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iENCUIST: DEVELOPMENT AND APPLICATION OF AN ONLINE PSYCHOLOGICAL SUPPORT TOOL DURING COVID-19 IN SPAIN

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Abstract

The iENCUIST online tool was designed to reduce the psychological impact on both the confined population and on professionals who were at the forefront of the fight against the pandemic. In the first study (*N*= 2,362), the results are shown of the short test to perform personality profiles, made up of 34 items that show good psychometric properties. In the second study, the psychological profiles of confined individuals and professionals who had requested psychological help are presented (*N*= 815). The results indicate that confined women present higher scores in the variables of anxiety, anger, or disgust, placing this group at a greater risk for presenting psychological problems. As for professionals, those with more years of experience or who faced past crises have greater emotional stability, being a key factor in crisis management. After 6 weeks, the usefulness of the help offered by iENCUIST was evaluated and almost 80% of users indicated that they applied the recommendations offered by the tool, and that they helped them overcome the crisis.

KEY WORDS: *Covid-19, personality, health care professionals, confinement.*

Resumen

La herramienta *online* iENCUIST fue diseñada para reducir el impacto psicológico, tanto en la población confinada como en los profesionales que estaban a la vanguardia de la lucha contra la pandemia por Covid-19. En el primer estudio (*N*= 2.362) se muestran los resultados del test breve para realizar perfiles de personalidad, compuesto por 34 ítems que presentan buenas propiedades psicométricas. En el segundo estudio se presentan los perfiles psicológicos de los confinados y los profesionales que habían solicitado ayuda psicológica (*N*= 815). Los resultados indican que las mujeres confinadas presentan puntuaciones más altas en las variables de ansiedad, enfado o disgusto, colocando a este grupo en mayor riesgo de presentar problemas psicológicos. En cuanto a los profesionales, aquellos con más años de experiencia o que enfrentaron crisis pasadas tienen mayor estabilidad emocional, siendo un factor clave en la gestión de crisis. A las 6 semanas se evaluó la utilidad de la ayuda ofrecida por iENCUIST y casi el 80% de los usuarios indicó que aplicaron las recomendaciones que ofrece la herramienta y que les ayudaron a superar la crisis.

PALABRAS CLAVE: *Covid-19, personalidad, profesionales sanitarios, confinados.*

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Introduction

Barely 3 months passed from the report of the first cases of people affected by the new coronavirus Covid-19 (coronavirus disease 2019) in Wuhan province (China) in late December, up until the declaration of the pandemic situation on March 11, 2020 (WHO, 2020). This disease has spread throughout the world at an unprecedented rate. At the end of March 2022, it is estimated that there are more than 6.119.231 deaths from Covid-19 and more than 479.105.085 infected worldwide (European Center for Disease Prevention and Control, 2022).

The State of Alarm was decreed at the state level in Spain, on March 14, 2020 and, with this, one of the strictest confinements in Europe was imposed on the entire country. In Spain, unlike other countries, citizens were required to stay home at all times, and only activities aimed at acquiring essential goods or attending health or work centers were authorized. Today's Spanish society, like those of many other countries, was facing a situation of isolation for the first time and experts predict that it will have repercussions on mental health, such as anxiety and depression disorders, substance abuse, domestic violence, or child abuse, among others (Galea et al., 2020). A review of previous confinement experiences in other countries also indicates that likely psychological consequences include post-traumatic stress symptoms, confusion, and anger (Brooks et al. 2020).

There are several studies that have evaluated the impact of the pandemic on the mental health of the population. One of the first articles on the Chinese population reported that more than half of respondents reported a moderate or severe psychological impact and one third reported moderate or severe anxiety symptoms (Wang et al., 2020). Similar data are found in the Italian population where 32.6% of people present moderate or extreme anxiety, more than 50% present symptoms of moderate or severe stress, and 24.2% present symptoms of depression (Cellini et al., 2020). Wang et al. (2020) also evaluated how these symptoms progress over time and found that, over a one-month period, the stress, depression, and anxiety indices did not vary significantly. Recently, in a systematic review by Xiong et al. (2020), they have found high rates of symptoms of anxiety (6.33% to 50.9%), depression (14.6% to 48.3%), post-traumatic stress disorder (7% to 53.8%), psychological distress (34.43% to 38%), and stress (8.1% to 81.9%) in the general population during the Covid-19 pandemic in China, Spain, Italy, Iran, the USA, Turkey, Nepal, and Denmark.

On the other hand, the state of health emergency has led to the deployment of State Security Forces and Corps to control the state of alarm, as well as the recruitment of health care and senior center personnel to deal with the disease. These professionals have been subjected to high workloads, increased risk of getting infected and infecting their families, increased working hours, ethical and medical decision-making under great pressure and, on many occasions, lack of sufficient protection materials to carry out their work. Likewise, they have also lacked recreational, sports, or leisure-related activities that allow for channeling of stressors derived from work. Recent research on the psychological impact on health care personnel indicates that more than 50% report symptoms of depression, 44.6%

report anxiety, 34% report insomnia, and more than 70% present stress (Lai et al., 2020). Furthermore, research carried out on previous similar epidemics such as that on the 2003 severe acute respiratory syndrome (SARS) show multiple pathological symptoms among health care personnel during the epidemic (Brooks, et al. 2020), as well as years later (Wu et al., 2008; Reynolds et al., 2008).

Several authors consider it necessary to act quickly in the face of this crisis situation, offering citizens and professionals resources to contain the possible negative effects (Galea et al., 2020; Pfefferbaum & North, 2020). Orrù et al. (2020) suggest that mental health professionals should create easily disseminated tools or questionnaires capable of detecting the presence of psychopathological indicators and, if possible, that could be accompanied by recommendations according to their needs.

To create this type of tool, it is important to bear in mind that not all people react the same way in the face of stressful situations and, therefore, the same resources are not equally valid. In this sense, personality variables can help to draw tighter recommendations. For example, it is expected that individuals with high levels of extroversion would experience confinement or social distancing measures more negatively than those with low levels of this variable, for which it can be a protection factor (Carvalho et al., 2020). It occurs in the same way with people who are seeking sensations, for whom the situation of confinement can suppose true levels of discomfort. In this sense, special attention should be paid to men and young individuals since they tend to present higher levels of sensation seeking than women and older individuals, respectively (McDaniel & Zuckerman, 2003). On the contrary, for professionals who are working on controlling the health emergency, presenting high levels of sensation seeking may be less maladjusted than for those who present low levels of this variable and must face a situation of such high risk.

On the other hand, high levels of neuroticism or emotional instability are related to high levels of anxiety and stress (Jeronimus et al., 2016), which would imply higher levels of risk for the person's mental health in coping with this crisis (Aschwanden et al., 2020). In this case, it is important to keep in mind that women tend to present higher levels of anxiety than men (McLean & Anderson, 2009). Furthermore, anxious symptoms are also related to higher levels of disgust and obsessive-compulsive disorder (Knowles et al., 2018), which may further exacerbate the presence of obsessive behaviors in this population, due to requests from international organizations to increase hygiene measures and cleaning of the environment. In contrast, there are studies that show a relationship between the presence of anxiety and behavioral inhibition (Li et al., 2014) that, in situations like this, can be a protective factor for the risk of contagion since they are people more predisposed to maintaining social distancing (Jones & Salathé, 2009).

With the aim of helping the confined population and professionals (health care personnel, security forces and corps, military, and nursing home staff) to overcome the crisis with the least possible psychological impact, it was necessary to design a tool that was as similar as possible to the different personality profiles and that made it possible to offer psychological help in real time. We decided to create the iENCUIST

tool for this purpose. In this work we want to verify the usefulness of this type of resource to reduce the impact on the mental health of the population.

iENCUIST is an online tool created with the aim of providing psychological support to confined people and professionals during the Covid-19 pandemic. This tool was designed according to four fundamental criteria. Firstly, it should offer psychological guidance as individualized as possible, adjusted to the different individual profiles. In a crisis situation such as this one, governments and mental health professionals develop aid materials for the population that are, in most cases, very general. Therefore, it was necessary to customize the aid as much as possible (Pfefferbaum & North, 2020). Second, it should be brief. Given the emotional overload of a confinement situation and the stress experienced by professionals, it was necessary to develop a tool that could make the most complete profile of a person with the fewest questions. Furthermore, psychological counseling had to be automatic and offered in real time. On many occasions, the results of scientific advances are returned to society with some delay, but in this case, people needed answers on how to deal with the crisis at a very specific and precise time. Finally, it was necessary for the tool to reach many people - distribution and diffusion had to be massive.

Achieving these four goals was only possible if technology was used. For this purpose, the iENCUIST tool was designed on the Google Forms platform with 3 sections. It contains an initial section of sociodemographic questions (different questions depending on whether they were confined persons or professionals) to assess each person's situation and in which the subject is given all the necessary information about the treatment of their data.

A second section aimed at evaluating the subject's personality characteristics through the variables of extroversion, sensation seeking, anxiety, anger levels, expression of anger, inhibition, ability to persist in the task, perception of disgust, ability to express emotions, and need for cognition. Variables were chosen to evaluate aspects related to emotional instability (anxiety, inhibition, anger, expression of anger, and disgust) since managing emotions is one of the most crucial aspects of managing the crisis, both for professionals and for the confined population (Brooks, et al. 2020). The guidelines for these types of people were aimed at presenting strategies that would help them lower their levels of emotional distress. Variables related to sensation seeking and socialization are also collected, the latter being especially relevant for the population confined due to social distancing measures. As an example of recommendations for this type of person, they were offered to channel their need for social contact through various online platforms or video calls. It was also considered important to assess the person's ability to express their emotions, since one of the recommendations to avoid the development of a Post-traumatic Stress Disorder later on is that the person is able to express the emotional intensity of what they are experiencing in the crisis (Lange et al., 2003). Since not all people have the ability to express what they are feeling, this type of profile was recommended using iENCUIST to try to channel their emotions in other ways, for example through physical activity (to the best of their ability) or music; and avoid the guilt for not being able to easily express what is

happening to them. Finally, a variable related to the need for cognition was recorded. The need for cognition refers to the tendency for an individual to engage in and enjoy effortful cognitive activity (Cacioppo & Petty, 1982). People who have low levels of need for cognition contrast the information they receive less and are more easily influenced (Haddock et al., 2008). Furthermore, this fact may be a risk factor for spreading false news about Covid-19, generating more social alarm. Using the iENCUIST tool, it was recommended that people who scored low on the need for cognition variable should contrast the information they received through social networks before distributing it through their contacts, to avoid spreading fake news.

In a third section, the person completing the form was asked for an email to which the guidelines based on their profile could be immediately sent. In the feedback provided by the tool, it was made clear at all times that the guidelines received did not constitute a psychological evaluation or substitute for a therapeutic process if needed.

When the person submitted the form on the Google Forms platform, a previously trained algorithm decided what orientation to offer according to the established profile. To make the orientations that people received easier, the messages were classified into 5 groups. The first group consisted of the summation of the extroversion, sensation seeking, and ability to persist in the task variables; the second, added the levels of anxiety, inhibition, and propensity to disgust; the third, added the levels and expression of anger; the fourth group focused on the ability to express their emotions; and, lastly, the need for cognition was taken into account. To generate the guidelines, each group was divided into high (1) or low (0) scores based on the $+1\sigma$ of each personality variable. In this way, people received guidelines adjusted to their profile for all the variables analyzed.

The guidelines offered by the tool are built on evidence-based practices, such as health psychology and anxiety treatment programs (Pérez et al., 2003).

The iENCUIST tool was created with these considerations to help the Spanish population, both confined persons and professionals, to overcome the crisis caused by the Covid-19 pandemic.

This investigation's objective is not to develop a new evaluation tool, rather using existing questionnaires to generate the online tool user's personality profile and based on it, offer sufficiently accurate recommendations to cope with the crisis. To be able to complete the profile with so many personality variables, whilst avoiding making it too cumbersome to the final user due to high number of items, the first step was reducing the dimensionality of the personality tests, creating a brief instrument. In the second study, the profiles of the confined Spanish population and professionals who have made use of the iENCUIST tool during the Covid-19 pandemic are described and the usefulness of this online help is evaluated through user satisfaction.

Study 1

Method

Participants

The sample of the first study consisted of 2362 people who answered the questions of different questionnaires of personality. This sample was made up of 68.2% women and 31.8% men with an average age of 30.83 years (*SD*= 12.28) and an age range from 18 to 74 years.

Institutional Review Board approval was obtained. To be included in the sample, participants had to document that they were of adult age (i.e., 18 years of age or older), and agree to online written informed consent in which the study was extensively described. These data from Study 1 were collected online prior to the onset of the Covid-19 pandemic, and participants responded to advertisements requesting potential volunteers for psychological research on the web (e.g., newsgroups, university websites).

Instruments

a) *NEO Five Factor Inventory* (NEO-FFI, Costa & McCrae, 2008). Four items from the extroversion subscale of the NEO-FFI, which focus on evaluating a subject's sociability levels, were used to evaluate the extroversion trait (E). The response format is from 1 (strongly disagree) to 5 (strongly agree). This subscale has an alpha of .659.
b) *Zuckerman Sensation Seeking Scale-V* (SSS-V; Zuckerman et al., 1978). To evaluate the sensation-seeking (SS) trait, two items were selected from the emotion search subscale, three items from the experience search subscale, and one item from the SSS-V, to which were added the items ("I like routine", "I like to have exciting body sensations", "I would like to carry out activities that involve some risk", "I get bored easily") prepared by the research team. In total, the sensation-seeking trait is made up of 10 items with a response format ranging from 1 (strongly disagree) to 4 (strongly agree) and yields an alpha of .723.
c) *State-Trait Anxiety Inventory* (STAI; Spielberger, 1983). To assess the relatively stable propensity for anxiety (AN), the trait anxiety subscale of the STAI was used. This subscale consists of 20 items with a response format of 0 (almost never/not at all) to 3 (very much/almost always) and has an alpha of .905.
d) *State-Trait Anger Inventory* (STAXI-2; Spielberger, 1991). To assess the propensity to experience anger in a relatively stable way, the trait anger subscale (TA) of the STAXI-2 was used, consisting of 10 items that assess the temperament of anger and reaction to anger. The response format has 4 response options (A: Almost never; B: Sometimes; C: Often; D: Almost always) and presents an alpha of .870. In addition, the anger expression subscale was used. This subscale evaluates how the subject reacts or behaves when he or she

is furious. It consists of 6 items with 4 response options (A: Almost never; B: Sometimes; C: Often; D: Almost always). This subscale has an alpha of .786.

e) *Inventory Callous Unemotional* (ICU; Frick, 2004). The ICU is a 24-item self-report with 4 response options ranging from 0 (not true) to 3 (definitely true) and evaluates aspects such as uncaring, callousness, and unemotional. An alpha of .819 was obtained in this investigation.

f) *BIS/BAS Scale* (Carver & White, 1994). It is a self-report that assesses the features of the behavioral inhibition system (BIS) and behavioral activation system (BAS). It is made up of 20 items with 4 response options ranging from 1 (strongly disagree) to 4 (strongly agree). The BIS subscale presents an alpha of .737 and BAS presents an alpha of .780.

g) *Disgust Propensity and Sensitivity Scale-Revised* (DPSS-R; van Overveld et al., 2006). The DPSS-R was used to assess disgust. This scale is made up of 16 items with a response format of 1 (never) to 5 (always) and yields an alpha of .884.

h) *Need for Cognition Scale* (NC; Cacciopo et al., 1996). To evaluate an individual's motivation towards thinking, the reduced version (18 items) of the NC scale was used. Its response format ranges from 1 (not characteristic of me) to 5 (very characteristic of me), and it has an alpha of .887.

Procedure

In order to design a brief instrument for subject profiling in the shortest possible time, we decided to reduce the dimensionality of each of the instruments mentioned above and selected 4 items for each of the variables (except for extroversion, whose initial scale was already made up of 4 items). The procedure to select the best items was, first, to perform a reliability analysis of each of the instruments and to select items with an item-total correlation equal to or greater than 0.70. Second, an exploratory factor analysis was performed with each study variable to select one-dimensional items, using the unweighted least-squares extraction (ULS) and quartimax rotation methods. The ULS extraction method was used because the items do not follow a normal distribution and because the data are ordinal on Likert-type scales (Flora and Curran, 2004). Since the objective was to select one-dimensional items with a high degree of reliability, more importance was given to factor analysis than to reliability analysis, and the rotation was forced to two factors to select items that saturated highly in one factor and less in the other.

Data analysis

Reliability analyses were performed with the IBM SPSS Statistics 26.0 statistical package in order to depurate and reduce the dimensionality of the tests. The MPlus 6.11 statistical package was used for exploratory factor analysis with the unweighted least-squares extraction (ULS) and quartimax rotation procedures.

Results

Table 1 shows the 36 selected items that make up the brief version of the rotated factor matrix.

Table 1
Loading of the selected items of the rotated factor matrix

Items	Loading
SS_7. I like practicing activities implying some risk	.813
SS_5. I would like to try parachute jumping	.692
SS_1. I think I would enjoy the sensations of skiing very fast down a high mountain slope	.657
SS_6. I like having exciting body sensations	.599
AN_15. I feel inadequate	.738
AN_1. I feel pleasant	.700
AN_12. I lack self-confidence	.690
AN_17. Some unimportant thought runs through my mind and bothers me	.675
BIS_3. Critics or a reprimand strike me highly	.644
BIS_2. I am worried about making mistakes	.638
BIS_4. I feel highly upset when I think or know that somebody's angry at me	.582
BIS_1. When I think that something unpleasant will happen, I usually get pretty "wrought up"	.574
BAS_4. I give great effort to get things I want	.742
BAS_13. When I make work from something, I give my full self into it	.685
BAS_1. When I want something, I usually completely go for it	.653
BAS_12. If I see an opportunity to get something I like, I immediately get excited	.626
ICU_1. I express my feelings openly	.778
ICU_6. I do not show my emotions to others	.732
ICU_22. I hide my feelings from others	.713
ICU_19. I am very expressive and emotional	.660
TA_8. I get angry very quickly	.805
TA_2. I have a fiery temper	.785
TA_5. I fly off the handle	.766
TA_1. I am quick tempered	.757
TA_E_6. I lose my temper	.805
TA_E_4. I argue with others	.785
TA_E_5. I say nasty things	.766
TA_E_1. I express my anger	.757
DPSS_9. When I experience disgust, it is an intense feeling	.736
DPSS_10. I experience disgust	.723
DPSS_12. I become disgusted more easily than other people	.705
DPSS_6. Disgusting things make my stomach turn	.701
NC_13. I prefer my life to be filled with puzzles that I must solve	.749
NC_10. The idea of relying on thought to make my way to the top appeals to me	.734
NC_11. I really enjoy a task that involves coming up with new solutions to problems	.696
NC_2. I like to have the responsibility of handling a situation that requires a lot of thinking	.691

Note: SS= sensation seeking; AN= anxiety; BIS= behavioral inhibition system; BAS= behavioral approach system; ICU= callous unemotional; TA= trait anger; TA_E= expression of anger; DPSS= disgust; NC= need of cognition.

The extroversion subscale (α= .53) is defined as a subject's level of sociability - how much they enjoy being with other people. The sensation-seeking subscale (α= .82) refers to the tendency or desire for risk. The anxiety subscale (α= .77) evaluates the anxiety levels presented by the subject. The anger (α= .90) and anger expression (alpha= .78) subscales evaluate the levels of anger presented by the subject and the intensity of said emotion, respectively. The ICU subscale (α= .84) assesses a subject's difficulty to express their emotions and corresponds to the unemotional subscale of the original instrument. Items on the BIS (α= .50) and BAS (α= .50) subscales assess a subject's levels of inhibition and their ability to persist on a task, respectively. The disgust subscale (α= .84) assesses a subject's propensity to manifest disgust. And finally, the subscale for the need for cognition (α= .88) assesses how much a subject enjoys engaging in the activity of thinking.

Discussion

The brief version of the instruments has shown to maintain acceptable reliability indices in the different subscales that comprise it and can also provide relevant information to offer each participant a tailored orientation based on their profile, thus achieving the objectives proposed in this study.

Study 2

Method

Participants

The sample of individuals who use the iENCUIST tool was collected from March 29 to May 4, 2020, and was made up of 815 people, of whom 79.09% were persons confined to their home and 20.79% were health professionals, state security corps and forces, military, and nursing home staff. Of the people confined at home, 25.35% were men (*M*= 41.86, *D*= 15.89) and 74.65% were women (*M*= 38.97, *SD*= 13.65).

Regarding the number of people who live together at home, 11.82% of the sample reported that they lived alone, 23.95% reported two people, 23.02% reported three people, 27.22% reported four people, 8.86% reported five people, and 5.13% reported six or more people living at the same address. Regarding the characteristics of the home, 3.58% reported living in a home of less than 50 square meters, 25.66% reported living in a home measuring between 50-80 square meters, 39.97% reported living in a home measuring 80-120 square meters, and 30.79% reported living in a home measuring more than 120 square meters. The confined persons' employment situation is divided into 2.49% who had to continue working in person during the crisis, 58.79% who continued to telework, 12.29% who were in a temporary employment regulation file, 2.02% who lost their jobs as a result of the pandemic, and 24.42% who did not work before the crisis.

Regarding the number of professionals who use the iENCUIST tool, 24.40% are men (*M*= 49.56, *SD*= 9) and 75.60% are women (*M*= 42.57, *SD*= 10.5). Professionals are divided into 78.70% health care, 8.88% state security forces and corps, 2.37% military, and 10.06% nursing home staff. Regarding the professional experience of this group, 41.42% of these professionals held positions of responsibility in their work compared to 58.58% who did not; 73.37% had no previous crisis intervention experience, compared to 26.63% who did; 11.24% of the sample had between 1 and 5 years of professional experience, 32.54% had between 5 and 15 years, and 56.21% had over 15 years. Of the professionals, 10.06% of the sample had been infected with Covid-19 or had already gotten over the disease when the data was collected, compared to 89.94% who had not been infected. Out of the total sample of 815 people, 75.89% did not have relatives who had ever had Covid-19, 9.59% had relatives who had already gotten over the disease, 11.07% had relatives who had the disease when the data was collected, 0.86% had family members who were seriously ill, and 2.46% had family members who had died as a result of Covid-19.

Institutional Review Board approval was obtained. To be included in the sample, participants had to document that they were of adult age (i.e., 18 years of age or older), and agree to online written informed consent in which the study was extensively described.

Instruments

a) *The iENCUIST tool*. As explained previously, the iENCUIST tool consists of 3 sections. In the first, sociodemographic questions are asked according to the group (professionals or confined persons); in the second section, the personality variables are applied; and, in the last section, an email address is requested to which the personalized guidelines are sent.
b) *Feedback from the iENCUIST tool.* Six weeks after data collection, the people who agreed to continue to contact the researchers answered the following questions to assess the usefulness and help of the tool: *"I have applied the tool's guidelines", "The tool's guidelines have helped me manage the situation in this crisis", "I would recommend this tool to a friend or acquaintance", "If this procedure of receiving personalized guidance becomes an App that you can consult whenever you want, would you use it?"*. The response format was 0 (not at all) to 5 (very much).

Procedure

The link to the iENCUIST tool was distributed through newsgroups and university websites, as well as through the College of Physicians of the Community of Madrid and the official website of the government of the Community of Madrid.

Data analysis

Descriptive analyses, student *t* tests for independent samples, and one-way ANOVA were performed to profile the individuals who requested help through iENCUIST. These statistical analyses were performed with the IBM SPSS Statistics 26.0 statistical package.

Results

Profile of the population confined during Covid-19

Table 2 shows the descriptive data of men and women in each of the analyzed variables. Men present significantly more sensation seeking (t= 3.56, p= .0001, d= 0.32), more difficulty expressing their emotions (t= 5.44, p= .0001, d= 0.49), and more need for cognition (t= 5.40, p= .0001, d= 0.50) than women. Conversely, women have significantly higher scores than men in extroversion (t= 3.09, p= .002, d= 0.28), anxiety (t= 4.50, p= .0001, d= 0.41), inhibitory behaviors (t= 5.68, p= .0001, d= 0.51), persistence in the task (t= 4.79, p= .0001, d= 0.42), and in levels of disgust (t= 3.12, p= .002, d= 0.29).

Table 2

Descriptive statistics of the variables studied between confined men and women

Variables	Men		Women	
	M	*SD*	*M*	*SD*
Sensation seeking	9.83	3.48	8.70	3.52
Extroversion	11.60	2.11	12.20	2.16
Anxiety	3.69	2.59	4.75	2.57
Behavioral inhibition system	11.30	2.01	12.34	2.00
Behavioral activation system	12.97	1.84	13.70	1.62
Callous unemotional	5.41	2.89	3.94	2.99
Trait anger	8.12	3.05	8.33	3.09
Expression of anger	8.58	2.62	8.63	2.50
Disgust	9.23	3.01	10.18	3.44
Need of cognition	15.47	3.26	13.74	3.61

The results of Scheffé's homogeneous subsets indicate that confined persons who, at the time of data collection, reported that they had very ill family members or that one of their family members had died from Covid-19, had higher levels of anger expression. than people who did not have relatives who were sick or who had gotten over the disease, $F_{(4,639)}$= 3.088, p= .016, η^2= .019 (Table 3).

Table 3

Descriptive statistics of anger expression and the variable "relatives sick with Covid-19"

Answer options	*M*	*SD*
They are not sick	8.58	2.54
They have already gotten over the disease	8.66	2.65
They have the disease	8.33	2.29
They are very ill	11.40	2.60
They died of Covid-19	10.14	1.99

Confined persons were asked if they wanted investigators to contact them again later, and 46.34% of the sample answered "yes". Table 4 shows that people who did want to maintain contact had significantly higher levels of anxiety (t= 3.08, p= .002, d= 0.24), higher levels of inhibition (t= 2.05, p= .04, d= 0.16), higher levels of persistence in the task (t= 2.39, p= .01, d= 0.18), greater ability to express their emotions (t= 2.17, p= .03, d= 0.17), higher levels of anger (t= 1.96, p= .05, d= 0.15), and higher levels of expression of anger (t= 2.50, p= .01, d= 0.19), than those who did not want to maintain contact.

Table 4

Descriptive statistics of the variable "subsequent contact" with the study variables in the confined population

Variables	Contact		No contact	
	M	*SD*	*M*	*SD*
Sensation seeking	9.14	3.52	8.86	3.57
Extroversion	12.14	2.12	11.96	2.20
Anxiety	4.82	2.77	4.19	2.44
Behavioral inhibition system	12.25	2.10	11.92	2.00
Behavioral activation system	13.69	1.68	13.37	1.71
Callous unemotional	4.04	2.98	4.56	3.06
Trait anger	8.53	3.16	8.05	2.99
Expression of anger	8.89	2.49	8.39	2.55
Disgust	10.05	3.52	9.84	3.22
Need of cognition	14.41	3.60	13.99	3.59

Profile of professionals during Covid-19

Statistical analyses were carried out comparing the different groups of professionals with each other (health care, law enforcement, military, and senior center staff) among the personality variables studied, and no significant differences were observed between groups. Therefore, the results presented below consider the entire sample of professionals as a whole.

Table 5 shows the descriptive data of the professionals' profile. The differences found indicate that women have significantly higher scores in anxiety (t= 2.26, p= .02, d= 0.40), inhibition (t= 2.60, p= .001, d= 0.47), and persistence in the task (t= 3.29, p= .001, d= 0.61) than men.

Table 5

Descriptive statistics of the variables studied between professional men and women

Variables	Men		Women	
	M	*SD*	*M*	*SD*
Sensation seeking	8.83	2.88	8.12	3.17
Extroversion	12.51	1.87	12.14	1.93
Anxiety	2.93	2.49	3.91	2.40
Behavioral inhibition system	11.41	1.96	12.35	2.02
Behavioral activation system	12.85	1.37	13.77	1.60
Callous unemotional	4.59	2.55	3.97	3.12
Trait anger	7.37	2.76	7.95	3.05
Expression of anger	8.80	2.59	8.01	2.30
Disgust	9.00	3.84	8.69	3.15
Need of cognition	14.37	3.26	13.55	3.77

Professionals with more years of experience (more than 15 years) present significantly less levels of anxiety ($F_{[2.168]}$= 3.87, p= .023, η^2= 0.04), less sensation seeking ($F_{[2,168]}$= 5.26, p= .006, η^2= 0.06), and more persistence in the task ($F_{[2,168]}$= 6.02, p= .003, η^2= 0.06), than professionals with less experience (1-5 years) (Table 6).

Table 6

Descriptive statistics of the years of experience of professionals in the study variables

Variables	From 1 to 5 years		From 5 to 15 years		More than 15 years	
	M	*SD*	*M*	*SD*	*M*	*SD*
SS	10.11	3.34	8.62	3.38	7.75	2.73
E	12.63	2.11	12.44	2.08	12.03	1.76
AN	4.79	2.25	3.98	2.46	3.26	2.40
BIS	12.79	1.75	12.45	2.01	11.79	2.06
BAS	14.53	1.07	13.73	1.54	13.54	1.59
ICU	4.84	3.45	4.04	3.32	4.03	2.70
TA	8.00	3.16	7.47	3.02	7.94	2.95
TA_E	8.00	2.21	7.80	2.49	8.46	2.35
DPSS	8.16	2.77	8.40	3.46	9.09	3.31
NC	13.95	3.10	13.44	4.29	13.92	3.37

Note: SS= sensation seeking; E= extroversion; AN= anxiety; BIS= behavioral inhibition system; BAS= behavioral activation system; ICU= callous unemotional; TA= trait anger; TA_E= expression of anger; DPSS= disgust; NC= need of cognition.

Professionals who occupy positions of responsibility in managing the health crisis present higher levels of persistence in the task (t= 2.06, p= .04, d= 0.32) and need for cognition (t= 2.36, p= .019, d= 0.36) than professionals who do not occupy positions of responsibility (Table 7). Differences in personality variables were also observed, depending on whether the professionals had lived through previous crisis situations (Table 7). Professionals who have had previous crisis experiences presented significantly more sensation seeking (t= 2.39, p= .019, d= 0.39), less anxiety levels (t= 2.45, p= .015, d= 0.43), and fewer levels of inhibition (t= 2.90, p= .004, d= 0.51), than professionals who have not gone through previous crisis experiences.

Table 7

Descriptive statistics of the responsibility of the professional position and previous crisis experience in the variables studied

Variables	Position of responsibility				Crisis experience			
	Yes		No		Yes		No	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
SS	8.29	3.37	8.30	2.91	9.22	3.50	7.96	2.88
E	12.41	1.71	12.10	2.04	12.13	1.84	12.27	1.94
AN	3.73	2.74	3.63	2.23	2.91	2.28	3.94	2.45
BIS	12.30	2.03	11.99	2.04	11.38	1.83	12.39	2.05
BAS	13.84	1.61	13.33	1.55	13.36	1.47	13.61	1.63
ICU	3.99	3.02	4.22	2.98	4.40	2.90	4.02	3.03
TA	7.97	3.09	7.67	2.92	7.71	2.98	7.82	3.00
TA_E	8.10	2.62	8.26	2.22	8.09	2.19	8.23	2.46
DPSS	8.67	3.26	8.83	3.36	8.89	3.47	8.72	3.27
NC	14.54	3.90	13.21	3.39	14.58	3.20	13.47	3.78

Note: SS= sensation seeking; E= extroversion; AN= anxiety; BIS= behavioral inhibition system; BAS= behavioral activation system; ICU= callous unemotional; TA= trait anger; TA_E= expression of anger; DPSS= disgust; NC= need of cognition.

Out of the professionals who consult the iENCUIST tool, 10% were infected with Covid-19 and the professionals who were infected presented significantly higher levels of sensation seeking (t= 2.24, p= 0.026, d= 0.51), than the professionals who did not become infected (Table 8).

Table 8
Descriptive statistics of the variables studied among the professionals who had Covid-19

Variables	Infected		Not infected		Contact		No contact	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
SS	9.88	3.82	8.12	2.97	8.17	2.94	8.42	3.27
E	12.35	1.86	12.22	1.92	12.36	1.96	12.10	1.86
AN	3.53	1.70	3.68	2.52	4.09	2.56	3.23	2.25
BIS	12.59	1.97	12.07	2.04	12.35	2.23	11.88	1.80
BAS	14.00	1.54	13.49	1.59	13.70	1.67	13.39	1.49
ICU	3.35	2.42	4.21	3.04	3.99	3.02	4.27	2.98
TA	8.71	3.11	7.69	2.96	8.45	3.15	7.11	2.66
TA_E	9.00	1.96	8.11	2.42	8.48	2.49	7.90	2.25
DPSS	8.65	3.57	8.78	3.29	8.78	3.30	8.75	3.34
NC	13.00	3.27	13.85	3.70	14.01	3.67	13.51	3.65

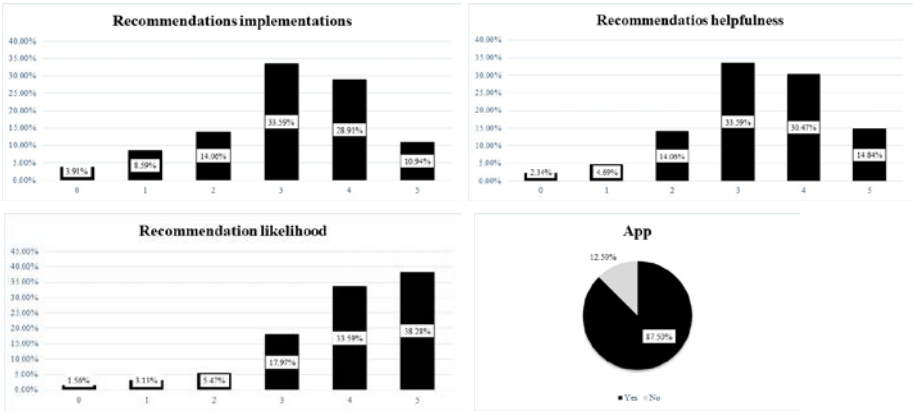
Note: SS= sensation seeking; E= extroversion; AN= anxiety; BIS= behavioral inhibition system; BAS= behavioral activation system; ICU= callous unemotional; TA= trait anger; TA_E= expression of anger; DPSS= disgust; NC= need of cognition.

Professionals were also asked if they wanted the researchers to contact them again later, and 50.88% of the sample answered "yes". Table 8 shows that people who did want to maintain contact had significantly higher levels of anxiety (t= 2.32, p= .021, d= 0.35) and higher levels of anger (t= 2.99, p= .003, d= 0.45) than those who did not want to maintain contact.

Feedback from the iENCUIST tool

Six weeks after data collection began, all people who wanted to maintain subsequent contact were asked to assess the usefulness and help of the iENCUIST tool. Responses were received from 33.33% of the people asked and, as can be seen in Figure 1, 73.44% of the sample used the recommendations (evaluation of 3 or more points), it helped 78.90% of them manage the crisis situation (evaluation of 3 or more points), 89.84% would recommend this tool to an acquaintance or friend (evaluation of 3 points or more), and 87.50% of the sample would use an App with this recommendation format.

Figure 1
Results of the evaluation of users of the iENCUIST tool



Discussion

The iENCUIST tool has been offered both to people confined to their homes and to professionals who have acted on the front line during the state of alarm decreed in Spain, such as health care workers, security forces and corps, and personnel from senior centers, whose specific situation deserved special attention.

In the global sample, significant differences were observed according to participants' gender, with more sensation seeking, more difficulty in expressing their emotions, and more need for cognition in men, while higher rates of extroversion, anxiety, inhibitory behaviors, persistence in the task, and disgust were seen in women. These results are in line with what is expected, considering the literature regarding gender differences. Various studies have consistently shown higher levels of anxiety in women vs. men (Feingold, 1994; Jalnapurkar et al., 2018), as well as extroversion (Feingold, 1994; Weisberg et al., 2011), behavioral inhibition (BIS) (Ma-Kellam & Shengtao, 2020), and disgust (Al-Shawaf et al., 2018). On the other hand, men tend to obtain higher levels than women in sensation-seeking (McDaniel & Zuckerman, 2003; Zuckerman, 1994; Zuckerman et al., 1978), as well as unemotional traits (Rachle et al., 2018). The results of the present study support the data found by Somma et al. (2020) and Xiong et al. (2020) and suggest that special attention should be paid to women, who seem to suffer more emotionally from the impact of confinement and the pandemic situation. Along with their higher scores in anxiety, inhibition, or disgust, their higher scores in extroversion have also been related to greater discomfort due to social distancing measures (Carvalho et al., 2020). In addition, it is necessary to have a special follow-up of the high scores in disgust since, although it can be a protection factor to avoid contagion, it can also be the precursor of several pathologies such as obsessive-compulsive disorder (Knowles et al., 2018; Olivera-La Rosa et al., 2020).

An interesting fact is that the confined persons who, at the time of data collection, reported that they had seriously ill relatives or that some of their relatives had died from Covid-19, had higher levels of expression of anger than people who did not have relatives who were sick or who had gotten over the disease. This data is consistent given their situation of mourning, or frustration facing the possibility of imminent death. Feelings of anger and resentment, as well as the search for those responsible or guilty, are characteristic of mourning. These people will probably require special attention, given the possibility that they may develop a complicated form of grief. This is because, in most cases, the state of confinement prevented them from accompanying their relatives in hospitals and holding a wake for them before their funerals, thus preventing them from receiving the support of those close to them. These rapid losses under such complex circumstances could make it difficult to carry out a wake without complications (Bertuccio & Runion, 2020).

Considering the subsample of professionals, the significant differences detected based on gender have been more anxiety, inhibition, and persistence in the task. As can be seen, there are fewer differences among professionals based on the gender of the participants than in the confined population, and the differences found show a profile of professional women in the sample with anxiety, which is logical considering the situation they were facing and was also present in the general population. It was accompanied by a high level of inhibition which could be a protection factor to avoid contagion (Li et al., 2014) and by the ability to persist in their task and pursue their goals, which suggests good professional performance.

Considering the subsample of professionals, it has been found that a higher level of work experience corresponds to less anxiety, less sensation seeking, and more persistence in the task. These results, in addition to agreeing with the expected outcome, are positive, which means that the experience gained during the course of professional life improves the resilience of professionals, while motivating them to achieve their goals. In a similar sense, those professionals who have experienced crises prior to the current one obtained significantly higher scores in "search for sensations", and less in "anxiety and inhibition".

Likewise, the following results relative to professionals who occupy positions of responsibility were observed: they show significantly more persistence in the task and more need for cognition, which are expected characteristics in individuals who must lead other people in the exercise of their profession, and especially in difficult situations such as those related to the development of the Covid-19 pandemic. Specifically, increased need for cognition has been associated with more goals that require reasoning and problem solving (Gollwitzer et al., 2012). For example, Wu et al. (2014) suggested that people with a great need for cognition tend to be involved in innovative processes that require dealing with complex situations, investing effort, and developing new strategies and solutions in the workplace context.

Significantly higher sensation-seeking scores were also observed among professionals who were infected. This data is somewhat alarming, because it could have to do with a certain lack of precaution when it comes to adequately protecting themselves against the virus, or it could be because they are people who take greater risks in the exercise of their profession in extreme situations. It should be kept in

mind that, in Spain during the first weeks of the pandemic, health professionals did not have the necessary means of protection available to carry out their work with guarantees, and at the same time were in very high demand by people infected with Covid-19. It is possible that, in view of the urgent need to care for the sick, professionals who had more sensation seeking took more risks, increasing the chances of getting infected.

The evaluation made by users of the iENCUIST tool indicates that it has been very useful. An indirect indicator of the utility of the tool perceived by the participants is the high response rate received 6 weeks after having disseminated it (33.33%). This is added to the fact that 46.34% of participants, and 50.88% of professionals, stated that they wanted researchers to contact them again later, which indicates that they perceived utility in the tool. This was confirmed by the evaluations offered 6 weeks later, in which 73.44% of respondents indicated that they had used the recommendations, 78.9% indicated that it helped them, 89.84% would recommend it to a friend, and 87.5 % would use an App with this recommendation format.

Both in the sample of professionals and confined persons, the individuals who wanted to continue keeping in touch with the researchers were those with higher scores regarding the emotional variables. It is important to keep this information in mind for two reasons. First, because the people who need it the most can receive follow-up through the iENCUIST tool and, second, because this monitoring can reduce the chances of developing post-traumatic stress disorder (Tang et al., 2020). Early identification of the existence of psychological distress is a key element for preventing future psychological problems. As recommended by various authors, psychology and psychiatry professionals should have access to citizens to offer them help through an online methodology with the aim of promoting their psychological and physical health and well-being (Inchausti, et al., 2020; Khan et al., 2020; Lima et al., 2020). That is precisely the objective of iENCUIST, which offers brevity, immediacy of response, ease of dissemination, and personalization of the guidelines offered based on the personality profiles obtained.

The main objective of this research was to develop an online tool (iENCUIST) to provide psychological support to confined individuals and professionals during the Covid-19 pandemic. Through iENCUIST, people received via e-mail a series of psychological orientations to overcome the crisis, adjusted to their personality profile. To shorten the personality profiling of the subjects, 40 items were selected from different personality tests whose psychometric properties have proven to be acceptable. Study 2 presents the psychological profiles of confined persons and professionals who have requested psychological help. The results indicate that confined women present higher scores in the variables of anxiety, anger, or disgust, placing this group at greater risk of presenting psychological problems. As for professionals, those with more years of work experience or who have faced past crises have greater emotional stability, being a key factor in crisis management. After 6 weeks, the usefulness of the help offered by iENCUIST was evaluated and almost 80% of users who responded indicated that they used the recommendations offered by the tool and that they helped them overcome the crisis.

Although this study offers promising results, it is not without limitations. Firstly, these are the profiles of people who have required help during the first months of the Covid-19 pandemic. It would have been interesting to compare these profiles with those who have not required help during confinement or to carry out their work. Secondly, it would have been necessary to have the capacity to offer more specific help (by phone or video call) to profiles with very high scores in the study variables and, therefore, with a higher possibility of risk of presenting a mental disorder. Two future lines of research emerge from this limitation. On the one hand, transforming the iENCUIST link into an application that allows psychological triage to be carried out to refer people who are most at risk to specific resources. On the other hand, re-evaluating the subjects after 6 months to see if the responses given at the start of the pandemic were due to an adaptive response or, conversely, if there are some people who have higher scores.

In conclusion, the present study provides valuable information for offering intervention and prevention strategies in future situations. It is important that researchers offer tools to the population to facilitate immediate help or guidance during crises. An important aspect to bear in mind is that these types of tools (such as iENCUIST) can help in a certain moment of crisis, but they should not replace the intervention of a health professional if necessary. Research in general pays little attention to the implementation of effective interventions (Duan & Zhu, 2020) in real time, and the early detection of psychological distress is key in preventing problems from becoming chronic or sustained in the future. This is what has been sought with the design of this iENCUIST tool, which has proven its potential to help the individuals who have used it.

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