<u>**Scientific report of the project PSICOV20-652016-P**</u>

1. **Title of project:** Psychological Coping with the COVID-19 Pandemic.

2. **Principal investigators:** David Fernández Carreño (Universidad de Almería), Nikolett Eisenbeck (Universidad de Sevilla)

3. **Collaborators:** Paul T.P. Wong (Meaning-Centered Counselling Institute Inc, Canada), Joshua A. Hicks (Texas A&M University, USA), José Manuel García-Montes (Universidad de Almería, Spain), José Antonio Pérez-Escobar (ETH Zürich, Switzerland), Ruíz-Ruano García María (University of Granada, Spain), Jorge L. Puga (University of Granada, Spain), James Greville (University of South Wales, UK), Ines Testoni (University of Padova, Italy), Gianmarco Biancalani (University of Padova, Italy), Ana Carla Cepeda López (Universidad de Monterrey, Mexico), Sofía Villarreal (Universidad de Monterrey, Mexico), Violeta Enea (Alexandru Ioan Cuza University, Romania), Christian Schulz-Quach (University of Toronto, Canada), Jonas Jansen (Rheinland Klinikum Neuss GmbH, Germany), Maria-Jose Sanchez-Ruiz (Lebanese American University, Lebanon), Murat Yıldırım (Ağrı İbrahim Çeçen University, Turkey), Gökmen Arslan (Mehmet Akif Ersoy University, Turkey), José Fernando A. Cruz (University of Minho, Portugal), Rui Manuel Sofia (Polytechnic Institute of Viana do Castelo, Portugal), Maria José Ferreira (Lusófona University of Oporto, Portugal), Farzana Ashraf (COMSATS University, Pakistan), Grażyna Wąsowicz (Kozminski University, Poland), Shahinaz M. Shalaby (Tanta University, Egypt), Reham A. Amer (Tanta University, Egypt), Hadda Yousfi (University Of Batna, Algeria), JohnBosco Chika Chukwuorjiv (University of Nigeria Nsukka, Nigeria), Valeschka M. Guerra (Universidade Federal do Espírito Santo, Brazil), Sandeep Singh (Guru Jambheshwar University of Science and Technology, India), Samantha Heintzelman (Rutgers, USA), Bonar Hutapea (Universitas Tarumanagara, Indonesia), Bouchara Béjaoui (Claude Bernard University Lyon, France), Arobindu Dash (International University of Business Agriculture and Technology, Bangladesh), Karoly Kornel Schlosser (Goldsmith, University of London, UK), Malin K. Anniko (Örebro University, Sweden), Martin Rossa (Otto von Guericke University Magdeburg, Germany), Hattaphan Wongcharee (Pathumwan Institute of Technology, Thailand), Andreja Avsec (University of Ljubljana, Slovenia), Gaja Zager Kocjan (University of Ljubljana, Slovenia), Tina Kavčič (University of Ljubljana, Slovenia), Dmitry A. Leontiev (National Research University Higher School of Economics, Russia), Olga Taranenko (National Research University Higher School of Economics, Russia), Elena Rasskazova (National Research University Higher School of

Economics, Russia), and Elizabeth Maher (New Zealand Acceptance & Commitment Therapy Training Ltd., New Zealand)

4. **Purpose of project and its academic rationale.**

Our goal was to conduct novel research into how people cope psychologically with the current coronavirus crisis (e.g., confinement, feelings of stress and depression). The study was applied online and aimed to measure longitudinally different mechanisms of psychological coping, with a special emphasis on coping with existential components (e.g., meaning in life and acceptance of negative emotions) and its beneficial effects on mental health.

We live in a very intense and key time for humanity because more than a hundred years ago we have not faced a pandemic as harmful as the current one. As psychologists and researchers, we have a responsibility to measure the psychological effects of this crisis in order to understand which are the most effective coping methods. With this knowledge we are able to identify the characteristics of the most resilient and also the most vulnerable people with the long-term objective of generating interventions that can help in times of crisis like this.

The present study is framed in positive existential psychology (EPP; Wong, 2009) or second wave of positive psychology (PP2.0, Lomas & Ivtzan, 2015; Ivtzan, Lomas, Hefferon & Worth, 2015; Wong, 2011). Positive existential psychology was developed seeking the integration of Humanistic Existential Psychology with positive psychology. PP2.0 represents a development of the first wave of positive psychology (Seligman & Csikszentmihalyi, 2000), a paradigm criticized for being excessively focused on positivity (for example, Held, 2004; Wong & Roy, 2017). In addition to the positive qualities of human functioning proposed in the first wave research, PP2.0 affirms that to get the best out of people, it is necessary to accept the negative side of life. In life suffering is inevitable but also potentially beneficial. According to this point of view, heartbreaking moments, trauma, death, illness, existential abyss, among others, although instinctively they can be considered undesirable, they can also be promoters of personal and spiritual growth (Wong, 2011).

How one relates to adversity and negative emotions is crucial to well-being. A style of avoidance to cope with life's demands has been associated with a significant number of psychological problems. For example, Ben-Zur (2009) found that avoidance-based coping was negatively related to positive affect and positively related to negative affect. Blalock and Joiner (2000) found that cognitive avoidance is predictive of

depressive and anxious symptoms in women. Similarly, Elliot, Thrash and Murayama (2011) observed in a longitudinal study with university students that facing stressful situations by evading undermines subjective well-being. In another study, Dempsey, Overstreet, and Moely (2000) found that children who experienced higher levels of violence and used cognitive distraction strategies were at risk for more symptoms of post-traumatic stress disorder. Drug use has also been considered as a coping strategy based on the avoidance of negative emotions (Carreno & Pérez-Escobar, 2019).

Although adversity is generally not desired, it can also be a strong promoter of personal growth. Many people who experience events such as diagnosing a life-threatening illness, survivors of natural disasters, war veterans, spouses, and parents who lose loved ones and other survivors of a near-death event report what is called " post-traumatic growth ”(Calhoun & Tedeschi, 2006; Khanna & Greyson, 2015). This growth is based on positive change related to greater personal strength, an openness to new possibilities in life, a greater connection with other people, a greater appreciation of life and a spiritual change after such events (Calhoun & Tedeschi, 2006). This phenomenon indicates that growth and discomfort coexist.

However, adversity does not guarantee growth. Post-traumatic growth depends on two coexisting components (Maercker & Zöllner, 2004; Zoellner & Maercker, 2006): a functional constructive side (based on openness and acceptance) and a dysfunctional illusory side (self-deception or cognitive avoidance). Post-traumatic growth is predicted on the constructive side and the severity of post-traumatic stress, suggesting that those who suffer greatly but accept their experience have more potential to grow (e.g., Görg et al., 2017; Shipherd & Salters- Pedneault, 2018). Distorted positive illusions can be useful, at least in the short term, to counteract emotional distress and promote self-consolidation (Zoellner & Maercker, 2006). However, if the illusory component serves as a long-term cognitive avoidance strategy, it can make psychological adjustment difficult (e.g., Dempsey et al., 2000).

Another fundamental component to face stressful events is the meaning in life. Meaning in life has been defined as "the sense of, and the felt importance regarding, the nature of being and one's existence" (Steger, Frazier, & Oishi, 2006, p. 81). Reker and Wong (1988) describe it as "the perception of order, coherence and purpose in one's existence, the search and achievement of valuable goals, and an accompanying sense of accomplishment" (p. 221). This construct is at the heart of human experience and represents an important area in clinical and health psychology (Hicks & Routledge, 2013; Wong, 2012). For example, meaning in life has been included as one of the main components of psychological well-being (Ryff, 1989), which has a protective role on health in reducing the risk of illness and prolonging life expectancy. (Ryff, 2014; Ryff, Heller, Schaefer, van Reekum, & Davidson, 2016). Furthermore, meaning-focused interventions have

shown improvements in quality of life and psychological well-being, as well as reduced psychological distress (Vos, 2016; Vos and Vitali, 2018). In a previous study, we observed that meaning in life, particularly sources of relational character, play a key role in well-being, while predicting less psychological discomfort, fundamentally less depression (Carreno et al., 2020).

The present study aimed to analyze and compare the aforementioned coping strategies during this COVID-19 pandemic. We seek to carry out a predictive analysis of which coping styles lead people to greater well-being and psychological adjustment to the current crisis, and which are related to greater post-traumatic post-traumatic stress and discomfort. The greatest emphasis was given to the mechanisms proposed by positive existential psychology such as the acceptance of negative emotions and the personal meaning that is given to this pandemic.

5. Brief description of methods and measurements.

Measures
All instruments are attached to this application.

-Demographic data
The demographic data of the participants were asked, such as country and municipality of residence, age, gender, marital status, studies, occupation, socio-economic level, if they were under psychological / psychiatric treatment and diagnosis if so.

-Attitudes and opinions about the coronavirus
In this section, participants were asked about their opinions and attitudes about the current pandemic. The questions include the level of concern for themselves and other people, effects on physical and mental health, beliefs about contagion, prevailing emotion at this time, days in confinement, whether or not they were infected and their symptoms. See attached full questions.

-Stress, Anxiety and Depression Scale (DASS-21)
Different versions of the Stress, Anxiety and Depression Scale was used (DASS-21; Brown, Chorpita, Korotitsch and Barlow, 1997). The items on this scale describe negative emotional states experienced during the past week and are rated on a 4-point Likert-type scale that ranges from 0 (not applicable to me at all) to 3 (very applicable to me, or the most hours). It consists of 21 items organized in three subscales: depression, anxiety and stress. The full scale scores represent general psychological distress.

-PERMA profile (PERMA)

The PERMA profile (Butler and Kern, 2015) measures subjective well-being and satisfaction with life through five subscales: positive emotions, commitment, relationships positive, meaning in life and achievement. The questionnaire consists of 23 items. Each question offers a scale of eleven points from 0 to 10 as indicated in each question. In this study, we used the PERMA profile on a 7-point scale, from 0 to 6 to better adapt it to the rest of the questionnaires in the package.

-Brief COPE Inventory (Brief-COPE)

The short version of the COPE inventory was used (Carver, 1997). It is a questionnaire of 28 items and 14 subscales (active coping, planning, instrumental support, use of emotional support, self-distraction, relief, behavioral disconnection, positive reinterpretation, denial, acceptance, religion, substance use, humor, self-blame) that is answered on a Likert-type scale of 4 response alternatives (from 0 to 3), between "I never do this" and "I always do this" with intermediate scores.

-Meaning-Centered Coping Scale (MCCS)

This instrument has been developed for the present study in order to collect the coping strategies during the pandemic proposed from positive existential psychology. The instrument measures meaning-centered coping, a set of cognitive, emotional, and behavioural strategies that serve to create and sustain meaning in life in adversity. Among these strategies are positive reframing, hope, existential courage, life appreciation, prosociality, and engagement in value-based actions. It contains a total of 9 items with a Likert scale from 1 (not at all agree) to 7 (completely agree). The psychometric properties of the questionnaire were investigated in this study in order to validate the instrument in 18 languages.

-Mature Happiness Scale (MHS)

This scale has been recently developed by Paul T. P. Wong (researcher in the present study, Wong & Bowers, 2018). It measures psychological well-being oriented to calm and emotional maturity. It is made up of 12 items on a Likert scale from 1 (not at all) to 5 (all the time) that evaluate inner harmony, acceptance, gratitude, satisfaction and peace with oneself, others and the world. The present study served to investigate its psychometric properties in different languages.

-Post-Traumatic Stress (PCL-5)

The Post Traumatic Stress Disorder Checklist for DSM-V (PTSD Checklist for DSM-5; PCL-5) is one of the most widely applied scales to measure post-traumatic stress (Ashbaugh, Houle-Johnson, Herbert, El -

Hage and Brunet, 2016). The questionnaire contains 20 items measured on a Likert-type scale from 0 (not at all) to 4 (totally). The items describe the symptoms referring to the diagnostic criteria of re-experimentation, avoidance, activation and cognitive alterations that characterize post-traumatic stress.

-Post-Traumatic Growth-Short Version (PTGI-SF)

The Posttraumatic Growth Inventory -Short Form (PTGI-SF) Inventory was used in this study. The PTGI-SF (Cann et al., 2010) measures five different factors (relationship with others, appreciation of life, personal strength, change in the philosophy of life, new possibilities) as possible areas of personal growth after having lived through a traumatic event. The instrument consists of 21 items that are answered on a Likert scale from 0 (No change) to 5 (A huge change).

Procedure

The study was carried out using an online survey through the Google Forms program. All the information, consent, and questionnaires were applied through this web application. Since participants can fill out the questionnaire from anywhere in the world, the identical questionnaire (including study information and consent) was offered in different languages. The study design is longitudinal with two measurement points.

The first measure was applied during the initiation or development of the virus in each country, depending on when we can start the study. The second measure was applied around 8-9 months later, when the virus was under a major control in each country. In countries where confinement or other social restrictions were implemented, the second measure was taken when people begin to return to social normality.

The measures included in the first package of questionnaires: Study information and consent; Demographic data; Attitudes and opinions about the coronavirus; DASS-21; PERMA, Brief-COPE; MCCS; MHS.

The measures included in the second questionnaire package: Study information; Identification code; DASS-21; Brief-COPE, MCCS, PERMA; PCL-5, PTGI-SF.

With this design, we were able to determine which coping strategies (and other psychological and demographic variables) predict a better future psychological adjustment, leaving fewer sequelae (eg, anxiety, post-traumatic stress, depressive symptoms). We kept abreast of the evolution of the virus in each participating country. The link to the questionnaire package was disseminated on social networks and to the contacts of the main researchers. The entry criteria was to be over 18 years old.

6. **Participants: recruitment methods, number, age, gender, exclusion/inclusion criteria.**

The study is international, so we recruited online participants from different countries around the world.

The exclusion criterion was not to exceed 18 years. An attempt was made to have a diverse sample in terms of provinces, ages, and gender, in order to have the greatest possible representation of the general population. To recruit this sample, the URL with the survey was shared in Google Forms to all personal contacts and groups that we have access to on social networks, mainly through Facebook and WhatsApp.

To have samples in other countries, we contacted interested collaborators who translated the questionnaires into their respective languages (those that have not yet been translated) and also disseminated the survey on social networks in their country.

We have obtained collaborators in the Spain, Canada, United States, UK, Italy, Mexico, Romania, Germany, Lebanon, Turkey, Portugal, Pakistan, Poland, Egypt, Algeria, Nigeria, Brazil, India, Indonesia, France, Bangladesh, Sweden, Thailand, Slovenia, Russia, and New Zealand. The estimated sample of participants by country was above 300 people with the same criteria and methods of recruitment as in Spain.

7. **Consent and participant information arrangements, debriefing.**

In this study the anonymity of the participants was preserved so that their responses to the questionnaires and other types of information required was not identifiable with the person in question. For this, the online questionnaire does not ask for the name or ID of the participants. Since we delivered several questionnaire packages at different times, and we needed to know which questionnaires belong to the same person, in the first questionnaire package each participant was asked to invent a code that was later requested in the subsequent questionnaire packages.

However, to send participants the additional questionnaire packages, people who decided to continue participating after completing the first survey were asked for a means of contact or an email. To those who decided to participate, a reminder was sent to said email with the link of the following survey. Emails were saved completely separate from other participant responses.

The researchers undertake to protect any type of personal information provided during the study by the participants. The investigator responsible for the custody of the data is David Fernández Carreño and Nikolett Eisenbeck. In addition, a password was placed in the data file so that only attached researchers can access the study databases. The results of the study have been scientifically disclosed from absolute anonymity.

The questionnaire was designed so that people can express how they feel and how they were psychologically facing the pandemic and confinement (in those countries where it has already been implemented). We believe that the survey can help participants reflect on different ideas on how to handle the situation, while sharing their experience with others. The survey took no more than 20 minutes.

The questionnaires used in the package did not induce discomfort, therefore their potential undesirable effects were very low. In particular, the DASS-21 questionnaire asks participants about their levels of depression, anxiety and stress. However, in previous studies we have observed that people do not report greater discomfort for answering this questionnaire, rather the opposite, they find some relief for being able to verbalize and share their discomfort.

8. Start date and duration of project.

The study started in March 2020 and it is open to date (January, 2023).

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