

# ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS

**Publications in Psychology Related to the COVID-19: A Bibliometric Analysis**

**Publicaciones en Psicología Relacionadas con el COVID-19: un análisis bibliométrico**

Danilo Zambrano\*

<https://orcid.org/0000-0003-1527-6088>

Daniela Serrato Alvarez\*

<https://orcid.org/0000-0001-5815-6794>

Oscar Javier Galindo Caballero\*\*

<http://orcid.org/0000-0003-4603-6415>

Recibido: Julio 01 de 2020

Aceptado: Julio 10 de 2020

Correspondencia: [danilozambrano@psicologos.com](mailto:danilozambrano@psicologos.com)

\* Fundación Universitaria Konrad Lorenz (Colombia)

\*\* Universidad de los Andes (Colombia)

## **Abstract.**

The new strain of a virus in the coronavirus family, COVID-19, generated a pandemic that changed the dynamics of the entire world. Since its inception, there have been discussions about the effects on mental health that isolation and social distancing can generate. To investigate the publications that have been made in psychology related to COVID-19, a bibliometric analysis was performed in the SCOPUS database in the psychology collection. We obtained 223 articles published in the first half of 2020. The results show that the studies are focused on the effects of the pandemic on mental health. Specifically, most of the studies are related to anxiety and depression and most of these studies were conducted in China. Furthermore, we discuss some limitations of the study regarding the social and intellectual structure of the articles retrieved. Finally, we suggest that future studies should explore how to promote or persuade individuals to comply with social distancing measures and to develop research focused on the effects of the pandemic on academic performance, job stress, job performance, marital satisfaction, sexual behaviour, among other phenomena.

**Keywords:** Bibliometric analysis, COVID-19, Psychology, Mental health.

## **Resumen.**

La nueva cepa de un virus de la familia de coronavirus, COVID-19, generó una pandemia que cambió las dinámicas en mundo entero. Desde su inicio se ha discutido sobre los efectos en la salud mental que pueden generar las medidas de aislamiento y distanciamiento social. Con el fin de indagar sobre las publicaciones que se han realizado en psicología relacionadas con el COVID-19, se realizó un análisis bibliométrico en la base de datos de SCUPUS en la colección de psicología. Se obtuvieron 223 artículos publicados en el primer semestre del 2020. Los resultados muestran que los estudios se

# ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS

han enfocado en los efectos de la pandemia en la salud mental. Específicamente, la mayoría de los estudios están enfocados en la ansiedad y la depresión y la mayoría de esos estudios fueron realizados en China. Por otro lado, discutimos algunas limitaciones del estudio respecto a la estructura social e intelectual de los artículos recuperados. Finalmente, sugerimos que se realicen investigaciones enfocadas en cómo promover o persuadir a los individuos para que obedezcan las medidas de distanciamiento social y que se desarrollen investigaciones enfocadas en los efectos de la pandemia en el desempeño académico, el estrés laboral, el desempeño laboral, la satisfacción marital, el comportamiento sexual, entre otros fenómenos.

**Palabras clave:** Análisis bibliométrico, COVID-19, Psicología, Salud mental.

## Introduction

In Wuhan, China, in early December 2019, several cases of pneumonia were reported (Ren, et al. 2020). By January 2, 2020, 41 patients were laboratory diagnosed with COVID-19 infection (Huang, et al., 2020) that made this virus (SARS-CoV-2), according to the complete genome sequencing, the seventh member of the coronavirus family to infect humans (Wu, et al., 2020). As of January 22, 2020, there were already 571 confirmed cases (Lu, 2020). Rapidly, the COVID-19 disease spread in various parts of the world through the air transport system and by March 12, the World Health Organization (WHO, 2020a), based on more than 20,000 infections in various regions of the world, characterized COVID-19 disease as a pandemic.

On the day this review was sent to the journal, June 30, 2020, the WHO based on laboratory tests counted a total of 10.321.689 cases of COVID-19 and 507.435 deaths around the world (WHO, 2020b). To combat a pandemic, individuals must engage in behaviours that can help prevent the spread of infections (Bish & Michie, 2010; Anderson, Heesterbeek, Klinkenberg, & Hollingsworth, 2020).

# *ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS*

Indeed, Governments around the world decided to close airports, declare quarantines, and request isolation and social distancing from their citizens, these strategies are proven to be effective in reducing and preventing the contagion of infectious diseases (Yan & Zou, 2008). Additionally, Governments have issued the guideline for use facemasks, among other recommendations, as more aspects of the symptoms and forms of transmission of COVID-19 became known, based on the WHO recommendations (WHO, 2020c).

However, such restrictions are ethically challenging (Wilder-Smith & Freedman, 2020) because several studies detailed the negative consequences of behaviour due to programmed isolation. Specifically, social isolation increases the risks of premature mortality (Valtorta, Kanaan, Gilbody, Ronzi, & Hanratty, 2016; Alcaraz, et al., 2019), depressive symptomatology (Ge, Yap, Ong, & Heng, 2017), post-traumatic stress symptoms and aggressive behaviours (Zelikowski, et al., 2018). Furthermore, social isolation increases feelings of loneliness that can harm overall health (Tiwari, 2013; Cole, et al., 2015; Leigh-Hunt, et al. 2017; Cacioppo & Cacioppo, 2018) and causes twice as much physical and psychological harm as smoking or obesity (Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015; Hawkey & Capitano, 2015).

Additionally, these negative effects could appear on weekends and during holiday's periods (which can be generalized to periods such as imposed quarantines and predict even stronger effects). Perhaps, as it is closely related to time spent at a computer or internet that can cause people to experience poor sleep quality (Liu, et al., 2017),

# *ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS*

changes in physical activity and changes in sleep routines which can result in weight gain, and loss of respiratory fitness (Brazendale, et al., 2017; G. Wang, et al., 2019).

Notwithstanding the negative consequences of social isolation, this turns out to be a mandatory measure to prevent massive contagion and a possible increase in deaths in a pandemic situation (Glass, Glass, Beyeler, & Min, 2006; Chen, Yang, Yang, Wang, & Bärnighausen, 2020; Mowbray, 2020). Researchers have suggested that to minimize the negative consequences individuals must obtain clear information about the disease from reliable sources that indicate the reason for distancing and social isolation.

Other recommendations to reduce feelings of loneliness suggest that individuals should be in contact with others remotely (Brooks, et al., 2020), to do physical activity, to have a balanced diet, to establish routines of sleep and promote a hygiene routine, especially in children (Mason, et al., 2018) and participate in crisis mental health interventions (Liu, et al., 2020). Even, to take a hot shower may reduce feelings of loneliness (Bargh & Shalev, 2012) or just walking and cycling could maintain satisfactory levels of well-being and health (De Vos, 2020).

Nevertheless, individuals can be reluctant to engage in such behaviours and behave in unusual ways such as hoarding or panic buying (Mahase, 2020; Garfin, Silver, & Holman, 2020), may incur self-medication (Mowbray, 2020), or self-medicate with disinfectants that could cause several health damages (López-Cañón & Pérez-Acosta, 2020).

# *ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS*

Consequently, researchers in psychology have generated various alliances and international calls (Palmer, 2020) to inquire about what could they do to minimize the effects of confinement and social distancing (see, for example, Arden & Chilcot, 2020; Dorison, et al., 2020; Forscher, Primbs, & Coles, 2020; K. Wang, et al., 2020).

To know what studies have carried out in psychology related to the COVID-19 disease and its effects, we performed a bibliometric of the publications in the first semester of 2020. Specifically, we established the following objectives to contribute to identifying the published articles related to the pandemic in psychological journals; identifying which articles have cited the most; to identify the most cited references, authors, and journals; and to explore the conceptual structure of the articles retrieved.

## **Method**

### **Design**

This work consisted of a bibliometric study that, according to Aria and Cuccurullo (2017), is useful to know the evolution of a topic or area of science from the quantification of the bibliometric information of the scientific production that allows identifying the most relevant authors, the most studied topics, research trends, the most used keywords, among other characteristics.

### **Search procedure**

On June 12, 2020, in the SCOPUS database, we retrieved the bibliometric information of all the articles published during 2020 in Psychology. The topic is composed of the following subareas according to the SCOPUS classification: applied

# ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS

psychology, clinical psychology, psychology experimental and educational, experimental, and cognitive psychology, general psychology, neuropsychology and physiological psychology, psychology (miscellaneous) and social psychology. This subarea has the contribution of 1462 scientific journals. Specifically, we generated the following advanced search in SCOPUS with the following keywords and only texts published in the year 2020 in Psychology, without considering reviews:

*SUBJAREA (psyc) AND TITLE-ABS-KEY (coronavirus OR covid-19 OR "novel coronavirus" OR "SARS nCoV" OR "2019 nCoV" OR "Wuhan coronavirus" OR "Wuhan pneumonia" OR "SARS-CoV-2") AND DOCTYPE (ar) AND PUBYEAR > 2019*

We retrieved the bibliographic information from 223 published articles, which we downloaded in the BibTeX format. On the following page, readers will be able to find the downloaded raw data so that they can reproduce the results found: <https://osf.io/gz9qa/>.

## **Data analysis**

Based on descriptive statistical analysis and data visualization techniques set in R, we analyzed the data exported in BibTeX in the “bibliometrix” version 3.0 package developed by Aria and Cuccurullo (2017). This package allows bibliometric analysis performed in the “biblioshiny” interface. Besides, in different areas of knowledge, this package has been used (see, for example, Alonso, Castiello, & Mencar, 2018; Anglada-Tort & Sanfilippo, 2019; Almeida & de Paula, 2019; Aria, Misurca, & Spano 2020).

## **Results**

# ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS

We found 223 documents published in 61 journals that contained 5,333 references, 418 authors' keywords and 574 keywords plus. Besides, we found that 62 articles had a sole author, and the average number of authors per article was 4.

Figure 1 shows the 20 journals where most articles have published according to this review during the pandemic. The Irish Journal of Psychological Medicine published 28 articles related to COVID-19. Next to the title in parentheses is the quartile of each journal based on the 2019 SCOPUS ranking (<https://www.scimagojr.com/>).

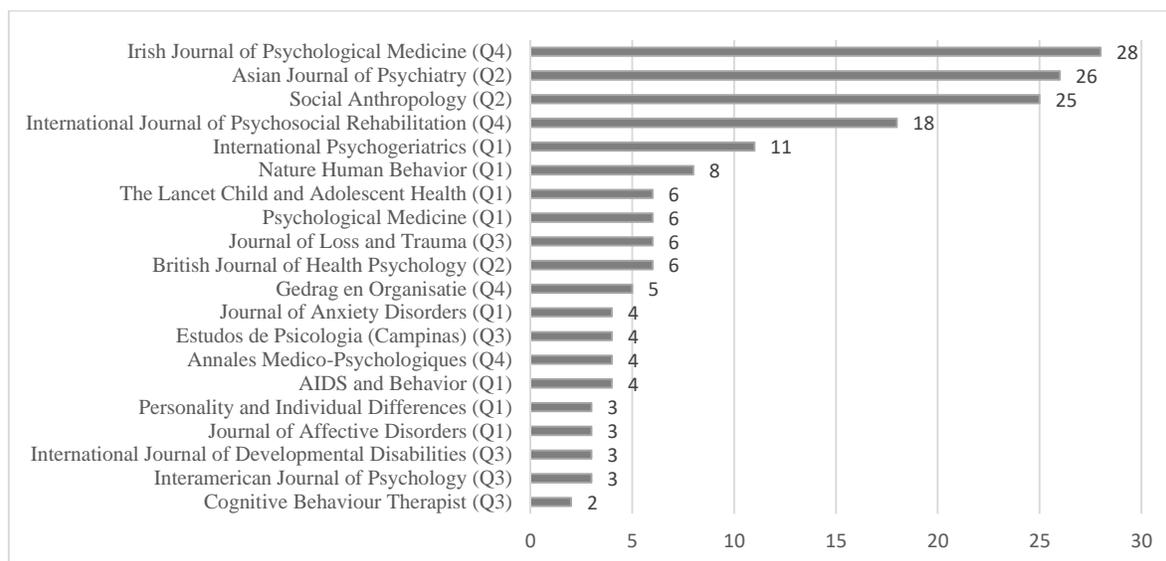


Figure 1. Journals that have published psychological studies related to COVID-19.

Additionally, we examined the frequency of citation of the articles until June 12, 2020. Table 1 shows the first 20 articles with the highest citation with their respective DOI number and a brief description of the articles. These articles focus on the effects of COVID-19 on mental health and most of them were made in China.

Table 1. Most cited articles worldwide during the pandemic of the 223 articles analyzed.

# ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS

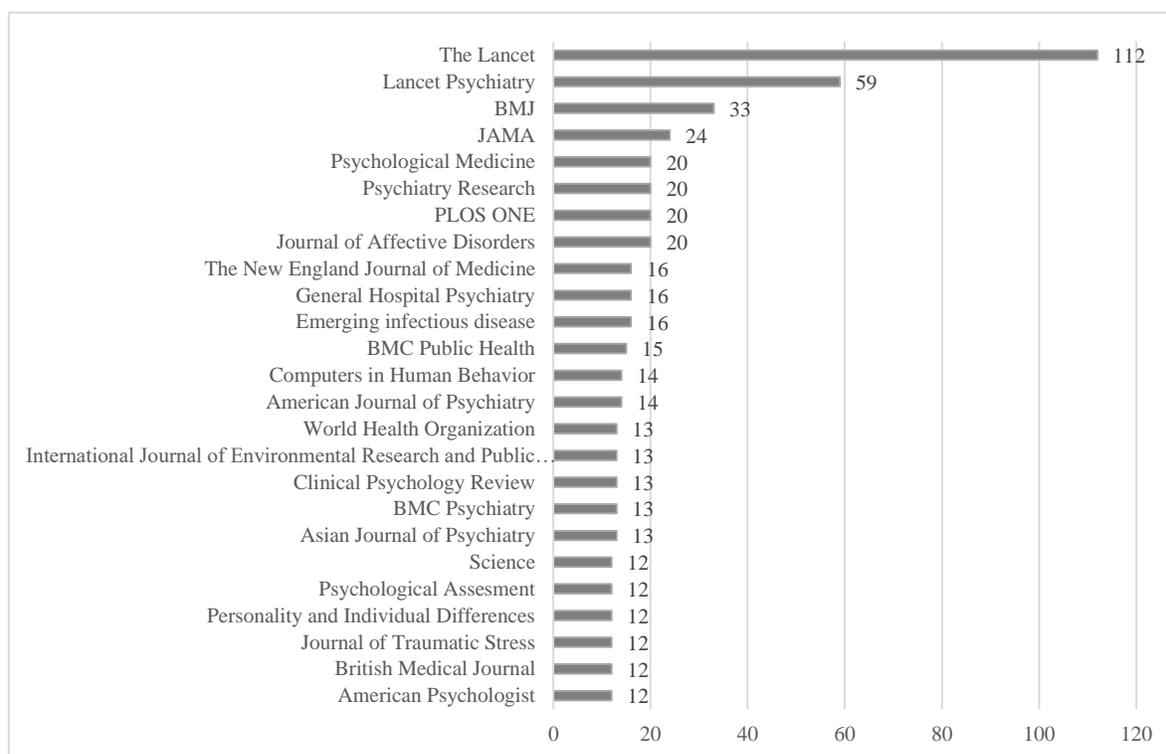
Nº	Authors	Description	DOI	Cites
1	Rajkumar, R. P.	Systematic review of 28 studies on mental health in relation to the pandemic.	<a href="https://dx.doi.org/10.1016%2Fj.ajp.2020.102066">https://dx.doi.org/10.1016%2Fj.ajp.2020.102066</a>	14
2	Bo, H. X., Li, W., Yang, Y., Wang, Y., Zhang, Q., Cheung, T., ... Xiang, Y. T.	Study on the relationship between post-traumatic stress symptoms and COVID-19 and the perception of virtual psychological services.	<a href="https://doi.org/10.1017/s0033291720000999">https://doi.org/10.1017/s0033291720000999</a>	10
3	Mamun, M. A. & Griffiths, M. D.	Recommendations of strategies for the prevention of suicidal behavior during the COVID-19 pandemic.	<a href="https://doi.org/10.1016/j.ajp.2020.102073">https://doi.org/10.1016/j.ajp.2020.102073</a>	9
4	Roy, D. & Sinha, K.	Letter to the editor: Analysis of cognitive biases, such as framing and overconfidence, as reasons for people not abiding by the isolation guidelines by COVID-19.	<a href="https://doi.org/10.1016/j.ajp.2020.102048">https://doi.org/10.1016/j.ajp.2020.102048</a>	9
5	Bavel, J. J. V., Baicker, K., Boggio, P. S., Caprano, V., Cichocka, A., Cikara, M., ... Willer, R.	Review of evidence of behavioral and social science strategies that can help effectively respond to the COVID-19 pandemic.	<a href="https://doi.org/10.1038/s41562-020-0884-z">https://doi.org/10.1038/s41562-020-0884-z</a>	8
6	Wang, Y., Di, Y., Ye, J., & Wei, W.	Study on the symptoms of anxiety and depression of 600 participants during the COVID-19 outbreak.	<a href="https://doi.org/10.1080/13548506.2020.1746817">https://doi.org/10.1080/13548506.2020.1746817</a>	6
7	Horesh, D. & Brown, A. D.	Recommendations for diagnosis, prevention, communication and public disclosure, and investigation of specific trauma related to COVID-19.	<a href="https://doi.org/10.1037/tra0000592">https://doi.org/10.1037/tra0000592</a>	5
8	Zhang, W. R., Wang, K., Yin, L., Zhao, W. F., Xue, Q., Peng, M., ... Wang, H. X.	Research on insomnia, depressive and anxiety symptoms in the Chinese population during the COVID-19 outbreak.	<a href="https://doi.org/10.1159/000507639">https://doi.org/10.1159/000507639</a>	5
9	Lee, S. A.	Creation and analysis of the psychometric properties of the Coronavirus Anxiety Scale -CAS- of five items applied to 775 adults.	<a href="https://doi.org/10.1080/07481187.2020.1748481">https://doi.org/10.1080/07481187.2020.1748481</a>	4
10	Taylor, S.	Review of theory, research, and practices related to anxiety sensitivity.	<a href="https://doi.org/10.1037/0000150-004">https://doi.org/10.1037/0000150-004</a>	4
11	Lee, J.	Analysis of the effects on mental health of school closings on children during the COVID-19 outbreak.	<a href="https://doi.org/10.1016/S2352-4642(20)30109-7">https://doi.org/10.1016/S2352-4642(20)30109-7</a>	4
12	Verawardina, U., Asnur, L., Lubis, A. L., Hendriyani, Y., Ramadhani, D., Dewi, I. P., ... Sriwahyuni, T.	Review of online learning and how it can help to cope with the COVID-19 outbreak.	N/A	4
13	Kavoor, A. R.	Analysis of mental health and COVID-19 in people with mental problems.	<a href="https://dx.doi.org/10.1016%2Fj.ajp.2020.102051">https://dx.doi.org/10.1016%2Fj.ajp.2020.102051</a>	3
14	Shi, W. & Hall, B. J.	Recommendations to help people experiencing multiple traumas during the COVID-19 outbreak.	<a href="https://doi.org/10.1016/j.ajp.2020.102065">https://doi.org/10.1016/j.ajp.2020.102065</a>	
15	Huang, Y. & Zhao, N.	Study on the prevalence of symptoms of anxiety, depression, and insomnia in 7,236 participants from China.	<a href="https://doi.org/10.1016/j.ajp.2020.102052">https://doi.org/10.1016/j.ajp.2020.102052</a>	
16	Marhefka, S., Lockhart, E., & Turner, D.	Recommendations and protocols for researchers to transition from person-to-person evaluations and	<a href="https://doi.org/10.1007/s10461-020-02837-x">https://doi.org/10.1007/s10461-020-02837-x</a>	3

# ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS

interventions to synchronous videoconferencing platforms.

17	Zhang, J., Shuai, L., Yu, H., Wang, Z., Qiu, M., Lu, L., ... Chen, R.	Study on the mental health of children with attention deficit disorder in China during the COVID-19 outbreak.	<a href="https://doi.org/10.1016/j.ajp.2020.102077">https://doi.org/10.1016/j.ajp.2020.102077</a>	3
18	McKay, D., Yang, H., Elhai, J., & Asmundson, G. J. G.	Study of moderation between sensitivity and disgust propensity to anxiety and fear of getting COVID-19.	<a href="https://doi.org/10.1016/j.janxdis.2020.102233">https://doi.org/10.1016/j.janxdis.2020.102233</a>	2
19	Moghanibashi-Mansourieh, A.	Study on the anxiety of the Iranian population during the COVID-19 outbreak and of participants who had a family member diagnosed with the disease.	<a href="https://www.x-mol.com/paperRedirect/1251560813656694784">https://www.x-mol.com/paperRedirect/1251560813656694784</a>	2
20	Ahmed, M., Z., Ahmed, O., Aibao, Z., Hanbin, S., Siyu, L., & Ahmad, A.	Study on the relationship between the COVID-19 outbreak and psychological problems (anxiety, depression, mental well-being, and alcohol consumption) in China.	<a href="https://doi.org/10.1016/j.ajp.2020.102092">https://doi.org/10.1016/j.ajp.2020.102092</a>	2

In figure 2, the most cited journals in the 5,333 references of the documents extracted with a cutoff of 12 occurrences. The most referenced magazine is The Lancet with 112 articles, followed by Lancet Psychiatry with 59 papers.



# ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS

Figure 2. Most relevant journals of the references of the 223 articles.

After, we explored which authors were the most cited in the references. In this sense, we found that the most cited authors were Wang, Y. (61) and Zhang, L. (40) as evidenced in figure 3. Although, we noted that there is not necessarily a relationship with the order of the most frequent references cited because the authors appear in different studies.

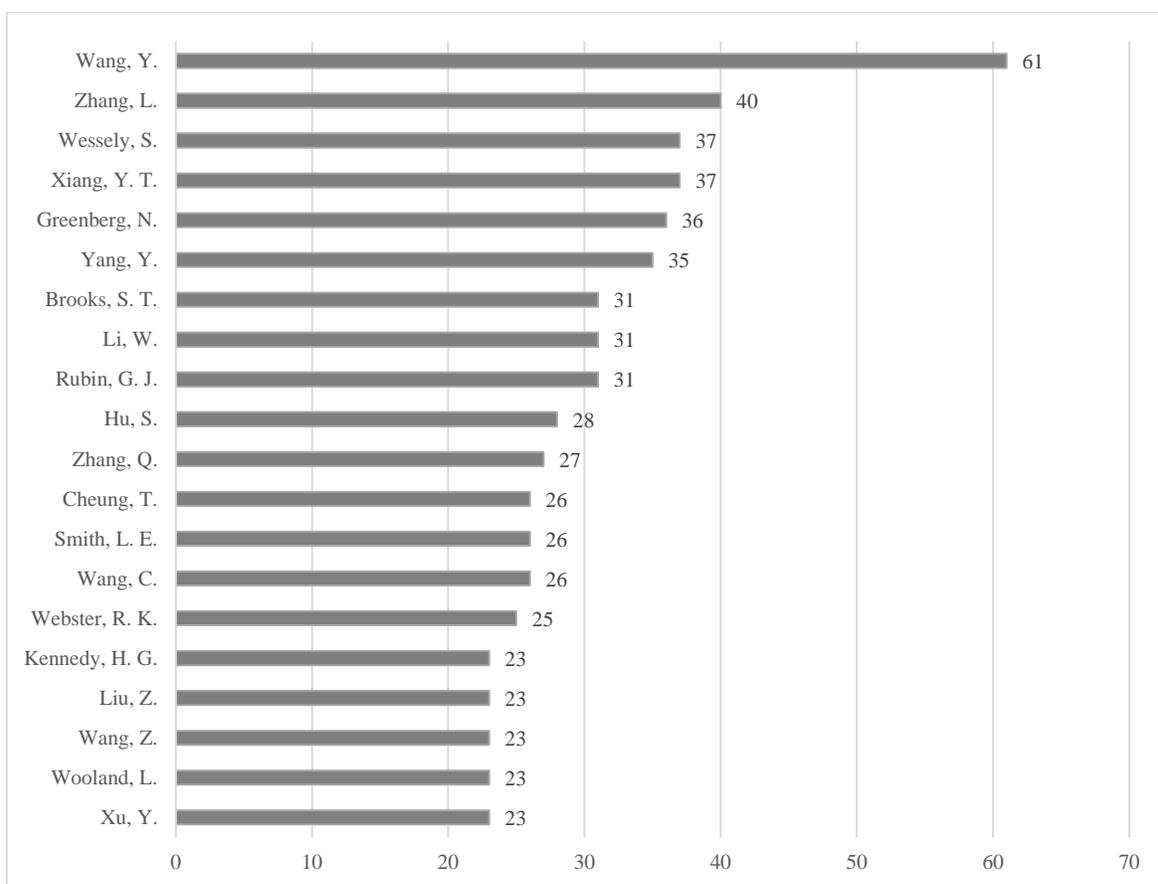


Figure 3. authors most cited in references.

Moreover, we explored which were the 10 most common references among the 223 articles. We found that Brooks, et al. (2015) and de Wang, et al. (2020) were the

# ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS

references most cited (See table 2) with a cutoff of 10 occurrences. Results showed that most of these studies were conducted in China.

Table 2. Most cited references in the 223 documents.

Nº	Referencias	Citas
1	Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020) The psychological impact of quarantine and how to reduce it: rapid review of the evidence. <i>The Lancet</i> , 395(10227), 912-920. <a href="https://doi.org/10.1016/S0140-6736(20)30460-8">https://doi.org/10.1016/S0140-6736(20)30460-8</a>	31
2	Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic among the General Population in China. <i>International Journal of Environmental Research and Public Health</i> , 17(5), 1729. <a href="https://doi.org/10.3390/ijerph17051729">https://doi.org/10.3390/ijerph17051729</a>	19
3	Qiu, J., Shen, B., Zhao, M., Wang, Z., Xie, B., & Xu, Y. A. (2020). A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: implications and policy recommendations. <i>General Psychiatry</i> , 33(2), e100213. <a href="https://doi.org/10.1136/gpsych-2020-100213">https://doi.org/10.1136/gpsych-2020-100213</a>	16
4	Banerjee, D. (2020). The COVID-19 outbreak: Crucial role the psychiatrists can play. <i>Asian Journal of Psychiatry</i> , 50, 102014. <a href="https://doi.org/10.1016/j.ajp.2020.102014">https://doi.org/10.1016/j.ajp.2020.102014</a>	15
5	Xiang, Y.-T., Yang, Y., Li, W., Zhang, L., Zhang, Q., Cheung, T., & Ng, C. H. (2020). Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. <i>The Lancet Psychiatry</i> , 7(3), 228–229. <a href="https://doi.org/10.1016/S2215-0366(20)30046-8">https://doi.org/10.1016/S2215-0366(20)30046-8</a>	14
6	Lai, J., Ma, S., Wang, Y., Cai, Z., Hu, J., Wei, N., ... Hu, S. (2020). Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. <i>JAMA Netw Open</i> , 3(3), e203976. <a href="https://doi.org/10.1001/jamanetworkopen.2020.3976">https://doi.org/10.1001/jamanetworkopen.2020.3976</a>	12
7	Liu, S., Yang, L., Zhang, C., Xiang, Y. T., Liu, Z., Hu, S., & Zhang, B. (2020). Online mental health services in China during the COVID-19 outbreak. <i>Lancet Psychiatry</i> , 7(4), e17-e18. <a href="https://doi.org/10.1016/s2215-0366(20)30077-8">https://doi.org/10.1016/s2215-0366(20)30077-8</a>	12
8	Zandifar, A. & Badrfam, R. (2020). Iranian mental health during the COVID-19 epidemic. <i>Asian Journal of Psychiatry</i> , 51, 101990. <a href="https://doi.org/10.1016/j.ajp.2020.101990">https://doi.org/10.1016/j.ajp.2020.101990</a>	12
9	Duan, L. & Zhu, G. (2020). Psychological interventions for people affected by the COVID-19 epidemic. <i>Lancet Psychiatry</i> , 7(4), 300-302. <a href="https://doi.org/10.1016/s2215-0366(20)30073-0">https://doi.org/10.1016/s2215-0366(20)30073-0</a>	10
10	Yao, H., Chen, J. H., & Xu, Y. F. (2020). Rethinking online mental health services in China during the COVID-19 epidemic. <i>Asian Journal of Psychiatry</i> , 50, 102015. <a href="https://doi.org/10.1016/j.ajp.2020.102015">https://doi.org/10.1016/j.ajp.2020.102015</a>	10

Furthermore, we analyzed the conceptual structure of the documents based on their titles, abstracts, authors' keywords, and keywords plus. The keywords plus are similar to the authors' keywords (Garfield & Sher, 1993). However, they are generated automatically by an algorithm of the database that helps in bibliometric analyzes to

# ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS

understand the conceptual structure of a bibliometric data set although it does not necessarily represent the content of articles (Zhang, et al. 2016).

As a result, we merge the analysis of the four mentioned characteristics to have a better understanding of the downloaded documents (Figure 4). The size of the words indicates the frequency of occurrences in the articles consulted. For instance, in the titles, the word "COVID" was the one that had the most appearances in 181 papers, in the abstracts the word "COVID" had 340 appearances, and so on. We noticed that the algorithm of the plus keywords categorized several of these articles as “priority journal” and most of the words are related to the impact of the pandemic on mental health.



Figure 4. Frequency of words in titles, abstracts, authors' keywords, and keywords plus of the articles downloaded from SCOPUS

Besides, we performed a text mining factor analysis of the words in the abstracts using multiple correspondence analysis methods to explore the conceptual structure of

# ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS

the published documents. This mapping strategy displays the structural and dynamic aspects of scientific research. Figure 5 shows the two factors. The first of them represents related articles that allude to COVID-19 and the reporting of disease data. The second factor represents studies related to the psychological effects of COVID-19 pandemic.

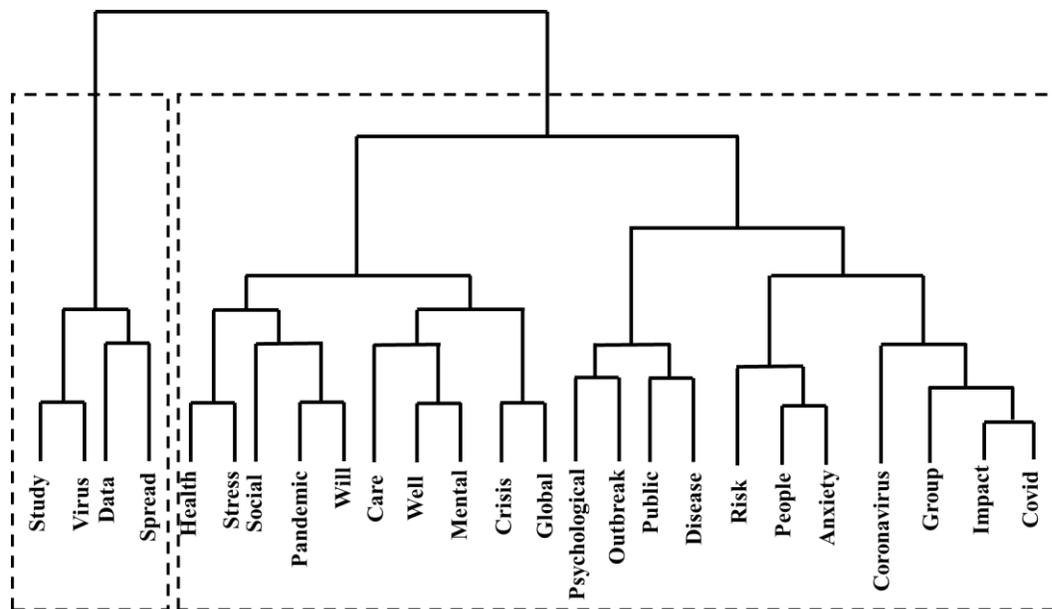


Figure 5. Factor analysis of the words of the abstracts.

## Discussion

The purpose of this article was to carry out a bibliometric analysis of the production of psychological science concerning the COVID-19 pandemic. With the analysis of the bibliometric information of the articles published from January to June 12, 2020, in the SCOPUS database in the area of psychology, it allowed us to contribute to future studies to identify authors, documents and journals that have prioritized the publication of articles related to COVID-19.

# *ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS*

Additionally, we illustrate the advantages of using computational bibliometrics set in R (Aria & Cucurullo, 2017). Likewise, we share the data in an open science repository to contribute and stimulate the replicability of the results of this study and the psychological science (Open Science Collaboration, 2015).

Regarding the results found, we could observe an interest by the scientific community and the journals in psychology to publish quickly on topics related to the current pandemic. Many of the studies show an interest in the effects on the mental health of distancing and social isolation, specifically in anxiety and depression (see Bo, Li, Yang, & Wang, 2020; Y. Wang, et al. 2020).

However, we noticed a lack of studies related to social psychology, educational psychology, consumer psychology and other areas that could help to understand human behaviour in a pandemic situation. For instance, some researchers are working hard to understand if framing messages in terms of gains (e.g. “you can stay healthy if you use a mask”) can persuade people to adopt protective health behaviours, as social distancing, more than loss framing messages (e.g. “you have much to lose and danger others if you don’t use a mask”), typically, in media this kind of messages are used (Dorinson, et al., 2020).

Other studies, after this bibliometric analysis, have found that people with high sensitivity to pathogen disgust tend to give lower judgements of trustworthiness and higher perceptions of illness of others that use a surgical mask (Olivera-La Rosa, Chuquichambi, & Ingram, 2020). Other studies have focused their attention to COVID related to conspiracy theory beliefs and its relation to negative attitudes toward

# *ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS*

government responses (Georgiou, Delfabbro, & Balzan, 2020); youth's motivation to engage to social distancing (Oosterhoff, Palmer, Wilson, & Shook, 2020), and other topics.

Besides, journals currently have called for rapid and regular reviews encouraging researchers to publish papers (empirical and reviews) related to COVID-19 and diverse areas of psychological and behavioural sciences (see APA journals, Taylor & Francis Journals, Wiley journals, and others).

Regarding the limitations of this study, in our analysis, we could not explore the social and intellectual structures of these documents (collaboration network and co-citation network respectively) because there was not enough data to conduct these analyses. Moreover, data retrieved is limited to the search strategy (keywords used).

Finally, we suggest to carry out bibliometric studies regarding the publications related to COVID-19 focused on behavioural sciences and other scientific disciplines that seek to conduct interventions or studies for avoiding the transmission of COVID-19 (for instance, Arden & Chilcot, 2020; Dorison, et al., 2020; Forscher et al., 2020; K. Wang, et al., 2020). Likewise, future research should explore the effects of the pandemic on academic performance, work stress, work performance, marital satisfaction, sexual behaviour, and other phenomena.

## **References**

Alcaraz, K. I., Eddens, K. S., Blase, J. L., Diver, W. R., Patel, A. V., Teras, L. R., ...  
Gapstur, S. M. (2019). Social isolation and mortality in us black and white men

# ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS

and women. *American Journal of Epidemiology*, 188(1), 102-109.

<https://doi.org/10.1093/aje/kwy231>

Almeida, F., & de Paula, L. G. (2019). The place of uncertainty in heterodox economics journals: A bibliometric study. *Journal of Economics Issues*, 53(2), 553-562.

<https://doi.org/10.1080/00213624.2019.1603771>

Alonso, J. M., Castiello, C., & Mencar, C. (2018). A bibliometric analysis of the explainable artificial intelligence research field. In J. Medina, M. Ojeda-Aciego, J. L. Verdegay, D. A. Pelta, I. P. Cabrera, B. Bouchon-Meunier, & R. R. Yager (Eds.), *Information Processing and Management of Uncertainty in Knowledge-Based Systems. Theory and Foundations* (pp. 3–15). Springer International Publishing.

Anglada-Tort, M., & Sanfilippo, K. R. M. (2019). Visualizing music psychology: A bibliometric analysis of psychology of music, music perception, and musicae scientiae from 1973 to 2017. *Music & Science*, 2, 1-18.

<https://doi.org/10.1177/2059204318811786>

Arden, M. A., & Chilcot, J. (2020). Health psychology and the coronavirus (COVID-19) global pandemic: A call for research. *British Journal of Health Psychology*, 25(1), 231-232.

<https://doi.org/10.1111/bjhp.12414>

Aria, M., & Cuccurullo, C. (2017). bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, 11(4), 959-975.

<https://doi.org/10.1016/j.joi.2017.08.007>

# ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS

Aria, M., Misuraca, M., & Spano, M. (2020). Mapping the evolution of social research and data science on 30 years of Social Indicators Research. *Social Indicators Research*, 149, 803-831. <https://doi.org/10.1007/s11205-020-02281-3>

Anderson, R. M., Heesterbeek, H., Klinkenberg, D., & Hollingsworth, T. D. (2020). How will country-based mitigation measures influence the course of the COVID-19 epidemic? *The Lancet*, 395(10228), 931-934. [https://doi.org/10.1016/S0140-6736\(20\)30567-5](https://doi.org/10.1016/S0140-6736(20)30567-5)

Bargh, J. A. & Shalev, I. (2012). The substitutability of physical and social warmth in daily life. *Emotion*, 12(1), 154-162. <https://doi.org/10.1037/a0023527>

Bish, A. & Michie, S. (2010). Demographic and attitudinal determinants of protective behaviours during a pandemic: a review. *Br J Health Psychol.*, 15(4), 797-824. <https://doi.org/10.1348/135910710x485826>

Bo, H. X., Li, W., Yang, Y., & Wang, Y. (2020). Posttraumatic stress symptoms and attitude toward crisis mental health services among clinically stable patients with COVID-19 in China. *Psychological Medicine*, 1–2. <http://doi.org/10.1017/S0033291720000999>

Börner, K., Chen, C. & Boyack, K. (2003). Visualizing knowledge domains. *Annual Review of Information Science & Technology*, 37, 179-255.

Brazendale, K., Beets, M. W., Weaver, R. G., Pate, R. R., Turner-McGrievy, Kaczynski, A. T., ... von Hippel, P. T. (2017). Understanding differences between summer vs. school obesogenic behaviors of children: the structured days

# ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS

hypothesis. *International Journal of Behavioral Nutrition and Physical Activity*, 14(100), 1-14. <https://doi.org/10.1186/s12966-017-0555-2>

Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenbergh, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *The Lancet*, 395, 912-920. [https://doi.org/10.1016/S0140-6736\(20\)30460-8](https://doi.org/10.1016/S0140-6736(20)30460-8)

Cacioppo, J. T. & Cacioppo, S. (2018). The growing problem of loneliness. *Lancet*, 391(10119), 426. [https://doi.org/10.1016/S0140-6736\(18\)30142-9](https://doi.org/10.1016/S0140-6736(18)30142-9)

Chen, S., Yang, J., Yang, W., Wang, C., & Bärnighausen, T. (2020). Covid-19 control in China during mass population movements at New Year. *The Lancet*, 395(10226), 764-766. [https://doi.org/10.1016/S0140-6736\(20\)30421-9](https://doi.org/10.1016/S0140-6736(20)30421-9)

Cole, S. W., Capitanio, J. P., Chun, K., Arevalo, J. M. G., Ma, J., & Cacioppo, J. T. (2015). Myeloid differentiation architecture of leukocyte transcriptome dynamics in perceived social isolation. *PNAS*, 112(49), 15142-15147. <https://doi.org/10.1073/pnas.1514249112>

De Vos, J. (2020). The effect of COVID-19 and subsequent social distancing on travel behavior. *Transportation Research Interdisciplinary Perspectives*, 5, 100121. <http://dx.doi.org/10.1016/j.trip.2020.100121>

Dorison, C., Lerner, J. S., Heller, B. H., Rothman, A., Kawachi, I. I., Wang, K., ... Coles, N. A. (2020, April 16). A global test of message framing on behavioural

# ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS

intentions, policy support, information seeking, and experienced anxiety during the COVID-19 pandemic. <https://doi.org/10.31234/osf.io/sevkf>

Forscher, P. S., Primbs, M., & Coles, N. A. (2020, April 16). *PSACR: The Psychological Science Accelerator's COVID-19 Rapid-Response Project*. <https://doi.org/10.31234/osf.io/x976j>

Garfield, E. & Sher, I. H. (1993). KeyWords Plus™ – algorithmic derivate indexing. *Journal of the American Society for Information Science*, 44(5), 298-299. [https://doi.org/10.1002/\(SICI\)1097-4571\(199306\)44:5<298::AID-ASI5>3.0.CO;2-A](https://doi.org/10.1002/(SICI)1097-4571(199306)44:5<298::AID-ASI5>3.0.CO;2-A)

Garfin, D. R., Silver, R. C., & Holman, E. A. (2020). The novel coronavirus (COVID-2019) outbreak: Amplification of public health consequences by media exposure. *Health Psychology*, 39(5), 355-357. <http://dx.doi.org/10.1037/hea0000875>

Ge, L., Yap, C. W., Ong, R., & Heng, B. H. (2017). Social isolation, loneliness, and their relationships with depressive symptoms: A population-based study. *PLoS ONE*, 12(8), e0182145. <https://doi.org/10.1371/journal.pone.0182145>

Georgiou, N., Delfabbro, P., & Balzan, R. (2020). COVID-19-related conspiracy beliefs and their relationship with perceived stress and pre-existing conspiracy beliefs. *Personality and Individual Differences*, 166(1), 110201. <https://doi.org/10.1016/j.paid.2020.110201>

# ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS

- Glass, R. J., Glass, L. M., Beyeler, W. E., & Min, H. J. (2006). Targeted social distancing design for pandemic influenza. *Emerging Infectious Diseases*, 12(11), 1671-1681. <https://doi.org/10.3201/eid1211.060255>
- Hawkey, L. C. & Capitanio, J. P. (2015). Perceived social isolation, evolutionary fitness and health outcomes: A lifespan approach. *Phil. Trans. R. Soc. B.*, 370, 20140114. <https://doi.org/10.1098/rstb.2014.0114>
- Holt-Lunstad, J., Smith, T. B., Baker, M., Harris, T., & Stephenson, D. (2015). Loneliness and social isolation as risk factors for mortality: A meta-analytic review. *Perspectives on Psychological Science*, 10(2), 227–237. <https://doi.org/10.1177/1745691614568352>
- Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu, Y., ... Cao, B. (2020). Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*, 395(10223), 497-506. [https://doi.org/10.1016/S0140-6736\(20\)30183-5](https://doi.org/10.1016/S0140-6736(20)30183-5)
- Leight-Hunt, N., Bagguley, D., Bash, K., Tuner, V., Turnbull, S., Valtorta, N., & Caan, W. (2017). An overview of systematic reviews on the public health consequences of social isolation and loneliness. *Public Health*, 152, 157-171. <https://doi.org/10.1016/j.puhe.2017.07.035>
- Liu, S., Yang, L. L., Zhang, C. X., Xiang, Y. T., Liu, Z., Hu, S., & Zhang, B. (2020). Online mental health services in China during the COVID-19 outbreak. *The Lancet Psychiatry*, 7(4), e17–e18. [https://psycnet.apa.org/doi/10.1016/S2215-0366\(20\)30077-8](https://psycnet.apa.org/doi/10.1016/S2215-0366(20)30077-8)

# ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS

Liu, Q. Q., Zhou, Z. K., Yang, X. J., Kong, F. C., Niu, G. F., & Fan, C. Y. (2017).

Mobile phone addiction and sleep quality among Chinese adolescents: a moderated mediation model. *Computers in Human Behavior*, 72, 108–114.

<https://doi.org/10.1016/j.chb.2017.02.042>

López-Cañón, L. M. & Pérez-Acosta, A. M. (2020 May). COVID-19, automedicación y cuarentena. SIP Bulletin, especial COVID-19, 18-23. Retrieved from

<https://drive.google.com/file/d/1gqYihs9CrWu7DxfoavpUMjkqPx7inzy1/view>

[w](#)

Lu, H. (2020). Drug treatment options for the 2019-new coronavirus (2019-nCoV).

*BioScience Trends*, 14(1), 69-71. <https://doi.org/10.5582/bst.2020.01020>

Mahase, E. (2020). Covid-19: Hoarding and misuse of protective gear is jeopardizing the response, WHO warns. *BMJ (Clinical Research Ed.)*, 368, m869.

<https://doi.org/10.1136/bmj.m869>

Mason, F., Farley, A., Pallan, M., Sitch, A., Easter, C., & Daley, A. J. (2018).

Effectiveness of a brief behavioural intervention to prevent weight gain over the christmas holiday period: randomised controlled trial. *BMJ*, 363, k4867.

<https://doi.org/10.1136/bmj.k4867>

Morris, S.A. & Van der Veer Martens, B. (2008), Mapping research specialties. *Ann. Rev. Info. Sci. Tech.*, 42, 213-295. <https://doi.org/10.1002/aris.2008.1440420113>

Mowbray, H. (2020). Letter from China: Covid-19 on the grapevine, on the internet, and

in commerce. *BMJ*, 368. <https://doi.org/10.1136/bmj.m643>

# ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS

Olivera-La Rosa, A., Chuquichambi, E. G., & Ingram, G. P. D. (2020). Keep your (social) distance: Pathogen concerns and social perception in the time of COVID-19. *Personality and Individual Differences*, 166(1), 110200. <https://doi.org/10.1016/j.paid.2020.110200>

Oosterhoff, B., Palmer, C. A., Wilson, J., & Shook, N. (2020). Adolescents' motivations to engage in social distancing during the COVID-19 pandemic: associations with mental and social health. *Journal of Adolescent Health*, 1-7. <https://doi.org/10.1016/j.jadohealth.2020.05.004>

Open Science Collaboration (2015) Estimating the reproducibility of psychological science. *Science*, 349(6251). aac4716. <http://dx.doi.org/10.1126/science.aac4716>

Palmer, C. (2020, May). Researchers mobilize to study impact of COVID-19. *Monitor on Psychology*, 51(4). Retrieved from <http://www.apa.org/monitor/2020/06/covid-researchers>

Ren, L. L., Wang, Y. M., Wu, Z. Q., Xiang, Z. C., Guo, L., Xu, T., ... Wang, J. W. (2020). Identification of a novel coronavirus causing severe pneumonia in human: a descriptive study. *Chinese Medical Journal*, 133(9), 1015-1024. <https://doi.org/10.1097/cm9.0000000000000722>

Tiwari, S. C. (2013). Loneliness: A disease? *Indian Journal of Psychiatry*, 55(4), 320-322. <https://dx.doi.org/10.4103%2F0019-5545.120536>

Valtorta, N. K., Kanaan, M., Gilbody, S., Ronzi, S., & Hanratty, B. (2016). Loneliness and social isolation as risk factors for coronary heart disease and stroke:

# ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS

systematic review and meta-analysis of longitudinal observational studies. *Heart*, 102, 1009-1016. <http://dx.doi.org/10.1136/heartjnl-2015-308790>

Wang, Y., Di, Y., Ye, J., & Wei, W. (2020). Study on the public psychological states and its related factors during the outbreak of coronavirus disease 2019 (COVID-19) in some regions of China. *Psychology, Health & Medicine*, 1-10. <https://doi.org/10.1080/13548506.2020.1746817>

Wang, G., Zhang, J., Lam, S. P., Li, S. X., Jiang, Y., Sun, W., ... Wing, Y. K. (2019). Ten-year secular trends in sleep/wake patterns in Shanghai and Hong Kong school-aged children: a tale of two cities. *J Clin Sleep Med.*, 15(10), 1495–1502. <https://doi.org/10.5664/jcsm.7984>

Wang, K., Goldenberg, A., Dorison, C., Miller, J. K., Lerner, J. S., & Gross, J. (2020, April 17). *A global test of brief reappraisal interventions on emotions during the COVID-19 pandemic.* <https://doi.org/10.31234/osf.io/m4gpp>

WHO (2020a). *WHO announces COVID-19 outbreak a pandemic.* Retrieved from <http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/3/who-announces-covid-19-outbreak-a-pandemic#:~:text=The%20meeting%20follows%20the%20announcement,a%20growing%20number%20of%20countries.>

WHO (2020b). *Coronavirus disease (COVID-19) outbreak situation.* Retrieved from <https://www.who.int/emergencies/diseases/novel-coronavirus->

# ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS

[2019?gclid=CjwKCAjw5vz2BRAtEiwAbcVILzZOexsYPOsyensmFAOpVBeiLsAAUjm2E\\_da7ksVZBog58vN-ntxjhoCG7kQAvD\\_BwE](https://doi.org/10.1016/j.cell.2018.03.037)

WHO (2020c). *Social Distancing. Keep Your Distance to Slow the Spread*. Retrieved from <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/social-distancing.html>

Wilder-Smith, A., & Freedman, D. O. (2020). Isolation, quarantine, social distancing and community containment: Pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. *Journal of Travel Medicine*, 27(2), taaa020. <https://doi.org/10.1093/jtm/taaa020>

Wu, F., Zhao, S., Yu, B., Chen, Y. M., Wang, W., Song, Z. G., ... Zhang, Y. Z. (2020). A new coronavirus associated with human respiratory disease in China. *Nature*, 579, 265-269. <https://doi.org/10.1038/s41586-020-2008-3>

Yan, X., & Zou, Y. (2008). Optimal and sub-optimal quarantine and isolation control in SARS epidemics. *Mathematical and Computer Modelling: An International Journal*, 47, 235–245. <https://doi.org/10.1016/j.mcm.2007.04.003>

Zelikowsky, M., Hui, M., Karigo, T., Choe, A., Yang, B., Blanco, M. R., ... Anderson. D. J. (2018). The Neuropeptide Tac2 Controls a Distributed Brain State Induced by Chronic Social Isolation Stress. *Cell*, 173(5), 1265-1279. <https://doi.org/10.1016/j.cell.2018.03.037>

Zhang, J., Yu, Q., Zheng, F., Long, C., Lu, Z., & Duan, Z. (2016). Comparing the keywords plus of WOS and author keywords: A case study of patient adherence

# **ARTÍCULO EN EDICIÓN – ARTICLE IN PRESS**

research. *Journal of the Association for Information Science and Technology*, 67(4), 967-

972. <https://doi.org/10.1002/asi.23437>