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Psychological impact of a country-wide lockdown. Role of personal, behavioral, social, and physical conditions on negative and positive affect and meaning in life

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ABSTRACT

During the early outbreak of COVID-19 in 2020, a strict home lockdown was maintained in Spain for more than 50 days, disrupting social and economic activities. The aim of this study is to explore affective and well-being responses during the initial period of mandatory home lockdown. Specifically, we analyzed: 1) differences in risk perception according to sociodemographic and health profile; 2) relation between social and environmental characteristics of home isolation, positive and negative affect and meaning in life; and 3) the relationship between activities and behaviors performed by people under lockdown and well-being. A total of 1343 Spanish residents participated in this correlational and cross-sectional study. Results show a significant relationship between health and economic risk perception associated with confinement. Higher health risk perception was identified among the older population and those belonging to high-risk groups. High resilience was linked to lower negative affect and greater positive affect and meaning in life. Regarding social and environmental characteristics of home isolation, people living with others reported greater negative affect than people living alone and the daily frequency of use of open-air spaces was linked to positive affect. Higher positive affect and meaning in life were also reported in people who frequently participated in community activities or by helping others. Lower negative affect was only associated with physical exercise.

Keywords

COVID Lockdown, Positive Affect, Negative Affect, Meaning in life, Risk Perception, Coping behaviors

Impacto psicológico de un confinamiento a nivel nacional. El papel de las condiciones personales, conductuales, sociales y físicas en el afecto negativo, positivo y el significado de la vida

RESUMEN

En la etapa inicial de propagación del COVID-19 en 2020, en España se mantuvo un estricto confinamiento en el hogar durante más de cincuenta días, quedando interrumpidas la mayoría de actividades sociales y económicas. El objetivo de este estudio es explorar las respuestas afectivas

y de bienestar durante el periodo inicial de confinamiento. Específicamente, se analiza: 1) el riesgo percibido según el perfil sociodemográfico y de salud; 2) la relación entre las características socio-ambientales del confinamiento, el afecto positivo y negativo y la significación vital; 3) la relación entre las actividades realizadas por las personas confinadas y el bienestar. Participaron en este estudio correlacional y trasversal 1343 residentes en España. Los resultados muestran una relación significativa entre riesgo percibido para la salud y riesgo económico asociados al confinamiento. Se identificó mayor riesgo para la salud entre las personas de más edad y pertenecientes a grupos de alto riesgo. Una alta resiliencia se relacionó con menor afecto negativo y mayor afecto positivo y significación vital. En relación con las características socio-ambientales, quienes vivían con otras personas informaron más afecto negativo que las personas que vivían solas. A su vez, el uso de espacios al aire libre se relacionó con el afecto positivo. Las personas que participaban con frecuencia en actividades comunitarias o de ayuda a los demás también presentaban mayor afecto positivo y significación vital. Un menor afecto negativo solo se asociaba con la práctica de ejercicio físico.

Palabras clave

Confinamiento COVID, Afecto Positivo, Afecto Negativo, Significación vital, Percepción de Riesgo, Conductas de afrontamiento

Introduction

Infection and spread of SARS-CoV-2, and the onset of the COVID-19 pandemic, became the main public health risk for most countries in 2020. When it came to controlling the disease, the strategy implemented in most of the affected countries involved adopting lockdown measures, following recommendations from the World Health Organization (WHO, 2020a). Spain is the European country that, after Italy, suffered the earliest impact and one of the highest numbers of infections and deaths caused by the COVID-19 pandemic (WHO/Europe, 2020). On March 12th 2020, the Spanish government declared a state of emergency, implemented lockdown measures and, as in most European countries, imposed severe restrictions on mobility and compulsory home isolation for the majority of the population, resulting in approximately 47,000,000 people being confined to their homes. During the first week of the state of emergency, more than 17,000 cases had already been diagnosed and more than 1,000 people had died. On March 22, 2020, the Spanish Government extended the state of emergency and on March 28, 2020, strengthened lockdown measures. All economic activities were banned, except those covering the basic needs of the population (e.g., security and health services, grocery stores, pharmacies or gas stations, etc.). In total, COVID-19 led to a strict lockdown of over 50 days in Spain, followed by progressive de-escalation measures. While from a public health perspective, the magnitude of COVID-19 infection and its impact on the health care systems is unprecedented, the strict and massive lockdown of the majority of a country's population for such a prolonged period of time is an absolutely unprecedented social circumstance, with psychological, social, and community implications. Lockdown measures may have a wide range of emotional consequences for the people that have to self-isolate at home.

People who have been quarantined tend to report symptoms of general psychological distress, as well as emotional disturbance (e.g., emotional exhaustion, irritability or anger), or even symptoms of post-traumatic stress (Cowling et al., 2010; Green et al., 2018; Liu et al., 2012; Peng et al., 2010), as observed in studies testing the impacts of lockdowns during outbreaks such as SARS, Ebola, H1N1 or MERS. In general, most research addressing the psychological impact of confinement focuses on the analysis of the negative effects and risks involved, either during confinement or afterwards. Recent work on COVID-19, involving either the general population, health professionals, or infected patients, has developed in a similar manner (Bo et al., 2020; Cao et al., 2020; Li et al., 2020; Lohiniva et al., 2020; Wang et al., 2020). However, lockdown situations

analyzed prior to the COVID-19 pandemic provide only partial evidence on the psychological impact associated to the extent and duration of confinement and, even less evidence on the impact of uncertainty regarding its long-term duration (Hossain et al., 2020).

Moreover, as confinement is a personal and prolonged situation, the associated risks are not limited exclusively to physical or mental health conditions. These negative effects are also linked to broad social aspects of daily life, such as neighborhood and family relationships, or economic conditions (Ko et al., 2006; Mihashi et al., 2009). For example, children and at-risk populations such as the elderly, people who have been institutionalized or are economically vulnerable, may be particularly affected (Scholten et al., 2020). Therefore, differential impact of the negative effects of confinement also needs to be considered. Likewise, being confined with others can have paradoxical effects, such as expressing a need to interact with others but with little intimacy, or expecting others to establish close relationships but preferring to maintain little social interaction (Paul et al., 2010). On the other hand, Weber et al. (2019) observed that negative affect was not altered by isolation, in contrast, positive affect tended to decrease as confinement progressed. This is a similar pattern of emotional response as the one identified in confinements under extreme environments (e.g., Sandal et al., 2018).

There is also evidence of cultural differences in the emotional response to the pandemic. US residents of Latin American origin differed from non-Latinos in their perception of susceptibility and in their acceptance of the affective tone in messaging on protective measures against COVID-19 (Shelus et al., 2020). Similarly, parental perception of the emotional effects of COVID-19 quarantine on children was different when comparing samples from Italian and Spanish families. Spanish parents perceived more adverse psychological and behavioral effects on their children (Orgilés et al., 2020). In turn, Lieberoth et al. (2021) working with a global survey of 48 countries, found that, while concern over COVID-19 correlated positively with compliance with behavioral guidelines to slow the spread of disease, it also correlated negatively with perceived stress. This negative relationship varied significantly across countries and was moderated by the availability of social provision and support. The relationship between stress and compliance was more strongly negative among people with greater levels of social support.

In addition to the existence of factors that moderate the impact of confinement, the psychological consequences of isolation may emerge with a wide range of expressions. For example, in a sample of Chilean people ranging in age from 22 to 68 years, in a COVID-19

pandemic situation, González-Tovar and Hernández-Rodríguez (2021) identified differences based on age, in emotional expressiveness and frequency of negative affections. People over 30 years old presented more negative emotions and showed more emotions than people below 30. In addition, men showed significantly more negative affections than women, however, women reported showing more emotions than men. The authors interpret these results suggesting that emotional expressiveness could be acting as a strategy in the perceptual process of coping with the stress associated with the COVID-19 pandemic. They also argue that emotional coping could be interpreted as a way to overcome weakness and an opportunity for positive personal growth and self-control associated with the pandemic situation. In a similar manner, Trzebiński et al., (2020) note that reactions to the COVID-19 pandemic might be influenced by the convictions and general positive assumptions that people have regarding the social world and their own lives. In a study conducted during the start of the pandemic in Poland, these authors identified that basic hope on the world's orderliness and positivity, was significantly and negatively related to the anxiety and stress associated to COVID-19 lockdown. This relationship, in turn, was mediated by meaning in life, which was defined as the extent to which one's life is experienced as making sense, as being directed and motivated by valued goals, and as mattering in the world (George & Park, 2016. Page 205). Similarly, meaning in life was significantly and positively related to emotional, problem-focused and meaning-focused coping strategies developed by healthcare workers during the COVID-19 pandemic (Krok & Zarzycka, 2020).

Resilience also has a positive influence on psychological coherence, subjective well-being, positive emotions, proactive coping behaviors, or cohesive relationships (Moore et al., 2014), and is inversely linked with psychological distress (Lee et al., 2018; Osofsky et al., 2011). Connor and Davidson (2003) consider resilience as a measure of people's ability to successfully cope with the stress produced by an adverse situation. Under such situations, resilience drives a more positive coping and adaptive recovery, which in turn leads to further empowerment. As such, psychological resilience can also act as a protective measure during strict lockdown. Barzilay et al. (2020) found that people with higher levels of resilience had less generalized anxiety and depression and perceived less risk (contracting or dying from COVID-19, infecting others, or having financial burdens due to COVID-19) in a large general population sample from the US and Israel.

A set of factors have been identified as having an impact on psychological resilience to the COVID-19 outbreak, both positive (perceived social support, healthy routines, outdoor activities)

and negative (socioeconomic vulnerability, duration of mandatory confinement, needing greater help from others to recover from the impact of COVID-19) (Ferreira et al., 2020; Hou et al., 2020; Killgore et al., 2020). For example, family income stability and living with parents versus living alone were identified as protective factors against anxiety in Hubei college students, during the COVID-19 outbreak in China (Cao et al., 2020). Moreover, Corral-Verdugo et al. (2021) when working with a sample of the Mexican population, 3 months after the onset of the pandemic in Mexico, found that family and social support, as well as access to certain types of physical infrastructure (open-air spaces, nearby natural areas or areas for physical activity) acted as positive environmental resources and significantly influenced precautionary behaviors against COVID-19 and hedonic well-being.

Following guidelines established by the World Health Organization (WHO, 2020a), in order to reduce the risk of developing mental health problems, Fiorillo and Gorwood (2020) note the importance of promoting a series of basic positive coping strategies among the population confined by the COVID-19 pandemic. These include: a) Increasing video communication with friends and family members to proactively break isolation. b) Maintaining regular daily routines, including sleep-wake and diet patterns. c) Developing intellectual, physical, and virtual social activities. d) Focusing on the benefit of confinement both for one's own health and others, by mitigating and finally stopping the pandemic's negative effects.

However, maintaining precautionary measures or recommended behaviors could be affected by the perceived severity of the situation or the concern of individuals (Prati et al., 2011). Likewise, certain personal characteristics can moderate the effect of protective factors. After comparing psychiatric patients with unaffected relatives and the general Spanish population, Verdolini et al. (2021) reported that psychiatric patients experienced worse overall resilience and experienced more unpleasant events during COVID-19 lockdown.

In sum, it is important to note that the negative impact of confinement is neither widespread nor direct. Several factors have been identified that can exacerbate the psychological damage associated with COVID-19 quarantine, such as length of confinement, inadequate supplies and poor environmental conditions, fear of infection, or frustration and boredom (Brooks et al., 2020). In any case, emotional responses to lockdown situations are not universally negative and can be expressed through a variety of consequences that are not necessarily limited to an increase in negative emotions. For instance, such contrasting outcomes can equally be found in relation to

cognitive reappraisal. As a coping strategy, it has a positive influence on mental well-being, but is also linked to an increase in the perception of risk regarding COVID-19 (Schudy et al., 2020).

The aim of this study is to explore the affective and behavioral responses during the initial period of mandatory home lockdown due to the COVID-19 outbreak in Spain. Specifically, to analyze: 1) the risk perception associated with COVID-19 on health and economic conditions; 2) the relation between the environmental characteristics of home isolation and the presence of other people on personal well-being, defined as positive affect, negative affect and meaning in life; 3) the influence of psychological resilience and positive coping activities as factors promoting personal well-being.

Method

Participants

A total of 1407 people participated in this study. Two general inclusion and exclusion criteria were used: legal age (18 years or older) and residence in Spain. Of the total sample, 46 were discarded for not residing in Spain and 18 for being underage. The final sample consisted of 1343 people, (31.9%, men; 66.3%, women; 0.2% marked the option Other, and 1.6% did not answer). Participants' average age was 39.66 years ($SD = 14.865$) ranging from 18 to 84. Of the total sample of participants, 35.1% were under 30 years old, 61.8% were between the ages of 31 and 64 and 3.1% were older than 65. Regarding academic level, 23.3% had completed secondary education, 18.4% had vocational education or training and 37.1% had completed university studies. Distribution of participants by academic level was comparable to that of the adult Spanish population, as reported by the Instituto Nacional de Estadística, INE (INE, n.d.).

Table 1 includes details related to participants' housing; a relevant factor given that it was the place where participants were confined to at the moment of answering the survey. An equitable distribution was observed between the different types of housing and the majority claimed to have space to be alone within their homes (91.4%) and open-air spaces (79.3%).

Table 1

Descriptive details of housing conditions

Variables	<i>n</i>	%
Type of housing		
Detached house	320	23.8

Townhouse	198	14.7
Building with 6 or less apartments	245	18.2
Building with 6-12 apartments	209	15.6
Building with more than 12 apartments	269	20.0
Residential complex with a shared garden or patio	99	7.4
Missing values	3	2
Total	1340	99.8
Availability of space to be alone		
Yes	1228	91.4
No	115	8.6
Total	1343	100
Use of space to be alone		
Never	254	18.9
Almost never	158	11.8
Occasionally	260	19.4
Almost every day	226	16.8
Every day	445	33.1
Total	1343	100
Availability of open-air spaces		
Yes	1065	79.3
No	278	20.7
Total	1343	100
Use of open-air spaces		
Never	299	22.3
Almost never	104	7.7
Occasionally	249	18.5
Almost every day	316	23.5
Every day	375	27.9
Total	1343	100

The average number of people with whom participants lived was 2.44 ($SD = 1.55$), in most cases, they were relatives (59.1%) or partners/spouses (31.7%). More than half of participants did not reside with minors (68.7%) or with adults over the age of 65 (85.3%). Among those who did, they mostly lived with one (66.9%) or two minors (28.7%). Among participants that lived with elderly people, most of them did so with one (76.9%) or two (21.5%). Table 2 shows participants belonging to high-risk groups regarding COVID-19.

Table 2
Participants belonging to high-risk groups

Variables	<i>n</i>	%
Suffers from a chronic disease		
Yes	162	12.1
No	1181	87.9

Total	1343	100
Lives with someone chronically ill		
Yes	221	16.5
No	1122	83.5
Total	1343	100
Cares for someone chronically ill		
Yes	45	3.4
No	1298	96.6
Total	1343	100
Cares for someone with special needs		
Yes	44	3.3
No	1299	96.7
Total	1343	100
Belongs to a high-risk group (i.e.: pregnant, immunosuppressed, cancer...)		
Yes	78	5.8
No	1265	94.2
Total	1343	100
Symptoms of coronavirus		
I have experienced symptoms	91	6.8
The people I live with have had symptom	75	5.6
Both I and the people I live with have had symptoms	67	5.0
Neither I nor the people I live with have had any symptoms	1110	82.7
Total	1343	100

Prolonged confinement affected the country's work capacity. Therefore, participants' employment status was relevant. Half of the sample worked remotely or were involved in long distance academic activity from home (50.3%), 14.7% were temporarily unemployed or had stopped working as a result of the COVID-19 pandemic, 11% were unemployed prior to the pandemic, 18.8% of participants continued working in person and 5.2% were retired.

We disseminated the questionnaire through a link with a snowball sampling procedure and several routes. We first sent an email to university students; in this email we also asked for their collaboration in spreading the questionnaire on their own personal social networks, with the same request for dissemination. Additionally, the authors themselves also used their own social networks (specifically, Facebook, Twitter, and Instagram) with the aim of reaching people within different age groups.

Materials

In addition to sociodemographic variables, all participants answered a questionnaire that consisted of the following elements.

Connor-Davidson Resilience Scale (10-item CD-RISC) (Connor & Davidson, 2003), adapted for its use with Spanish population by Notario-Pacheco et al. (2011). Psychological resilience, defined as the personal ability to cope with stressful circumstances and adversity, is a psychological process and can therefore be learned and modified in order to better adapt to life experiences. The CD-RISC is a brief self-rated assessment to quantify psychological resilience, comprising 10 items grouped into a single dimension. One example of an item is: “Not easily discouraged by failure”. Items were rated from 1 (Strongly disagree) to 7 (Strongly agree). The scale presented a mean score of 5.20 ($SD = .93$) and Cronbach’s α of .89. In the original study by Connor and Davidson, Cronbach’s α for the full scale was .89. Notario-Pacheco et al. reported Cronbach’s α of .85 in their adaptation.

MLM-10 validated by Morgan and Robinson (2013), is a shortened version of the Meaningful Life Measure (Morgan & Farsides, 2009). Meaningful Life is a psychological construct consisting of the attribution of coherence, order and meaning to one’s own existence, in order to achieve personally valued life goals which, in turn, provide fulfillment in life. It is a process that protects people from negative situations and experiences and promotes well-being. MLM-10 measures the fulfillment of five sources of personal meaning related to a sense of purpose, excitement, accomplishment, principles, and value. In Morgan and Farsides’ study, the α coefficients for the five subscales ranged from .85 to .88, while in the study by Morgan and Robinson, Cronbach’s α coefficients ranged from .75 to .84. One example of an item is: “I have a clear idea of what my future goals and aims are”. Items were rated from 1 (Strongly disagree) to 7 (Strongly agree), the scale presented a mean score of 5.54 ($SD = .90$) and an alpha of .85. For this study, the Spanish adaptation by Hernández-Hernández (2016) was used; in it, Cronbach’s α for the scale as a whole was .94.

Positive and Negative Affect Schedule (PANAS) (Watson et al., 1988), in its short 10 item version. Positive and negative affect are the two main dimensions that form the basic elements of all emotional phenomena. Positive affect represents the degree to which a person feels excited, active and alert, while negative affect refers to the subjective discomfort that encompasses a variety

of aversive mood states. The PANAS scale was adapted for its use with the general Spanish population by López-Gómez et al., (2015). The short 10-item version was also adapted for its use with the Argentinian population by Flores-Kanter and Medrano (2018), the authors obtained a Cronbach's α of .84 for negative affect and .75 for positive affect. PANAS measures the weekly or general frequency in which people have manifested/felt the emotional states positive and negative affect, from a list of adjectives that describe such moods. Examples of adjectives are: "Inspired" (positive affect) and "Afraid" (negative affect). For this study, instructions were adapted and participants were asked to refer to the mood "during the duration of quarantine". Items were rated from 1 (Little or nothing) to 5 (Extremely). Positive affect presented a mean score of 2.77 ($SD = .712$) and Cronbach's α of .68, and negative affect presented a mean score of 2.26 ($SD = .798$) and Cronbach's α of .83.

Risk perception was measured by directly assessing the severity of risk regarding two dimensions: health and economic conditions. Each dimension was measured at three different levels: perceived personal risk, perceived risk to family and friends, and perceived risk to town/city neighbors and residents. Perceived severity is a basic qualitative characteristic of risk, according to the psychometric risk paradigm (e.g., Slovic et al., 1985). The criteria for differentiating risk severity into aspects and levels has in turn been taken from studies applying the psychometric model of risk associated with pandemics (e.g., Aragones et al., 2010; Han et al., 2014). The scale consisted of 6 items, 3 for health risk perception and 3 for economic risk perception: Coronavirus is a serious risk to my own health/financial situation (depending on the dimension measured), Coronavirus is a serious risk to the health/financial situation of my family and friends, Coronavirus is a serious risk to the health/ financial situation of the residents of my town/city. Items were rated from 1 (Strongly disagree) to 7 (Strongly agree). Health risk perception presented a mean score of 5.83 ($SD = 1.13$) and Cronbach's α of .74, and economic risk perception presented a mean score of 5.81 ($SD = 1.19$) and Cronbach's α of .76.

To measure people's behavior during confinement, we included 13 activities recommended by public health institutions during confinement. These included activities such as physical exercise, working remotely, and caring for neighbors and dependents. These behaviors were selected from documents distributed by Spanish and international health authorities during March (Real Decreto 463/2020, de 14 de marzo; WHO, 2020b). The items were rated from 1 (Never) to 5 (Every day).

Information on housing and its occupants during confinement was collected with 6 items regarding housing characteristics (i.e., housing type, living space and availability of open-air spaces); number of people living together; people with chronic diseases or high-risk groups (e.g., pregnancy or immunosuppression).

Procedure

At the beginning of the questionnaire, participants were informed about the objectives of the study, the approximate duration of the participation, and the option of refusing to participate. Second, participants were informed that their personal data and any information provided during the study would be stored securely, and that it would be processed with confidentiality, in accordance with Spanish data protection regulations. Finally, they were asked for their consent to participate in the survey. The questionnaire was then presented using the Qualtrics data collection platform for response and was collected between the 23rd and 29th of March, during the second week under lockdown in Spain.

Data analysis

This is a correlational and cross-sectional study. Spearman's correlations were computed between the variables studied, along with the Mann–Whitney *U* test between the variables risk perception, belonging to high-risk groups, gender, meaning in life, positive and negative affect, and the specific recommended activities, as well as the Kruskal–Wallis test between the variables employment status and use of open-air spaces. Given that several of the variables that were used consisted of one item, we decided to use non-parametric statistics. Furthermore, to keep consistency across analysis, including statistical assumptions, we decided to use non-parametric statistics for the whole set of data analysis. In order to calculate the effect size, we used the formula proposed by Rosenthal (1994) for the Mann-Whitney *U* statistic and epsilon squared for Kruskal-Wallis (Tomczak & Tomczak, 2014).

Ethical considerations

This research complied with the principles of the Helsinki Declaration for research with human beings. Informed consent was obtained from all participants and all data collected was processed with confidentiality, in accordance with Spanish data protection regulations.

Results

To understand the psychological consequences of household isolation in the context of a nation-wide lockdown, we needed to assess at least: (a) individuals' risk perceptions, specifically, perceived health and economic risk associated with the COVID-19 pandemic and lockdown; (b) the relation between personal profile, social and environmental characteristics of home isolation and psychological well-being, in particular, sociodemographic profile, employment status and health condition, psychological resilience, presence of other people and home conditions during confinement, and (c) how personally engaging in different actions on a daily basis could be linked with positively coping with the lockdown situation.

To avoid the statistical threat of the family-wise error rate, given that we conducted multiple tests per section, we implemented the Bonferroni correction, accepting an initial p-value of .05 that was adapted for the number of tests in each subsection of the reported results. To estimate the scope of our results, we calculated the effect size in each of the comparative tests, these varied between weak, moderate and relatively strong (Rea & Parker, 1992).

Differences in risk perception associated with COVID-19 according to sociodemographic profile

We decided to study two dimensions of risk perception considered to be relevant in the context of a global pandemic: health risk perception, as lockdown originated from a public health concern, and economic risk perception, due to the massive economic impact caused by lockdown measures. A significant relation was found between both types of risk perception, $r_s(1341) = .56$, $p < .001$. We tested whether there were differences depending on participants' sociodemographic profile and found that the older the participant, the higher the health risk perception was $r_s(1341) = .19$, $p < .001$, but no significant correlation was found between age and economic risk perception.

Participants belonging to high-risk groups reported a higher health risk perception ($Mdn = 6.33$; $Mean Rank = 737.18$) than those not belonging to high-risk groups ($Mdn = 6.0$; $Mean Rank = 642.75$), $U = 165699.50$, $p < .001$, $r = .11$. No difference was found in the perception of health or economic risk according to gender. However, we found that health risk perception differed

depending on employment status, $\chi^2_{(3)} = 21.187$, $p < .001$, $\epsilon^2 = .015$; specifically, between participants who worked from home ($Mdn = 6.0$; *Mean Rank* = 596.45), participants who had to attend their workplace in person ($Mdn = 6.0$; *Mean Rank* = 681.25) ($p = .01$) and participants who were temporarily suspended due to lockdown ($Mdn = 6.3$; *Mean Rank* = 714.99) ($p < .001$). No differences were found between other groups.

As expected, participants' economic risk perception differed depending on their employment status, $\chi^2_{(3)} = 67.354$, $p < .001$, $\epsilon^2 = .055$. Specifically, participants unemployed prior to confinement ($Mdn = 6.0$; *Mean Rank* = 688.74) scored higher in economic risk perception than those still working from home ($Mdn = 6.0$; *Mean Rank* = 578.62) ($p = .037$). Additionally, participants temporarily suspended from their job ($Mdn = 6.7$; *Mean Rank* = 817.27) scored significantly higher than those attending their workplace in person ($Mdn = 6.0$; *Mean Rank* = 634.03) ($p < .001$) and those working from home ($Mdn = 6.0$; *Mean Rank* = 488.41) ($p < .001$).

Finally, participants who had themselves shown symptoms of infection or who lived with someone who had, reported lower levels of health risk perception ($Mdn = 6.0$; *Mean Rank* = 583.53), $U = 149928.50$, $p < .001$, $r = .10$ than participants who had not experienced any symptoms ($Mdn = 6.0$; *Mean Rank* = 690.57).

Relation between personal profile, social, and environmental characteristics of home isolation and well-being

This section examines how different personal, social and environmental conditions relate to three key indicators of well-being: negative affect, positive affect, and finding meaning in life. Results showed that negative affect tended to be lower with age, $r_s(1341) = -.09$, $p < .001$, whereas positive affect, $r_s(1341) = .12$, $p < .001$, and meaning in life, $r_s(1341) = .09$, $p < .001$, tended to be higher. Women reported higher levels of negative affect ($Mdn = 2.20$; *Mean Rank* = 713.88) than men ($Mdn = 2.0$; *Mean Rank* = 546.43), $U = 142065.00$, $p < .001$, $r = .19$, but no differences were found in positive affect or meaning in life based on gender.

There were significant differences in finding meaning in life regarding employment status, $\chi^2_{(3)} = 17.933$, $p < .001$, $\epsilon^2 = .051$. Specifically, participants unemployed prior to confinement ($Mdn = 5.45$; *Mean Rank* = 573.32) reported finding less meaning in life than participants working in person ($Mdn = 5.70$; *Mean Rank* = 638.97) ($p = .009$), participants working from home ($Mdn = 5.75$; *Mean Rank* = 656.63) ($p < .001$), and participants temporarily suspended due to lockdown

measures ($Mdn = 5.70$; $Mean Rank = 656.28$) ($p = .003$). No differences were found in positive affect, negative affect or meaning in life based on belonging or not to high-risk groups.

Psychological resilience, as an individual's ability to cope with and recover from a negative situation could be a factor related to the variations found in participants' emotional state. The higher the resilience of participants, the lower the observed negative affect, $r_s(1341) = -.27$, $p < .001$, as well as the higher the positive affect, $r_s(1341) = .41$, $p < .001$, and greater the finding meaning in life, $r_s(1341) = .56$, $p < .001$.

Regarding health status, participants who had experienced symptoms either themselves or who lived with someone who had, scored lower in positive affect ($Mdn = 2.6$; $Mean Rank = 596.74$) than participants who had not experienced any symptoms ($Mdn = 2.8$; $Mean Rank = 687.80$), $U = 146849.50$, $p = .001$, $r = .09$. Additionally, they also scored lower in meaning in life ($Mdn = 5.5$; $Mean Rank = 583.37$) than participants who had not experienced any symptoms or lived with someone who, also had not experienced symptoms ($Mdn = 5.7$; $Mean Rank = 690.60$), $U = 149965.00$, $p < .001$, $r = .10$. No significant differences in negative affect were found between these groups.

Regarding immediate social and environmental surroundings during quarantine, people living with others reported higher negative affect ($Mdn = 2.20$; $Mean Rank = 684.37$) than people living alone ($Mdn = 1.80$; $Mean Rank = 503.74$), $U = 42066.50$, $p < .001$, $r = .11$. However, no differences were found in positive affect or in finding meaning in life. Additionally, no significant differences were found between people living with or without children, and the same was true for those living with or without people over the age of 65. Significant differences were found in positive affect depending on the frequency of use of open-air spaces, $\chi^2_{(3)} = 21.126$, $p < .001$, $\varepsilon^2 = .014$. Specifically, between participants who used open spaces every day ($Mdn = 2.8$; $Mean Rank = 723.39$) and participants who never used them ($Mdn = 2.6$; $Mean Rank = 639.52$) ($p = .031$) or who used them occasionally ($Mdn = 2.6$; $Mean Rank = 609.83$) ($p < .001$), as well as differences between using open-air spaces almost every day versus occasionally using them ($Mdn = 2.8$; $Mean Rank = 611.20$) ($p < .001$).

Relation between activities and behaviors performed during home isolation and well-being

In extreme situations such as a nation-wide lockdown, it is important to know how certain behaviors, performed under home isolation, relate to well-being. First, we analyzed activities

recommended by the WHO and found that participants who exercised frequently reported lower levels of negative affect than those who exercised less frequently. Furthermore, (a) keeping routines and stable schedules, (b) exercising, (c) making video calls with friends and relatives, and (d) developing creative activities at home, were linked with higher levels of positive affect and greater meaning in life. We have included all information regarding these behaviors and their different connections in Table 3.

Participants who frequently engaged in community activities reported higher positive affect and higher meaning in life, compared with participants who never or almost never engaged in such activities. Similarly, people who participated in activities that involved helping others, reported higher positive affect than those who did not perform in such activities. Participants who maintained online activities, such as working from home or studying, experienced greater meaning in life. Likewise, those who participated in online creative activities such as creating art and participating in digital cultural activities, experienced more positive affect. However, we found no significant reduction in negative emotions linked to any of these activities. Additionally, it seems that the frequency in which participants bought goods online made no difference regarding their affect. Finally, no significant differences were found in positive and negative affect and in finding meaning in life for exterior activities, such as going out to buy food, medication or other basic goods, walking the dog or attending a workplace in person.

Table 3
Difference in affect and meaning in life depending on the frequency of coping behaviors

	Negative affect					Positive affect					Meaning in life				
	Low	High	U	p	r	Low	High	U	p	r	Low	High	U	p	r
WHO activities	Wave 1														
Keeping routines	557.53	545.36	67983.00	.663	.01	380.86	572.82	45108.50	<.001	.20	384.81	572.20	45689.00	<.001	.20
Exercising	507.76	435.52	8861.00	<.001	.13	397.07	514.06	78577.50	<.001	.21	385.22	522.46	74005.50	<.001	.25
Video calls	422.43	480.30	70593.50	.005	.09	410.09	484.34	67755.50	<.001	.11	383.06	493.21	61538.50	<.001	.17
Online creative activities	519.73	480.54	83731.00	.058	.06	360.10	534.92	58541.00	<.001	.27	396.75	522.43	67666.00	<.001	.19
Community actions	Wave 2														
Community participation	523.65	583.93	133071.50	.002	.09	507.24	604.35	123063.00	<.001	.15	507.08	604.55	122966.500	<.001	.02
Helping others	553.10	546.53	50048.50	.043	.01	541.61	660.69	39724.50	<.001	.10	543.73	639.59	41855.50	.004	.15
Donating money	533.76	479.94	11673.50	.385	.01	530.37	620.90	10777.50	.144	.04	530.70	607.20	11120.00	.218	.01
Online actions	Wave 3														

Online working or studying	587.01	593.79	154418.50	.746	.01	550.77	612.25	139957.50	.003	.08	533.53	621.04	133079.50	<.001	.12
Art and cultural online activities	577.04	595.09	76537.00	.527	.01	560.07	702.45	59573.50	<.001	.14	570.78	634.66	70284.50	.026	.06
Buying online	580.17	505.03	8919.50	.342	.01	578.13	634.22	9257.00	.478	.01	577.47	675.64	8511.50	.216	.01
Exterior actions	Wave 4														
Buying outside products for basic needs	323.21	287.00	31860.50	.032	.08	303.08	350.59	30564.00	.005	.01	309.29	330.95	33529.00	.201	.05
Walking dogs	633.52	613.02	108975.50	.449	.01	637.20	595.24	105135.50	.121	.04	627.74	640.90	110290.00	.628	.01
Working outside home	630.73	586.32	87205.50	.130	.04	624.71	623.19	93657.50	.958	.01	627.33	607.15	90851.50	.492	.01

Note. After the Bonferroni correction, the p value to be considered significant was .001.

Discussion

In this study, we found relevant evidence that can contribute to the practical support of people under a lockdown situation. Our empirical findings include a wide range of connections between demographic, individual, social, environmental, and behavioral factors and the affective consequences of a lockdown. Among the results that we consider particularly relevant, we found that people belonging to more vulnerable groups reported higher levels of risk perception, indicating awareness of their relatively increased risks. Alongside this relation, we found that reported resilience was the key individual psychological factor predicting better psychological affect and higher meaning in life. Additionally, we found that people engaging more in their community, helping others, involving themselves in multiple online activities, and daily using open-air spaces reported higher positive affect, as well as greater meaning in life in some cases. Similarly, exercising was related to lower levels of negative affect. Below we expand on these results and their implications.

The obtained results showed that the COVID-19 pandemic was perceived as both a health and an economic risk by individuals under confinement. However, this dual dimension of the risk perceived by participants differed based on their demographic profile. As was expected, people who belonged to high-risk groups due to health conditions, reported a higher perceived health risk

than those belonging to the general population. Similarly, employment status also appeared to be related to the perception of risk regarding health. People who worked remotely from home perceived less health risk than workers who had to attend their workplace in person and those who were temporarily suspended due to quarantine. As having to go outside to work could be associated with a higher probability of exposure to the virus, an increase in the perception of health risk was expected. These results are consistent with studies conducted internationally (e.g., Barzilay et al, 2020; Feng et al, 2020; Zacher & Rudolph, 2021). Overall, people working from home during the COVID-19 lockdown, reported more positive experiences than negative ones regarding their work-life balance, improved work efficiency and reported greater work control (Ipsen et al., 2021). Similarly, perceived economic risk was linked to employment status. People unemployed prior to the pandemic, or temporarily suspended due to lockdown measures, perceived higher economic risk than participants working from home or working in person during lockdown. Therefore, economic and employment vulnerability are highlighted as having an important role in perceiving the financial risks associated with COVID-19. It is possible that these differences in perceived economic risk are related to uncertainty in the early stages of confinement about the duration of the pandemic, the magnitude of the lockdown, or the type of support and assistance that would be received while the state of emergency remained. It should be noted that the stay-at-home orders were very strict and duration of the nation-wide quarantine was extended by the Spanish government on as many as five successive occasions. In any case, health and economic vulnerability were also related to well-being indicators during quarantine, but it was not possible to identify a stable pattern of response associated with well-being.

There were two personal characteristics of participants that were particularly relevant for their apparent relation with indicators of well-being. First, having suffered symptoms of COVID-19 or living with symptomatic people was, as a whole, related to greater negative impact during quarantine, as it was linked to lower positive affect and meaning in life. These results are consistent with current international studies on the impact of COVID-19 on stress and mental health (e.g., Bo et al., 2020; Cao et al., 2020). Second, and in contrast, psychological resilience was the personal characteristic related with the greatest positive impact, as it was linked with higher positive affect and meaning in life, and lower negative affect. Therefore, psychological resilience could act as a safeguard against the psychological impact of pandemic lockdown measures, as it already does

with other negative life events. This protective effect by resilience is notably also reported in other studies involving the COVID-19 pandemic (e.g., Barzilay et al., 2020; Killgore et al., 2020).

Results obtained seem to indicate that the psychological consequences of quarantine were associated not only with a person's individual characteristics, but also with their immediate social and environmental household surroundings. People who quarantined with family members did not report higher positive affect or meaning in life, they instead reported higher negative affect than individuals who quarantined by themselves. This could be due to a variety of causes, for example, being confined with others for a prolonged period of time could be acting to some extent as a trigger for negative emotions. Thus, being confined with family members for an extended and undetermined period of time could force already existing conflicts to surface. There is evidence of increased violence against women and domestic abuse associated with the COVID-19 lockdown. Confinement facilitates the onset or escalation of violence and abuse (e.g., Piquero et al, 2021). Another possible cause is concern over how carefully safety measures are being followed by family members or any other individual under quarantine. Other people become a potential source of stress, as they are perceived as a possible source of infection.

The availability and frequency of open spaces usage (e.g., balconies or backyards), also seemed to act as a positive environmental affordance for psychological restoration. Access to fresh air and natural light or an increased field of vision, could break the monotony and fatigue of indoor confinement. This is consistent with findings in previous studies on the restorative effect of open and natural environments (e.g., Menatti & Casado da Rocha, 2016). There is also consistent evidence pointing to the negative impact on people's mental health during the COVID-19 lockdown, of specific housing architectural features, such as small size, unusable balconies, poor quality of indoor areas and poor-quality view from home (e.g., Amerio et al 2020). It should be noted that these aspects of participants' social and environmental surroundings could be interacting with other personal characteristics not explored in our study. For example, housing conditions, number of residents in a home and family ties, could be related to a person's immigration status. However, these conclusions should be interpreted with a certain degree of caution, as more research on the matter is necessary.

Other than the physical and social conditions under which lockdown occurred, another important factor to understand is how the different actions and activities performed by individuals were related to coping with home isolation. We found that most recommended activities were

linked with the positive emotional state and well-being (i.e., meaning in life and positive affect) of participants, but were not related to a reduction of negative affect. This was the case, for example, of participating in creative activities or maintaining daily routines. Such activities were recommended to the general population by governments and international institutions, and in our study, seemed to be related with positive affect, but were not related to a reduction of negative affect. A similar effect was found with other behaviors, essentially those involving seeking social contact (e.g., video calls with family and friends or community bonding actions). These behaviors were also linked with positive emotional responses but were not related with negative ones.

In our study, only one of the behaviors analyzed, exercising, seemed to have a significantly positive overall relation with well-being. Exercising was associated with greater positive affect and finding meaning in life, as well as with lower negative affect. In short, caregiving behaviors, whether caring for oneself, by exercising, or caring for others, by altruistically helping them, seems to be at the heart of actions that result in coping with a lockdown in a more constructive manner. There is prior evidence (e.g., Prati et al., 2011) of a strong link between affective and individual behavioral responses to the threat of pandemic disease.

Our findings on the connection between positive and protective behaviors and well-being is consistent with previous evidence on the determinant effect of prosocial support practices, and the mediating role of positive meaningful life experiences and psychological resilience on well-being and mental health (e.g., Alkozei et al., 2018; Lee, 2019). The positive emotions experienced when performing these types of behaviors might strengthen certain personal psychological resources and improve the level of general well-being, even if done within the context of a strongly negative event, such as being under confinement. This notion could find some support in the conceptualization and empirical evidence provided by the goal focused positive psychotherapy model (e.g., Conoley & Scheel, 2018; Winter Plumb et al., 2019). The relationship between well-being and protective behaviors observed in our results can be interpreted according to the transactional theory of stress (Lazarus and Folkman, 1984). These lockdown protective behaviors could be acting as self-sufficient coping strategies and as socially-supported coping strategies. However, it is necessary to consider why coping behaviors do not appear to be linked to a reduction of negative affect. On one hand, although the recommended activities seem to improve positive affect, the ever-present COVID-19 situation (e.g., continuous and daily news on the number of cases and deaths, announcement of new restrictions, uncertainty about the duration of lockdown,

etc.) might be preventing them from being effective strategies in the reduction of negative affect. On the other hand, following the results of González-Tovar and Hernández-Rodríguez (2021), individual characteristics such as emotional expressiveness may be acting as perceptual strategies of coping that might be inhibiting negative affect.

In any case, it is necessary to consider that behaviors that are positive, beneficial to the health of the individual and are focused on personal and social care, relate to positive affect, but do not seem to influence negative affect. It should be noted that our research sought to describe participants' psychosocial characteristics in a relevant situation. However, as no specific mental health or coping model was used as a starting point, our research only reflects an exploratory approach. Nonetheless, the results obtained are partially consistent with the evidence provided by research that has tested specific models. This is the case, for example, when applying the model of positive environments to explain precautionary behaviors in response to COVID-19 infection (Corral-Verdugo et al., 2021).

Our research presents a series of limitations that need to be expressed. First, data collection did not follow the criteria of representativeness of any specific population, nor did it take into account specific criteria related to cultural diversity. Therefore, despite having a large sample size, the results obtained should be interpreted with necessary caution from the perspective of public health interventions. Second, data collection was carried out during the second week of lockdown, when the impact associated with the initial surprise of lockdown might have been decreasing and yet the population was still unaware of the total duration of home isolation. Thus, the salience of the health and socioeconomic risks associated with prolonged lockdown might not have been properly identified. This could have also influenced the reduced effect size we observed in our analyses. It would be of interest to have longitudinal measures to study how the psychological impact developed along with the evolution of the pandemic in Spain and along the duration of lockdown. Third, our research does not identify the most serious psychological impacts of home isolation, as it does not include, for example, specific measures of anxiety or post-traumatic stress. In this regard, it is not possible to provide evidence on the long-term psychological effects that may be relevant to the future quality of life of the isolated population. Fourth, one of the aspects of this study was to analyze to what extent having suffered or currently suffering the disease, either by the individual or a family member, could have a strong psychological impact. Although we were able to identify significant differences regarding both negative and positive affect, it must be

noted that we were only able to access information about the presence of the disease among isolated participants in a limited, indirect, and self-reported manner. Fifth, the procedure developed for data collection may have made it difficult for people with COVID-19 to respond to our instrument. Furthermore, fear of being stigmatized for having COVID-19 may have limited reporting of the disease, despite ensuring the necessary confidentiality of data treatment at all times.

In summary, with a focus on policy guidelines for future lockdowns, the main evidence provided by this study relates to the relationship between positive home isolation coping activities and indicators of personal well-being. Thus, initiatives to mitigate the negative psychological impact associated with perceived risk, as well as initiatives that specifically seek to promote the psychological and social strengths of affected individuals, should be developed. An alternative course of action would be to systematically promote positive and proactive behaviors, based, among other aspects, on self-care and helping others. Although our study did not seek to answer specific questions concerning policy guidelines or intervention initiatives, in light of the results we obtained, it seems reasonable to consider that, whether clinical or socio-community based, the design and implementation of interventions oriented from a positive perspective could prove to be instrumental in controlling the psychological impact of confinement. For example, the influence that behaviors performed during home isolation have on emotional and personal well-being, could be increased with specific interventions based on the well-being factors identified in the Flourish Model (Seligman, 2011). Also, in order to increase the protective influence of these activities and behaviors during lockdowns, positive emotion regulation strategies could prove to be useful (e.g., Quoidbach et al., 2015). Furthermore, ensuring that people under quarantine have access to environments and activities that provide opportunities for psychological restoration is important. In any case, such initiatives must respond distinctively to the needs of different groups of people, specially, people belonging to health risk groups, women or those economically vulnerable.

Ethical statement: Ethical review and approval was not required for this study. This research complied with the principles of the Helsinki Declaration for research with human beings. Informed consent was obtained from all participants and all data collected was processed with confidentiality, in accordance with Spanish data protection regulations.

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