must however also

include the use of more traditional means (for example, telephone contact) for less digitized subjects (for example the elderly).



NS | Institutional interventions for the management of distress

LAB

Key factors for the development of institutional interventions

3. **Clear communication** that includes accurate updates on the progress of the virus. We have seen that overexposure to information can be more harmful than anything else. So the goal must be to provide **official and accurate updates at regular intervals and to monitor fake news** and misleading and confusing information. In addition, the spread of simple, but adequate and repeated hygiene and behavioral rules is

essential to encourage their learning. **The contribution of testimonials** (actors, sportsmen, etc.) and the use of figures (graphs, tables) can contribute to the effectiveness of the messages conveyed, favoring a **greater sense of control** over the crisis situation in the population and therefore the reduction of reactions of stress and anxiety.



INTERVENTION

NS LAB | The "resistance" to COVID-19

Spontaneous manifestations of psychological reaction

At the beginning of Phase 1, with the lockdown, we witnessed, in Italy as in many other countries, spontaneous manifestations of psychological reaction, such as flash mobs, choirs from buildings, the display of the national flag or banners with the "It will be all right".

Although these actions were inevitably destined to run out in the medium term, they nevertheless had the **function of promoting social involvement**, solidarity, in an action of real "resistance" to the sense of isolation and separation between individuals and motivational encouragement. reciprocal.



NS LAB | Individual management of distress

Behavioral indications to reduce the risk of negative reactions in emergency situations

STRATEGIES

Beyond governmental and institutional interventions to support mental health, experts provide

behavioral indications

to promote individual resilience and therefore reduce the risk of negative reactions in the various passages of the pandemic event from COVID-19.

It is essential to be able **to stem** not only the sense of **loneliness**, but also the **sense of helplessness**, reinforcing the feeling of **possibility** and **control**, significantly reworking the real situation to favor flexible adaptation and therefore resilience

COUNTERING THE SENSE OF SOLITUDE

COUNTERING THE SENSE OF IMPOTENCE

COUNTERING THE SENSATION OF «SUSPENDED TIME»

ANXIETY MANAGEMENT

NS LAB | Cognitive behavioral indications

Sense of loneliness and helplessness

COUNTERING THE SENSE OF SOLITUDE

PROMOTE AND INCREASE COMMUNICATION, NETWORK

- › Schedule phone **calls or video calls** regularly with family, friends and colleagues;
- › Keep in touch, even at work, also through forums and group calls on special platforms, to recreate **a virtual working space in which we are not alone**. If you have difficulty solving problems, seek confrontation with colleagues;
- › If you have a feeling that your psychological suffering is getting worse, **ask for help**, talk about it, confide in your acquaintances or contact the toll-free numbers of mental health services.

COUNTERING THE SENSE OF IMPOTENCE

KEEP CONTACT WITH REALITY, KEEP AN ACTIVE ROLE

- › Look after whom you think **may need help**, for example by calling someone you know is in difficulty, or through fundraisers, forms of solidarity shopping etc.;
- › Follow **health instructions** and instructions for contagion management with accuracy and common sense. Do not passively subject them as rules to be obeyed, but as self-protection behaviors;
- › Maintain **good eating and sleeping habits**, even if you don't have working hours to respect.

NS LAB | Cognitive behavioral indications

"Suspended" feeling of time

COUNTERING THE SENSATION OF «SUSPENDED» TIME

AIM FOR RESOURCES AND CREATIVITY

STRATEGIES

- › Establish a **daily routine**, limiting downtime and boredom: it helps manage anxiety and promotes faster adaptation while maintaining contact with reality;
- › If you work at home, create **spaces and times as distinct as possible between work and non-work**;
- › Always plan **recreational actions** outside of work during the day;
- › Practice daily **physical exercise**, even simple, albeit in limited spaces;
- › **Look after the appearance**: not having to appear in public is not a good reason to let yourself go and neglect yourself;
- › Do not think of this time as wasted time, as a mere wait. **Rather, use it by investing** it to carry out your goals and interests even if in a new way, or to discover new ones;
- › The contingent situation **stimulates us to learn new things**, whatever our age, **to invent creative solutions**. All these things will remain in the future and will increase our resources;
- › Don't just focus on what you can't do or what you've lost in quarantine. Rather, **focus on the concrete, social, technological and psychological resources** available to you.

ANXIETY MANAGEMENT

ATTENTION FOR YOURSELF, PROMOTE ADAPTATION AND RESILIENCE

- › Learn to **listen to the signals of your body and the changes in your mood**: they will signal your limits, do not force them excessively, gradually adapt;
- › **Manage your expectations**: we are in an extra-ordinary situation, so the performance standards of any kind must be revised. Take time and set realistic **goals that are appropriate to new circumstances** to avoid burn-out reactions;
- › **Accept possible reactions** of disorientation, confusion, irritability or other: they are normal and very common. To oppose resistance or to judge negatively for this is only harmful;
- › Always think that we have all experienced, and still are living, a totally new and complex situation, not only you, so **act with understanding** towards the other and especially towards yourself;
- › **Manage one day at a time**, do not make medium-term plans: in this way you will avoid possible frustrations due to a situation in constant evolution;
- › **Limit your exposure to the media** to what is necessary and select as many reliable sources as possible.

NS LAB

Cognitive behavioral indications

Mindfulness and virtual reality

VIRTUAL REALITY

As evidence of the psychological impact deriving from the pandemic event, and as a further reinforcement and integration of the general principles previously listed, self-help programs have

been developed, based on the **principles of mindfulness and autogenic training**, to promote healthy stress and anxiety management. An example is the protocol

developed by the **Auxologico Institute of Milan and the startup Become Hub**, which exploits the potential of virtual reality to enhance the effects of guided relaxation¹.



COVID Feel Good

for overcoming the psychological burden of Covid



THE WEEKLY VR SELF HELP PROTOCOL

discover the potential of Positive Technology and how it can help you

created an easy self-help virtual reality protocol that can be interacted with a smartphone, helping you to cope with the psychological burden of Coronavirus.

FREE and it requires just HALF AN HOUR everyday for a week.

COVID Feel Good

FEEL GOOD NOW

BECOME
RESEARCH AND TECHNOLOGY HUB

ISTITUTO AUXOLOGICO ITALIANO
Istituto di Ricerca e Cura in Otorinolaringoiatria

Living in the time of the coronavirus means experiencing not only a global health emergency but also extreme psychological stress that puts a strain on our identity and our relationships. The coronavirus and the associated quarantine forces us to manage three different psychological dimensions simultaneously:

- the stress of the disease,
- the disappearance of places,
- and the crisis of the sense of community.



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