Variables protecting mental health in the Spanish population affected by the COVID-19 pandemic

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Abstract

The pandemic produced by COVID-19 can lead the population to suffer serious psychological disorders. However, there are several psychosocial variables that can enhance resilient outcomes in adverse situations. The aim would be to establish the level of resilience of the general Spanish population exposed to a traumatic situation by the COVID-19 in order to identify which protective factors predict resilient outcomes. 1227 homebound people (863–70.3% women), aged 18–73 years (M = 28.10; SD = 12.88) reported on sociodemographic and psychological variables such as optimism, hope, self-efficacy and post-traumatic growth. Having a higher academic level (β = .47; CI (95%) = .11–.34; $p < .01$), being autonomous (β = .29; CI (95%) = 0.1–.09; $p < .01$), along with self-efficacy (β = .42; CI (95%) = .71–92; $p < .01$) and to a lesser extent optimism (β = .31; CI (95%) = .63–.84; $p < .01$) would be the predictive variables of a resilient outcome. A high level of statistical power (1-β = 1) and effect size (f2 = 19.2) is observed. The Spanish population exposed to confinement presents high levels of resilience, but no relevant post-traumatic growth has taken place.

Keywords COVID-19 · Resilience · Self-efficacy · Optimism

Coronavirus-19 (COVID-19) began as a viral pneumonia in China in late 2019 and within two months took on pandemic proportions in most parts of the world (Mahase, 2020; World Health Organization-WHO, 2020). The ease of transmission, the lack of immunity in the population, the delay in testing to determine who can transmit the disease, the lack of protective equipment and the significant number of deaths, has meant that the population may feel high levels of stress (Torales, O'Higgins, Castaldelli-Maia, & Ventriglio, 2020). The actions taken in most countries include increasing hygiene measures, home confinement, reducing contact between people, and increasing social distancing (Clara-Rahola, 2020). All of these measures are unprecedented (Centers for Disease Control and Prevention, 2020), which has produced a threatening situation that can only be fought with responsible behaviour, as long as

there is no adequate medical treatment (Usher, Durkin, & Bhullar, 2020).

Historically, human beings have suffered different types of losses due to war, violence, oppression and disasters, all of which have been well studied (Horesh & Brown, 2020). The COVID-19 pandemic, like previous epidemics (e.g. SARS, MERS, influenza A/H1N1 and Ebola), can produce psychological distress, affective symptoms (low mood or irritability), and post-traumatic stress in the population, some of which may be long-lasting (Lai et al., 2020; Liang et al., 2020; Qiu et al., 2020; Wang, Di, Ye, & Wei, 2020). The population seems to move gradually from an avoidant posture through humor to a hypervigilant posture modulated by negative thinking, because there is a clear fear that the world as we know it is about to change, and the near future may be uncertain (Pfefferbaum & North, 2020). In addition, if one is infected or is closely associated with people who are infected, it is very likely that one will have intrusive thoughts related to health and even death (Horesh & Brown, 2020). Fear of contagion, lack of information, financial loss, and stigma are some of the stressors associated with epidemics (Collado-Boira et al., 2020; Ibáñez-Vizoso, Alberdi-Páramo, & Díaz-Marsá, 2020; Moreno, Fuentes-Lara, & Navarro, 2020).

A significant number of studies on the general population exposed to COVID-19 have focused on the psychosocial risk factors arising from this situation (Collado-Boira et al., 2020;

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Qiu et al., 2020; Usher et al., 2020; Wang et al., 2020). However, in theoretical studies some authors have hypothesized the possibility of initiating adequate coping mechanisms in this situation (Pfefferbaum & North, 2020). This line of work is aligned with research emphasizing the urgent need in the field of mental health to shift the focus from psychopathology to resilience (Chen & Bonanno, 2020; Kalisch et al., 2019). In addition, research articles that explore the capacity to cope with this adverse and stressful situation caused by the COVID-19 pandemic in the Spanish population are limited.

There is still no consensus on whether psychosocial resilience is a process or an outcome (Southwick, Bonanno, Masten, Panter-Brick, & Yehuda, 2014), although positive neurobiological effects of resilience to a traumatic experience have already been found (Mehta, Miller, Bruenig, David, & Shakespeare-Finch, 2020). The American Psychological Association (American Psychological Association, 2014) defined resilience as "the process of adapting well in the face of adversity, trauma, tragedy, threats or even significant sources of stress (pp. 4)". Hence, resilience can be understood as an outcome in which there is an absence of psychopathological symptoms (e.g. (Bonanno, Galea, Bucciarelli, & Vlahov, 2006)), or as a more complex process involving the individual's adaptive (cognitive, emotional and behavioural) reactions (e.g. (Carretero, 2010; Masten, 2014; Masten & Cicchetti, 2016)), and is not as common as originally thought (Infurna & Luthar, 2018). From this perspective, the individual has resources (e.g., different protective factors) that promote flexible adaptation to changing conditions that act as demands (Masten, 2016). Some factors are common, associated with adaptive adjustment during or following various adverse experiences, although they vary in form and importance across age and context. Others appear to be relatively unique to a particular culture or context, such as the ability to forgive or spiritual practices (Masten, 2019). Due to the importance of flexibility in resilient outcomes, it is essential to assess those specific protective factors that promote high levels of resilience in the particular situations caused by COVID-19 (Chen & Bonanno, 2020).

One class of resources that is broadly relevant to resilience involves self-efficacy, hope and optimism. Although these protective factors are interrelated, prior research suggests that they are distinct latent constructs in terms of their structure (Alarcon, Bowling, & Khazon, 2013; Bryant & Cvengros, 2004; Haanstra et al., 2015; Rand, 2018) and have unique relationships with mental health outcomes such as life satisfaction, psychological well-being, hedonic well-being, and depression (Carver, Scheier, & Segerstrom, 2010; Conversano et al., 2010; Ong, Standiford, & Deshpande, 2018; Pleeging, Burger, & van Exel, 2019). These personal resources may promote resilience in response to adverse circumstances by facilitating positive coping and adaptive responses to obstacles (Carver, Scheier, & Weintraub, 1989;

Connor & Davidson, 2003; Scheier & Carver, 1985; Snyder, 2002).

Scheier and Carver (Scheier & Carver, 1985) defined optimism as a personality trait representing the tendency to anticipate positive "generalized outcome expectancies," or favorable outcomes to events ((Carver et al., 2010), p. 219). Optimism involves goal-directed, future-oriented cognition (Bryant & Cvengros, 2004). Although an optimistic outlook is usually the result of confidence in one's abilities or past successes, it may also be due to outside influences such as perceptions of luck or the actions of others (Carver et al., 2010). Like optimism, self-efficacy is future-oriented and plays a prominent role in goal-directed behavior. Self-efficacy involves perceptions that one can perform specific behaviors necessary to achieve a desired outcome (Bandura, 1982a). Other researchers have expanded this scope to examine the role of a general sense of self-efficacy, a factor that reflects one's beliefs about one's own capabilities in dealing with demands in different situations (Benight & Cieslak, 2011). As for hope, Pleeging et al., (2019) distinguish between cognitive and emotional hope. Snyder (Snyder, 2002) highlighted the cognitive conception of hope, where the person presents beliefs about the ability to achieve their goals (agency) and belief about their abilities to imagine possible routes to these goals (pathways). According to these authors, cognitive hope is a pattern of thinking which is close to the construct of optimism. Emotional hope is present in Hertz's perspective (1992), his concept is linked to general feelings of hopelessness or helplessness and is more focused on the control of emotions than thoughts. Chen and Chen (Chen & Chen, 2008) related Hertz's hope scale to students' emotional resilience. The two components of hope are not independent, as shown by Snyder (Snyder, 2002). Positive emotions (hope) take precedence when the person establishes predictions to face the difficulties that are present, while negative emotions (hopelessness) take precedence when the predictions suggest the impossibility of facing the situation.

Individuals' high hope, optimism and self-efficacy are quick to rebound in the face of obstacles (Bandura, 1982b; Nes & Segerstrom, 2006; Snyder et al., 1991). Those with greater hope and optimism demonstrate positive emotions in the pursuit of goals and respond with less negative affect when they encounter difficulties (Scheier & Carver, 1985; Snyder, 2002). Higher levels of self-efficacy are also associated with lower levels of emotional arousal (Bandura, 1982b). These forms of positive expectancies are associated with adaptive engaged coping and inversely associated with maladaptive avoidance and emotion-focused coping (Kumar & Kadhiravan, 2009; Nes & Segerstrom, 2006; Ong et al., 2018). These factors are therefore expected to act as protective elements in adverse situations. Our hypothesis is that these variables will participate in the prediction of the population's

capacity of flexible adaptation (resilience) to the adverse situation linked to the COVID-19 pandemic.

After experiencing an adverse situation people can achieve personal growth (Goldstein, Faulkner, & Wekerle, 2013) related to the identification and/or strengthening of resilient variables in the individual (Richardson, 2002). Tedeschi and Calhoun (Tedeschi & Calhoun, 1996; Tedeschi & Calhoun, 2004) defined Post-traumatic Growth (PTG) as positive psychological changes, (e.g. a greater sense of personal strength and closer relationships with others) that happen as a result of a person's struggle with a traumatic event. According to these authors, for PTG to occur, the event must challenge an individual's core beliefs about themselves, others, and the world in general. The PTG model proposes that as an individual rebuilds their disrupted core beliefs, they attempt to regulate their emotions in a way that fosters constructive thinking and allows them to willingly engage with trauma-related memories and emotions.

Resilience and post-traumatic growth are not always related (Elderton, Berry, & Chan, 2017; Vázquez, Duque, & Hervás, 2013). However, Weber et al. (Weber et al., 2019) found that the meaning given to the adverse event is a factor shared by both constructs, i.e., as perceived meaning and resilience increased, PTG also increased. The PTG theory from Tedeschi and Calhoun (Tedeschi & Calhoun, 2004) states that for growth to occur, an individual must engage with the distressing emotions provoked by the traumatic event in order to derive meaning. Orejuela-Dávila et al. (Orejuela-Dávila, Levens, Sagui-Henson, Tedeschi, & Sheppes, 2019) emphasized that reappraisal of the situation (versus distraction) is a proactive emotional self-regulatory strategy that is well suited for this purpose because it requires individuals to engage with negative content and then re-evaluate its meaning in a more positive light. We believe that this strategy may support PTG and resilience. In this context we expect PTG to have a direct and positive relationship with resilience.

Along with these psychological variables, the capacity to adapt to an adverse situation can also be modulated by sociodemographic factors that act as the individual's available resources. The sociodemographic factors considered in this study were educational level, employment situation, age and gender. These factors have been linked to individuals' adaptability to adverse situations in general (Bonanno et al., 2006) as well as in relation to the COVID-19 pandemic (Lai et al., 2020; Qiu et al., 2020; Wang, Di, et al., 2020).

The aim of this study is to identify whether psychosocial and socio-demographic variables that act as protective factors in adverse situations play a role in the level of resilience achieved by individuals in a sample affected by the COVID-19 pandemic. We believe that these individuals will not only use their available resources to adapt to the situation but will also have become more aware of these strengths and and will have been encouraged to use them. However, given that post-traumatic

growth is not always present in resilience, we hypothesize that the contribution of this factor to the resilient outcome achieved will have less weight in the models identified by requiring deliberate changes in areas of the individual's life.

Method

Participants

The total sample consisted of 1345 people. The response rate was 98% with 1227 valid responses, and 118 participants eliminated because they did not comply with one or more of the stated inclusion criteria. The inclusion criteria were: 1) to be 18 years of age or older 2) to be of Spanish nationality and resident in Spain 3) to have read the information sheet and accepted the informed consent and 4) to have completed the questionnaire. The total sample (1227 participants) was composed of 863 women, 356 men and 8 people self-reported as non-binary. The age ranged between 18 and 73 years old (M = 28.10; WD = 12.88). Table 1 gives the socio-demographic data (Table 1). The sample was heterogeneous and representative of the Spanish population (Centre for Sociological Studies-CIS, 2020).

Instruments

Socio-Demographic Data Sheet We prepared a fact sheet for this study to capture information on sex, age, location, educational level, employment status, number of household members confined, whether there are family members or friends infected with COVID-19, whether there is a relationship with essential service workers, and the type of dwelling the respondent is confined in.

Life Orientation Test-LOT-R by Scheier et al. (Scheier, Carver, & Bridges, 1994) We used the Spanish adaptation by Ferrando et al. (Ferrando, Chico, & Tous, 2002). The instrument is made up of 10 items, with a 5-point response scale where 0 is completely disagree, and 4 is completely agree. Of the 10 items, only 6 measure aspects related to dispositional optimism, while the others are fillers. Of these 6, three are written positively and three negtively, such that it produces one score related to optimism or life orientation and another score that measures pessimism. In this study we only used the items measuring optimism. Cronbach's alpha for the adaptation to Spanish was .70 for optimism and .69 for pessimism. In this study we found an alpha of .77 for optimism.

Herth Hope Index (HHI) Herth (Herth, 1992) We used the Spanish version by Meseguer et al. (Meseguer, Fernández, & Soler, 2013). The scale consists of 12 items, with a 4-point Likert scale where 1 is completely disagree, and 4 is

Table 1 Description of socio-demographic data of the simple

	n (%)	Contrast	d.f.	η^2	Power
Gender					
Women	765 (62.35)	4.01*	1	.79	.89
Men	462 (37.65)				
Age					
18–28	191 (15.57)				
29–39	209 (17.03)				
40–49	221 (18.01)	3.67^{ns}	5	.82	.13
50–59	208 (16.95)				
60–69	213 (17.36)				
70 or more	185 (15.08)				
Number of inhabitants place of residence					
<5.000	142 (11.57)				
5.000–24.999	297 (24.21)				
25.000–49.999	309 (25.18)	4.77^{ns}	4	.72	.42
50.000–100.000	344 (28.04)				
> 100.000	135 (11.00)				
Level of education completed					
None	141 (11.49)				
Secondary education	275 (22.41)	3.02**	3	.90	.84
Bachelors degree / Vocational training	463 (37.73)				
Post-graduate qualification	348 (28.36)				
Employment situation					
Employed	478 (38.96)				
Self-employed	306 (24.94)	5.22^{ns}	3	.62	.59
Retired	151 (12.31)				
Unemployed / ERTE/ERE	292 (23.79)				
Number of members confined to the same dwelling					
1	69 (5.62)				
2	228 (18.58)				
3	351 (28.61)	.39 ^{ns}	5	.51	.63
4	324 (26.40)				
5	177 (14.43)				
6 or more	78 (6.36)				
Relationship with family or friend with COVID-19					
Yes	491 (40.01)				
No	736 (59.99)	2.23^{ns}	1	.45	.73
Relationship with essential service workers					
Yes	728 (59.33)				
No	499 (40.67)	4.03**	1	.92	.93
Type of dwelling					
Flat of less than 59 square meters	178 (14.51)				
Flat between 60 and 99 square meters	294 (23.96)				
Flat of 100 square meters or more	289 (23.55)	1.64^{ns}	4	.83	.56
One-story house of 100 square meters	364 (29.67)				
Two-story house of 100 square meters	102 (8.31)				

Contrast = T-Student/ Chi-Square; * = $p < .05$; ** = $p < .01$; ns = Not significant; d.f. = degree of freedom; η2 = eta square; Power = Power of contrast

completely agree. Items 3 and 6 are formulated inversely, meaning their scores have to be reversed. The index measures hope through 3 subdimensions which are temporality and future, positive readiness and expectancy, and interconnection, although recent studies in the Spanish clinical population show a two-dimensional structure (Sánchez-Teruel, Robles-Bello, & Camacho-Conde, 2020). The maximum possible score is 48 and the minimum is 12. Cronbach's alpha for a sample of Spanish university degree students was .89. In this study the total alpha was .69.

General Self-Efficacy Scale-GSE (Babler, Schwarzer, & Jerusalem, 1993) This scale was translated and adapted into Spanish by Sanjuán et al. (Sanjuán, Pérez García, & Bermúdez, 2000). It measures general self-efficacy, the belief that one's actions are responsible for successful outcomes, and is made up of 10 items with a scale from 1 (not at all true) to 4 (completely true). There are no cut-off points, scores vary from 10 to 40 points and the higher the score, the greater the overall perceived self-efficacy. The internal consistency of the Spanish version was .84 and in this study Cronbach's alpha was .90.

Post-traumatic Growth Inventory (PTGI) (Tedeschi & Calhoun, 1996) This was originally a 21-item instrument that was adapted and validated for Spanish parents of hospitalized children by Rodríguez-Rey et al. (Rodríguez-Rey, Alonso-Tapia,

Kassam-Adams, & Garrido-Hernansaiz, 2016) with a 12-item version. This brief inventory measures post-traumatic growth using a 6-point Likert response format ranging from 0 ("I did not experience this change as a result of my crisis") to 5 ("I experienced this change largely as a result of my crisis"). The internal consistency (McDonald's ω) in the short version of the questionnaire (12 items) adapted to the Spanish population was .96 for the personal growth (CP) sub-dimension, for interpersonal growth (IC) ω = .89, for the transpersonal growth (CT) sub-dimension ω = .91, and for the total scale it was .97. In this study alpha for the total inventory was .92 and was also adequate for the remaining sub-dimensions (CPα = .90; CIα = .83 and CTα = .66).

Connor-Davidson Resilience Scale-10 (Connor-Davidson Resilience Scale, CD-RISC10 (Campbell-Sills & Stein, 2007) This scale measures the level of general resilience, understood as the ability to adapt in the face of adversity, and is made up of 10 items in a Likert-type format (from 0 = not at all in agreement to 4 = completely in agreement) with a one-dimensional structure. In this study we used the adaptation to Spanish by Notario-Pacheco et al. (Notario-Pacheco et al., 2011). In terms of psychometric properties, it has good internal consistency (alpha = .87) (Soler, Meseguer, & García, 2016) and measurement invariability in terms of sex and age, and is suitable for measuring resilience in the general Spanish population (Pulido-Martos, Cortés-Denia, Rosa-Blanca, & López-Zafra, 2020). In this study we found an alpha of .88.

Procedure

Because the Spanish Government declared the State of Alarm on 14 March 2020, which minimised interaction between people by isolating them in their homes, respondents were invited electronically via the link https://forms.gle/kAU1sr84uCTHCfMu8 which was sent to them via social networks. From 15 April 2020, we distributed online questionnaires on psychological state, called "Emotions in times of crisis" to the general population. Participants completed the questionnaires in Spanish through an online survey platform (Google Forms, licensed by the University of Jaén). The informed consent of all participants was obtained. The study was approved by the ethics committee of the University of Jaén (code: ABR.20/4.PRY), and followed the ethical guidelines of the Spanish Society of Psychology and the principles of the Declaration of Helsinki. Data collection was carried out from 15 to 26 April 2020.

Data Analysis

Missing data accounted for less than 1% for all variables, and a multiple imputation method (SPSS) was used to impute missing

values (Graham, 2012). We used a parametric student-t test for a sample to determine whether there were differences in the different psychological variables measured. Subsequently, we assessed the correlations between all of the psychological variables and resilience. Finally, we performed a stepwise multivariate regression analysis of the socio-demographic and protective variables including optimism, hope, self-efficacy, and post-traumatic growth (independent variables) on resilience (dependent variable), first calculating the indices of goodness of fit. We also calculated statistical power and effect size indices. The level of statistical significance required in all tests was a minimum of $p < .05$. The statistical analysis of the data was performed using the SPSS statistical package version 22.0 (IBM (Corporation, 2013)) and the statistical power and effect size were determined using the G*Power 3.1.9.7 program (Faul, Erdfelder, Buchner, & Lang, 2009).

Results

The results of the descriptive statistics and the contrast of means for a sample (t) showed that there were differences in the scores in all the following protective variables: optimism ($t_{(1226)} = 120. 54$; $p < .001$), self-efficacy ($t_{(1226)} = 160.35$; $p < .001$), hope ($t_{(1226)} = 218.15$; $p < .001$), post-traumatic growth ($t_{(1226)} = 65.57$; $p < .005$) and resilience ($t_{(1226)} = 122.61$; $p < .001$) (Table 2). The *t*-test measures the difference between a sample's mean in a particular variable and a hypothetical value in that same sample, which in this case has been the maximum score that can be obtained by a person in that variable. In addition, Fig. 1 shows a high level of resilience in this sample, there were few participants with low or very low levels of resilience (only participant 127 with extremely low scores and approximately ten participants with outliers).

All of the relationships were significant ($p < .01$). The strongest correlations were between self-efficacy and resilience (r = .75; $p < .01$), between optimism and resilience (r = .70; $p < .01$), and between optimism and self-efficacy (r = .75; $p < .01$). Interestingly, there was little relationship between resilience and post-traumatic growth (r = .18; $p < .01$), the most prominent correlation being with hope (r = .36; $p < .01$) (see supplementary material).

We used multiple regression analysis to examine which protective and socio-demographic variables predicted a higher level of resistance in this sample exposed to a situation of mandatory containment by COVID-19. Preliminary analyses for the assessment of goodness of fit confirmed compliance with the assumptions of non-multicollinearity (<5, PIV = 1.00 and 1.77; (Kleinbaum, Kupper, & Muller, 1988)) and the tolerance values (1–0.1) were between 1 and .98 (Lomax & Hahs-Vaughn, 2012). Moreover, there was no autocorrelation in any of the protective and socio-demographic variables, thus the error independence assumption was met (Durbin-Watson = 1–3) and the results can be generalized to the general population, with

Table 2 Descriptive statistics and comparison of means in a sample for all psychosocial protective variables

	M(SD)	Min./Max	A (SE = .085)	C (SE = .169)	t	95%CI LL/UL
Optimism	19.25(4.61)	1–12	−.69	.77	120.54**	18.93/19.56
Hope	35.87(4.75)	12–48	−.97	1.67	218.15**	35.55/36.19
Self-Efficacy	29.92(5.39)	10–40	−.43	.29	160.35**	29.55/30.29
Post-traumatic growth	31.35(13.81)	0–60	−.26	−.72	65.57*	30.42/32.29
Resilience	28.54(6.72)	0–40	−.64	.61	122.61**	28.08/28.99

M = Mean; SD = Standard deviation; Min = Minimum; Max = maximum; A = Asymmetry; C = Kurtosis; SE = Standard error; t = Student-t test for a sample; *p < .05; **p < .01; ns = not significant; 95% CI = confidence intervals; L.L. = lower limit; U.L. = upper limit

the coefficient close to two (D-W = 1.95) (Yoo et al., 2014). Thus, we proceeded to stepwise multiple regression (the explanatory variables enter the model according to their degree of correlation with the dependent variable, in this case resilience) to detect the level of significance of each socio-demographic and psychological protective variable in order to detect the most appropriate and best fitting prediction model in this sample. Some sociodemographic and protective variables explained a greater degree of resilience, the proposed model (set of independent variables) being significant and explaining 82.10% of the resilience in this sample (R^{2c} = .821; F$_{(1,1226)}$ =1053.60; p < .01). The final proposed model of the sociodemographic and protective variables (model 3) would indicate the protective variables predicting greater levels of resilience. The results in Table 3, referring to the sociodemographic variables, show that having a higher level of academic qualifications (educational level) (β = .47; CI (95%) = .11–.34; p < .01) and being self-employed or working for others (employment status) (β = .29;

CI (95%) = 0.1–.09; p < .01) were the sociodemographic variables that would best explain a higher level of resilience. For the protective variables, the data show that self-efficacy (β = .42; CI (95%) = .71–92; p < .01) and to a lesser extent optimism (β = .31; CI (95%) = .63–.84; p < .01) were the protective variables that best predict a high level of resilience to adverse situations. By incorporating variables into the model it has greater power to explain resilience, as well as a high level of statistical power (1- β = 1) and effect size ($f2$ = 19.2) (McDonald, 2014), and allows us to state that the results are clinically relevant for predicting resilience to adverse situations.

Discussion

This study aimed to determine whether certain sociodemographic and psychological variables act as protective factors in adverse situations, testing their role in predicting

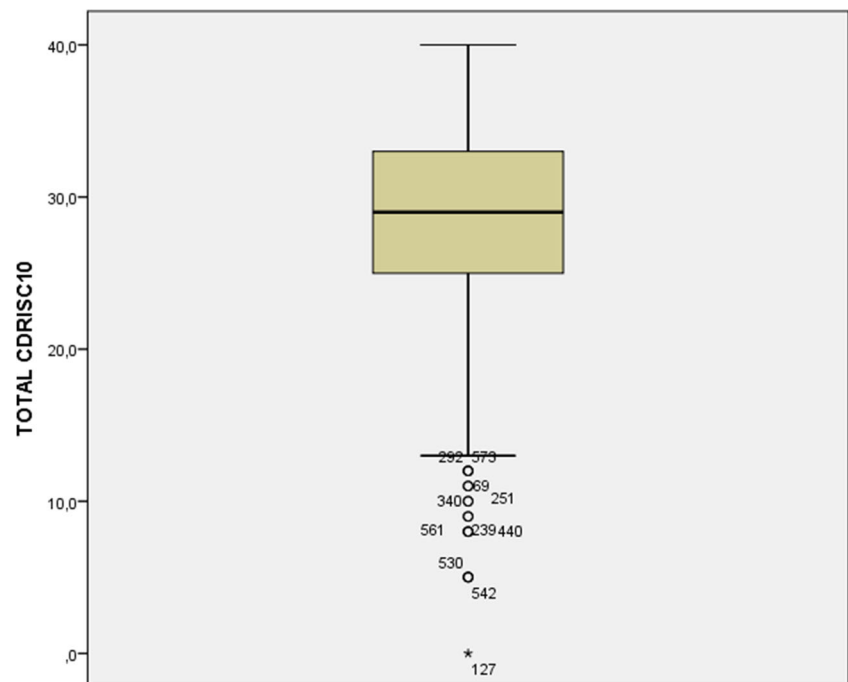**Fig. 1** Box plot related to resilience (CD-RISC-10)

Table 3 Predictive models of resilience according to protective socio-demographic and psycho-social variables

	R^{2c}	F	B	SE	t	β	C.I. (95%) para B		1-β	f^2
							L.L.	U.L.		
Model 1	.54	315.24**							.23	.34
Gender			.13	.01	1.78[ns]	.42	.12	.98		
Age			.12	.29	1.45[ns]	.70	.02	.32		
Edcuational level			.30	.83	3.18*	.12	.15	.81		
Employment			.22	.42	4.22*	.21	.19	.34		
Self-Efficacy			.43	.91	6.18*	.10	.12	.18		
Optimism			.82	.79	4.45*	.33	.67	.91		
Hope			.89	.19	2.34*	.27	.81	2.3		
Growth			−.02	.21	-.73[ns]	-,12	−.05	.51		
Model 2	.67	512.80**							.96	11.3
Educational level			.39	.03	12.32*	.56	.22	.46		
Employment			.67	.28	10.73*	2.12	−.45	6.01		
Self-Efficacy			.41	.91	16.78**	5.12	1.12	7.98		
Optimism			.82	.79	14.45**	4.31	.27	3.11		
Hope			−.89	.19	-.34[ns]	.27	−.21	5.23		
Model 3	.82	1053.60**							1	19.2
Educational level			.28	.36	22.67**	.47	.11	.34		
Employment			.03	.51	19.89**	.29	.01	.09		
Self-Efficacy			.82	.23	28.39**	.42	.71	.92		
Optimism			.78	.18	14.22**	.31	.63	.84		

R^{2c} = Corrected determination coefficient; F = contrast statistic (ANOVA); *$p < 0.05$ ** $p < 0.01$; ns = not significant; B = non-standardized coefficient; SE = standard error; t = predictive variable contrast statistic; g.l. = degrees of freedom; β = result of the regression or beta equation; C.I. = confidence intervals; L.L. = lower limit; U.L. = upper limit; 1- β = statistical power; f^2 = effect size

the level of resilience achieved in a sample affected by mandatory confinement to their homes. The COVID-19 pandemic in Spain has meant significant change to people's lives (Clara-Rahola, 2020; Collado-Boira et al., 2020). This situation has often had personal consequences (e.g. health status), family consequences (e.g. family economic situation), and community consequences (e.g. economic and political concern) in the general population (Johnson & Galea, 2011). However, few studies have measured the factors that may facilitate the population's adaptation to this pandemic situation due to COVID-19, focusing exclusively on risk factors. Our results support the hypothesis that this sample presents high levels of resilience, detecting factors that contribute to the prediction of the capacity to flexibly adapt to this situation, but they do not support the hypothesis predicting greater post-traumatic growth. The effect of the alarming COVID-19 data on the general Spanish population (with almost 900 deaths per day and more than 202,736 infected) (Ministry of Health, 2020) has not generally led to a personal transformation in life values. This may be explained by people's low perceptions of the risk of the adverse situation (Masten, 2019). Because it mainly affects people with previous pathologies and elderly people living in geriatric hospitals, low

visibility of the serious consequences has minimized the perception of risk, especially in young people. It could also be explained by another, more cultural factor, where one of the basic prevention measures, social distancing, is difficult for the general population of Spain to accept.

Resilience in this sample was modulated by self-efficacy and optimism. These two psychological variables have also traditionally been positively related to resilience as in this case both for optimism (Pathak & Lata, 2018) and for self-efficacy, the latter in both the clinical population (Liu et al., 2018; Tan-Kristanto & Kiropoulos, 2015) and in the general population (Li, Eschenauer, & Persaud, 2018). Benight and Cieslak (Benight & Cieslak, 2011) highlighted the contribution of self-efficacy beliefs as a mechanism to predict successful adaptation in the individual in response to demands and available resources. This aspect is essential because it makes the individual aware that they have some control over adversity, also participating in its possible control. Optimism is a factor that has been described as a general expectation of positive outcomes when evaluating future life events (Pathak & Lata, 2018). Buckingham and Richardson (Buckingham & Richardson, 2020) relate the level of optimism in individuals

to their ability to accept adverse situations, interpreting and assigning meaning to the situation in order to maintain engagement in important life activities. Esteve et al. (Esteve et al., 2018) found higher levels of optimism to be associated with individuals' ability to persist and be flexible with their goals, which is in turn related to task persistence and lower activity avoidance despite the adverse situation.

According to our results, the confluence of optimism and self-efficacy in the context of a pandemic encourages flexible and adaptive behaviour in the individual, such as following health recommendations to reduce the possibility of contagion (e.g. staying at home, hygiene measures, and social distancing), but also other behaviours in the work or educational environments with changes in how activities are performed (e.g. use of digital resources), in the family environment (e.g. access to basic resources), use of quality information (e.g. health information or the different economic and social policies), and considering the multilevel effects associated with a global pandemic situation such as COVID-19. These factors are further complemented by the participation of socio-demographic elements that can act as possible resources for the individual. Our results indicate that the people's educational attainment levels and employment situations play a role in the prediction of resilience. Those who had higher educational qualifications and were self-employed demonstrated more resilience. The contribution of these factors is in line with previous studies on factors that contribute to the protection of the individual in different adverse circumstances (Bonanno, Galea, Bucciarelli, & Vlahov, 2007) and also in relation to the COVID-19 pandemic (Chen & Bonanno, 2020; Liang et al., 2020).

Despite the interest shown by research in gender and age differences, the results with regard to resilience are not conclusive. Pulido-Martos et al. (Pulido-Martos, Fernández-Sánchez, & López-Zafra, 2019) found no relationship between resilience and age but did find a relationship with gender. These relationships were not found by Connor and Davidson (Connor & Davidson, 2003), Rodrigues-Lopes and Fernandes-Martins (Rodrigues-Lopes & Fernandes-Martins, 2011), or Karmalkar and Vaidya (Karmalkar & Vaidya, 2018). Disagreements about the relationship between these factors and resilience may be due to the types of adverse situation experienced (Karmalkar & Vaidya, 2018). In our study, another factor that may have influenced the minor role of gender in predicting resilience is the significant imbalance in the number of female participants. This can be seen as a limitation of this study, but investigating this possibility could be a target for future studies.

Nor were the factors of post-traumatic growth and hope involved in predicting resilience. Post-traumatic Growth refers to a positive adaptation process through which people re-evaluate their traumatic experiences (Tamiolaki & Kalaitzaki, 2020). These changes are deliberate in nature (meaning-making), with examination of the adverse element

and possible negative emotional reactions and/or attempts to suppress thinking. In this study, PTG was a negative predictor of resilience but was not statistically significant. Along the lines indicated by Vázquez et al. (Vázquez et al., 2013), this result suggests that there may be differences between resilient adaptation and arriving at a vital meaning. The growth leading to the construction of new meaning in the individual may have been limited by the duration of the study and, furthermore, may be clearer in the group experiencing this situation as more of a threat to their lives. Knowing whether this growth is related to a greater threat to life (older people, health professionals or those more exposed to infection) requires follow-up, an aspect that would need to be examined in future studies.

Morote et al. (Morote, Hjemdal, Krysinska, Martinez Uribe, & Corveleyn, 2017) found an important relationship between resilience and hope-mediated subjective emotional well-being using the HHI scale. Pleeging et al. (Pleeging et al., 2019) highlighted the evaluation of the emotional component of hope when using the HHI scale, that is, the concept of hope as an experience and focus "aimed at gaining control over emotions rather than over external circumstances" (p. 2). In this study, we did not directly examine possible emotional disturbances in the population examined by limiting the contribution of hope as a protective factor facilitating the development of a state of resilience.

Limitations and Directions of Future Research

This study has some limitations. On the one hand, we used a cross-sectional design, which cannot provide strong evidence of causality. This aspect has already been reported by other studies (Chen & Bonanno, 2020). However, the study provides empirical evidence through an interesting picture of the protective factors that can be enhanced to increase resilience in a general population exposed to a pandemic. There are no empirical studies on this aspect, and this added value must be reported. Interestingly, future research could use a longitudinal design that reveals possible changes in factors such as resilience or post-traumatic growth. Secondly, this study used self-reported questionnaires, which have problems of subjectivity. Furthermore, due to snowball sampling, these findings may not represent the entire Spanish population, although the number of participants can be considered significant (CIS, 2020). In addition, many more women took part than men. Female participation over male participation is common in psychological research, which may be explained by the greater frequency with which women actively face problems and make more requests for help than men (Liddon, Kingerlee, & Barry, 2017). This would be an area for improvement in future research. Finally, other sociodemographic and psychological variables that could affect the Spanish population vulnerable to COVID-19 should

be examined. The authors of this study are already working on this possibility.

Conclusions and Implications

In summary, self-efficacy, optimism, increased education, and being self-employed were the protective factors that predicted resilience, all confirmed by the size of the effect offered by increased clinical applicability. Self-employment develops an entrepreneurial vision based on effective skills, which can be useful in enhancing resilience to adverse situations. Moreover, proposing key policies that enhance the educational level of their citizens to the detriment of school failure can improve the resilience of the Spanish population and encourage greater adaptation to adversity. All of this should be seen as priority policies for the government to help safeguard the psychological well-being of the community in the face of the spread of COVID-19 outbreaks in Spain and in different parts of the world. On the other hand, as this study has shown, developing an optimistic vision in everyday and exceptional difficulties, such as the COVID-19 pandemic, based on constructive actions that lead to short-term achievements, improves people's adaptation to the adverse situations they will experience throughout their lives.

Compliance with Ethical Standards

Conflicts of Interest/Competing Interests   The authors declare that there are no conflicts of interest.

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