



ORIGINAL ARTICLE

Psychometric properties of the Connor-Davidson Resilience Scale in women with breast cancer



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KEYWORDS

Resilience;
CD-RISC 10©;
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intelligence;
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Abstract

Background/Objective:: The aim was to analyse the psychometric properties of the 10-item version of the Connor-Davidson Resilience Scale (CD-RISC 10©) in breast cancer patients. **Method:** A sample of 169 Spanish women who had undergone surgery for breast cancer completed the CD-RISC 10©, along with questionnaires assessing life satisfaction, emotional intelligence, self-esteem, and positive and negative affect. **Results:** Confirmatory Factor Analysis supported a single-factor structure with adequate fit indices. Reliability was analysed by calculating McDonald's omega coefficient, which yielded a value of .83. Validity evidence based on relationships with other variables was provided by positive and significant correlations between scores on the CD-RISC 10© and scores on emotional intelligence (clarity and repair), life satisfaction, self-esteem and positive affect, and by a negative and significant correlation with negative affect. The majority of these correlations were above |.50|. **Conclusions:** The CD-RISC 10© has satisfactory psychometric properties and is a suitable tool for measuring resilience in patients with cancer. The instrument is quick and easy to apply and may be used in both clinical and research contexts.

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PALABRAS CLAVE

Resiliencia;
CD-RISC 10©;
cáncer de mama;
inteligencia
emocional;
estudio instrumental

Propiedades psicométricas de la Escala de Resiliencia de Connor-Davidson en mujeres con cáncer de mama

Resumen

Antecedentes/Objetivo:: El objetivo de este estudio fue analizar las propiedades psicométricas de la versión de 10 ítems de la Escala de Resiliencia Connor-Davidson (CD-RISC 10©) en pacientes con cáncer de mama. **Método:** Una muestra de 169 mujeres españolas que se habían sometido a cirugía por cáncer de mama completaron el CD-RISC 10©, junto con

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cuestionarios que evaluaban la satisfacción vital, inteligencia emocional, autoestima, y afecto positivo y negativo. Resultados: El análisis factorial confirmatorio apoyó una estructura unifactorial con índices de ajuste adecuados. La fiabilidad se analizó calculando el coeficiente omega de McDonald que arrojó un valor de 0,83. Fue proporcionada evidencia de validez de relación con otras variables mediante correlaciones positivas y significativas entre las puntuaciones en el CD-RISC 10© y las puntuaciones en inteligencia emocional (claridad y reparación), satisfacción vital, autoestima y afecto positivo, y por una correlación negativa y significativa con afecto negativo. La mayoría de estas correlaciones estaban por encima de 50|0,50|. Conclusiones: El CD-RISC 10© tiene propiedades psicométricas satisfactorias, siendo una herramienta adecuada para medir la resiliencia en pacientes con cáncer. El instrumento es rápido y fácil de aplicar y puede usarse tanto en contextos clínicos como de investigación. Publicado por Elsevier España, S.L.U. en nombre de Asociación Española de Psicología Conductual. Este es un artículo Open Access bajo la licencia CC BY-NC-ND (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

A diagnosis of cancer is one of the most difficult experiences that a person may face during his or her lifetime, and it affects all aspects of health. Accordingly, several studies have reported that psychological intervention is crucial for improving mental health and quality of life in oncology patients (Bellver-Pérez, Peris-Juan, & Santaballa-Beltrán, 2019; Cerezo, Ortiz-Tallo, Cardenal, & De la Torre-Luque, 2014; Finck, Barradas, Zenger, & Hinz, 2018; Kuba et al., 2019; Maxwell-Smith et al., 2018; Ochoa, Casellas-Grau, Vives, Font, & Borràs, 2017). Among the psychological variables that influence how well a patient copes with this illness, one of the most important is resilience, which reflects the psychological resources that the person is capable of employing in order to maintain quality of life and mental health (Dooley, Slavich, Moreno, & Bower, 2017; Huang et al., 2019; Markovitz, Schrooten, Arntz, & Peters, 2015; Matzka et al., 2016).

Resilience may be conceptualized as a dynamic developmental process, whereby the aim is to understand the mechanisms which allow the individual to cope successfully with adversity, or as a personality trait or ability, in which case the focus is on identifying the resilient qualities of the individual (Gucciardi, Jackson, Coulter, & Mallett, 2011). According to Richardson (2002) model of resilience, individuals start from a state of homeostasis and must subsequently adapt to life circumstances and events; the ability to cope with these events is influenced by the relative success and failure of previous attempts at adaptation. The present study considers resilience as a person's ability to thrive in the face of adversity, to adapt to and find meaning in a traumatic experience (Cerezo, 2013; Connor & Davidson, 2003; Costa & Gil, 2008; Guil et al., 2016; Luo, Eicher, & White, 2018; Vázquez & Castilla, 2007).

Empirical evidence suggests that cancer patients with higher levels of resilience also score higher on emotional intelligence (García, 2014; Mundey, Nicholas, Kruczek, Tschopp, & Bolin, 2018), self-efficacy and self-esteem (Lee, Lee, Fawcett, & Park, 2019), and they are also more optimistic (Gallagher, Long, Richardson, & D'Souza, 2019), more likely to engage in physical activity (Matzka et al., 2016) and report a better quality of life (Greup et al., 2018; Harms

et al., 2018; Popa-Velea, Diaconescu, Jidveian Popescu, & Truțescu, 2017). Studies involving cancer patients have also found that those with high levels of resilience score lower on negative affect such as anxiety and depression (Lee et al., 2019), have fewer physical, psycho-emotional and information needs (Dubey, De Maria, Hoeppli, Betticher, & Eicher, 2015) and experience less psychological distress (Lim, Shon, Pack, & Daly, 2014; Matzka et al., 2016).

In the specific context of breast cancer, research has shown that resilience among women after surgery is relatively low (Huang et al., 2019). However, it has also been reported that women who score higher on resilience tend to score higher on emotional intelligence (Burga, Sánchez, & Jaimes, 2016), life satisfaction (Zayas, Gómez-Molinero, Guil, Gil-Olarte, & Jiménez, 2018; Zayas & Guil, 2018), emotional wellbeing, physical and mental health, quality of life (Guil et al., 2016; Huang et al., 2019; Ristevska-Dimitrovska, Filov, Rajchanovska, Stefanovski, & Dejanova, 2015; Schrier et al., 2011) and optimism (Gallagher et al., 2019; Markovitz et al., 2015). In women with breast cancer, resilience appears to be a protective factor against negative affect such as anxiety and depression (Markovitz et al., 2015; Ristevska-Dimitrovska, Stefanovski, Smichkoska, Raleva, & Dejanova, 2015; Schrier et al., 2011), as well as against low self-esteem in the event of mastectomy (Izydorczyk, Kwapniewska, Lizinczyk, & Sitnik-Warchulska, 2018), helping these women to accept and perceive their illness differently, or even to draw positives from the experience (Gálvez-Hernández, Ortega, Villareal-Garza, & Ramos del Río, 2018; Guil et al., 2016; Zayas et al., 2018). These findings suggest that psychological interventions should aim to promote resilience in these patients, helping them to deal more effectively with a cancer diagnosis.

Evaluating interventions whose goal is to promote resilience and studying the variables associated with resilience requires standardized measures with adequate psychometric properties. In their methodological systematic review designed to evaluate the psychometric properties of 19 resilience measurement scales, Windle, Bennett, and Noyes (2011) found that the Connor-Davidson Resilience Scale (CD-RISC 25©; Connor & Davidson, 2003) was one of

the instruments that received the best psychometric ratings. The CD-RISC 25© focuses on the personal qualities or resources which enable successful adaptation to adversity. It is a multifactor scale comprising 25 self-report items rated on a five-point Likert-type scale and referring to how the person has felt during the past month. The scale has been widely used and tested in several populations and contexts (e.g., [Bezdzian, Schneider, Burchett, Baker, & Garb, 2017](#); [Gucciardi et al., 2011](#)), and there is considerable empirical evidence for its reliability and validity. Questions remain, however, about its factor structure, since some studies (e.g., [Burns & Anstey, 2010](#); [Kararmak, 2010](#)) have failed to replicate the factor structure proposed by the scale's authors. Specifically, [Campbell-Sills and Stein \(2007\)](#) raised a number of methodological issues regarding the exploratory factor analysis conducted by the scale's authors, namely the lack of clear criteria for factor selection, the type of rotation used, which did not allow factors to intercorrelate, the presence of factors that were difficult to interpret as they included items covering disparate themes, and the fact that one factor was defined by just two items. Following their own reanalysis of the factor structure, [Campbell-Sills and Stein \(2007\)](#) proposed a brief 10-item version of the scale (CD-RISC 10©), which was showed to have a single-factor structure and adequate internal consistency (Cronbach's $\alpha = .85$).

The psychometric properties of the CD-RISC 10© are well documented and have been analysed in various countries and populations, including undergraduates in Brazil ([Rodrigues & Fernandes, 2011](#)) and Colombia ([Riveros, Bernal, Bohórquez, Vinaccia, & Quiceno, 2018](#)), American ([Madewell & Ponce-García, 2016](#)) and Canadian (French-speaking) university students ([Hébert, Parent, Simard, & Laverdière, 2018](#)), German adults ([Sarubin et al., 2015](#)), Chinese elders ([Meng et al., 2019](#)), and more specific groups such as Australian cricketers ([Gucciardi et al., 2011](#)), Colombian patients with chronic disease ([Riveros, Bernal, Bohórquez, Vinaccia, & Quiceno, 2016](#)), low income African-American men ([Coates, Phares, & Dedrick, 2013](#)) and earthquake victims in China ([Wang, Shi, Zhang, & Zhang, 2010](#)). In Spain, the instrument's properties have been examined in young adults ([Notario-Pacheco et al., 2011](#)), in a multi-occupational sample ([Soler, Meseguer, & García, 2016](#)), in unemployed adults ([Fernández, Meseguer, & Soler, 2018](#)), in informal caregivers ([Blanco, Guisande, Sánchez, Otero, & Vázquez, 2019](#)) and in patients with fibromyalgia ([Notario-Pacheco et al., 2014](#)). However, there is little or no evidence regarding its administration and validation in women diagnosed with breast cancer.

Studying resilience in people with a cancer diagnosis could improve our understanding of how people cope with and adapt to this illness, as well as contributing to the design and evaluation of psychological interventions for cancer patients. The aim of the present study was to analyse the psychometric properties of the CD-RISC 10© in a sample of Spanish women with breast cancer, examining the reliability of test scores and obtaining validity evidence based on the instrument's internal structure and on relationships between resilience scores and those for other variables ([American Educational Research Association AERA, American Psychological Association APA, & National Council on Measurement in Education NCME, 2014](#); [Muñiz & Fonseca-Pedrero, 2019](#)). The analysis of these three aspects involved,

respectively, the calculation of McDonald's omega coefficient, a confirmatory factor analysis, and the calculation of correlations with scores on life satisfaction, self-esteem, positive and negative affect, and emotional intelligence. We expected to find a positive relationship between resilience scores and scores on life satisfaction, self-esteem, positive affect and emotional intelligence, and a negative relationship with scores on negative affect.

Method

Participants

The sample comprised 169 women with breast cancer who were recruited through ASAMMA, an association in Malaga (Spain) for women who have undergone breast cancer surgery. They ranged in age from 31 to 80 years ($M = 51.62$, $SD = 10.57$). The inclusion criteria were as follows: a diagnosis of breast cancer, no diagnosed psychological disorder, having completed the cancer treatment, and being in the follow-up phase of care. All participants were Spanish speakers, and 98.2% were of Spanish nationality. In terms of marital status, 66.3% of the women were married, 17.2% single, 6.5% separated or divorced and 9.5% widowed. The large majority of them (79.6%) had children. Regarding their level of education, 39.6% had completed primary school, 33.7% secondary school and 26.6% had university qualifications. Based on the criteria of the TNM staging system ([Sobin, Gospodarowicz, & Wittenkind, 2009](#)), the percentage of women at each stage was as follows: 5.3% at stage 0, 8.9% at I, 55% at II, 29.6% at III, and 1.2% at IV. The mean age at the time of breast cancer diagnosis was 47.85 years ($SD = 10.10$), with a mean time since diagnosis of 3.77 years ($SD = 3.85$). At the time of the study, 75.1% of the women were disease free, 7.7% had recurrence without metastasis and 17.2% recurrence with metastasis. Nine of the participants had missing data which followed a MCAR pattern, $\chi^2(65) = 62.93$, $p = .55$. Therefore, and given that the percentage of missing data was low, only complete cases were analysed.

For the analysis of validity evidence based on relationships with other variables, we randomly selected around 50% of the total sample ($N = 88$), with an age range between 31 and 74 years ($M = 51.40$, $SD = 10.32$). The rationale for this approach was to avoid interfering unduly with the everyday running of the cancer patients' association (ASAMMA).

Instruments

Connor-Davidson Resilience Scale (CD-RISC 10©; [Campbell-Sills & Stein, 2007](#)), in its Spanish version ([Notario-Pacheco et al., 2011](#)). This scale is based on the CD-RISC 25© ([Connor & Davidson, 2003](#)) and its use in research has been authorised by the original authors. The instrument comprises 10 self-report items, each rated on a Likert-type scale from 0 (*not true at all*) to 4 (*true nearly all the time*). In its original version, the 10 items load on a single dimension. The total score ranges from 0 to 40, and higher scores indicate greater resilience.

Satisfaction with Life Scale (SWLS; [Diener, Emmons, Larsen, & Griffin, 1985](#)), in its Spanish version ([Vázquez,](#)

Duque, & Hervás, 2013). This instrument comprises five items, each rated on a seven-point Likert-type scale (from 1 = *strongly disagree* to 7 = *strongly agree*). Higher scores indicate greater satisfaction with life. Cronbach's alpha in the present sample was .79.

Rosenberg Self-Esteem Scale (RSS; Rosenberg, 1965), in its Spanish version (Atienza, Moreno, & Balaguer, 2000). This scale has 10 items, each rated on a four-point Likert-type scale (from 1 = *strongly disagree* to 4 = *strongly agree*). Higher scores are indicative of greater self-esteem. Cronbach's alpha in the present sample was .87.

Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988), in its Spanish version (González-Herero & Extremera, 2010). This instrument comprises 12 items distributed equally across two scales (positive and negative affect), with each item being rated on a five-point Likert-type scale (from 1 = *very slightly or not at all* to 5 = *extremely*). Higher scores on each of the subscales indicate a higher level of positive and negative affect, respectively. Cronbach's alphas in the present sample were .90 for positive affect scores and .86 for negative affect scores.

Trait Meta-Mood Scale-24 (TMMS-24; Fernández-Berrocal, Extremera, & Ramos, 2004). This instrument, developed originally in Spanish, is an abbreviated and modified version of the TMMS (Salovey, Mayer, Goldman, Turvey, & Palfai, 1995). The TMMS-24 measures emotional intelligence and comprises 24 items rated on a Likert-type scale from 1 (*strongly disagree*) to 5 (*strongly agree*). It comprises three dimensions, each with eight items: Attention (perceived degree to which an individual notices and thinks about his/her feelings), clarity (perceived ability to understand one's own feelings) and repair (beliefs about the ability to manage negative feelings and focus on the positive). In the present sample, Cronbach alphas for the subscale scores were .88, .88 and .91, respectively.

Procedure

The study followed the ethical guidelines for research involving humans and was conducted in accordance with the principles of the 1975 Declaration of Helsinki, as revised in 2000. This work was approved by the Experimentation Ethics Committee of University of Malaga. Participants were informed about the study objectives and procedures, and it was made clear to them that all the data collected would remain anonymous and be used solely for research purposes. No incentives were given and none of them declined the invitation to participate in the study. They all signed informed consent. The instruments were administered on the first day of their attendance at ASAMMA group meetings, in a single session lasting around 1 hour and supervised by one of the association's psychologists. Specifically, on their first day of attending the association each of the women was interviewed by a psychologist, as per usual practice. At the end of this interview the women completed the questionnaires in a quiet room in the presence of the same psychologist, who clarified any doubts they may have and ensured that all items had been completed. This protocol was followed for all participants.

Data analysis

Evidence based on the internal structure of the CD-RISC 10© was obtained through a confirmatory factor analysis (CFA), testing a single-factor model using EQS 6.3 (Bentler, 2006). Because the scale items are rated on a Likert-type scale, the analysis was based on the polychoric correlation matrix and used maximum likelihood and robust estimators. Specifically, we calculated the Satorra-Bentler chi-squared statistic (χ^2_{S-B}) and a series of fit indices: the comparative fit index (CFI; Bentler, 1990), the non-normed fit index (NNFI; Bentler & Bonett, 1980) and the root mean square error of approximation (RMSEA; Browne & Cudeck, 1993; Steiger, 2000). The CFI and NNFI measure the proportional increase in the fit of the tested model by comparing it with the null model, which is used as a baseline. The RMSEA is an index of absolute misfit, that is, it provides information about the lack of fit. These indices were interpreted according to the following criteria: values of the CFI and NNFI between .90 and close to .95 indicate acceptable fit (Bentler, 1992; Bentler & Bonett, 1980; Sharma, Mukherjee, Kumar, & Dillon, 2005; Sun, 2005; Weston & Gore, 2006), whereas values equal to or above .95 imply satisfactory fit (Hu & Bentler, 1999); values of the RMSEA above .08 indicate poor model fit, those between .08 and .06 a reasonable fit (Browne & Cudeck, 1993) and those below .06 a satisfactory fit (Hu & Bentler, 1999). In addition, the upper bound of the 90% confidence interval for the RMSEA must be below .08 to indicate good model fit.

Reliability of test scores was examined by computing McDonald's omega coefficient. We also carried out an item analysis by calculating corrected item-total correlation coefficients. Validity evidence based on relationships with other variables was obtained by calculating Pearson correlations between scores on the CD-RISC 10© and scores on the measures of life satisfaction, self-esteem, positive and negative affect and emotional intelligence (attention, clarity and repair). Finally, having verified that scores on the scale indicated adequate psychometric properties, we derived descriptive statistics for their interpretation. These analyses were performed using IBM SPSS 24.

Results

Validity evidence based on internal structure

Table 1 shows descriptive statistics for each item. Table 2 shows the fit indices (CFI, NNFI and RMSEA) obtained in the CFA of the single-factor model. All the indices were satisfactory. Figure 1 shows the standardised parameter estimates, all of which were statistically significant.

Reliability and item analysis

The McDonald's omega coefficient of .83 indicated adequate reliability for scores on the CD-RISC 10©. Corrected item-total correlation coefficients for the 10 scale items were satisfactory and ranged between .40 and .59, indicating an adequate degree of item homogeneity (Table 3).

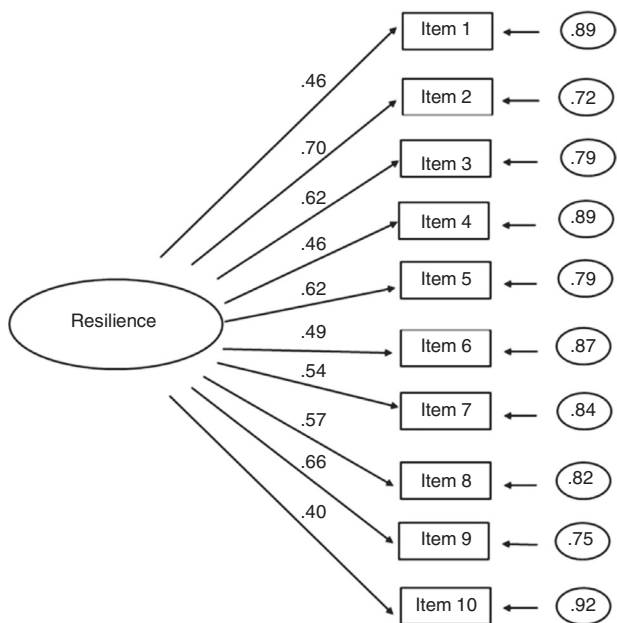
Table 1 Descriptive statistics for each item: mean (*M*), standard deviation (*SD*), skewness and kurtosis.

Items	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
1	2.95	0.96	−0.64	0.08
2	2.84	1.08	−0.70	0.03
3	2.57	1.04	−0.30	−0.45
4	2.43	1.31	−0.54	−0.88
5	3.26	0.75	−0.93	1.33
6	2.60	0.97	−0.27	−0.16
7	1.93	1.26	0.02	−0.83
8	2.17	1.11	−0.09	−0.59
9	2.79	1.08	−0.78	0.13
10	2.13	1.07	−0.17	−0.42

Table 2 Fit indices for the single-factor model.

χ^2	χ^2_{S-B}	<i>df</i>	CFI	NNFI	RMSEA
730.91	47.45	35	.98	.97	.047 [.001–.079]

Note. *N* = 160; χ^2_{S-B} : chi-squared statistic; χ^2 : Satorra-Bentler chi-squared; *df*: degrees of freedom; CFI: comparative fit index; NNFI: non-normed fit index; RMSEA: root mean square error of approximation, with 90% confidence interval.

**Figure 1** Single-factor model for the CD-RISC 10©, with standardised parameter values.

Validity evidence based on relationships with other variables

Scores on the CD-RISC 10© yielded positive and significant correlations with scores on life satisfaction, self-esteem, positive affect, clarity and repair, and were negatively and significantly correlated with scores on negative affect. The correlation between CD-RISC 10© scores and the score on attention did not reach statistical significance (Table 4).

Table 3 Corrected item-total correlation for each item.

Item	Corrected item-total correlation
1	.42
2	.59
3	.53
4	.40
5	.48
6	.43
7	.50
8	.54
9	.57
10	.40

Note. *N* = 160; The item statements may be consulted in Campbell-Sills and Stein (2007) and Notario-Pacheco et al. (2011).

Table 4 Correlation between scores on the CD-RISC 10© and scores on, life satisfaction, self-esteem, positive and negative affect, attention, clarity and repair.

Variables	CD-RISC 10©
Life satisfaction	.50*
Self-esteem	.52*
Positive affect	.58*
Negative affect	−.54*
Attention	.01
Clarity	.35*
Repair	.61*

Note. *N* = 88, **p* < .001.

Interpretation of scores

The scale is scored by summing the item scores (each 0–4), and hence the total score ranges from 0–40. High scores on the CD-RISC 10© indicate greater resilience. Scores in the present sample ranged from 4 to 39, with a mean of 25.35 (*SD* = 7.36) and median of 26. Scores of 21, 26 and 31 corresponded respectively, to the first, second and third quartiles.

Discussion

The aim of this study was to analyse the psychometric properties of the CD-RISC 10© in a sample of Spanish women with breast cancer, examining the reliability of test scores and obtaining validity evidence based on the instrument's internal structure and on relationships between resilience scores and those for other variables. Regarding its internal structure, the results confirmed the single-factor structure reported previously in populations other than cancer patients (e.g., Blanco et al., 2019; Fernández et al., 2018; Notario-Pacheco et al., 2011, 2014; Riveros et al., 2016, 2018; Rodrigues & Fernandes, 2011; Soler et al., 2016; Wang et al., 2010). This indicates that the total scale score provides a measure of the construct resilience, with higher scores corresponding to higher levels of this capacity in respondents. Scores also showed adequate reliability, and the homogeneity indices were satisfactory for all items.

Validity evidence based on relationships with other variables revealed, as we expected, a positive and significant relationship between resilience scores and scores on life satisfaction (SWLS), self-esteem (RSS), positive affect (PANAS), and the clarity and repair dimensions of emotional intelligence (TMMS-24), as well as a negative relationship with scores on negative affect (PANAS). The majority of the coefficients were above $|\ .50 |$, which according to Cohen (1988) criterion corresponds to a strong correlation.

In line with recent research (Izydorczyk et al., 2018; Lee et al., 2019; Matzka et al., 2016; Zayas et al., 2018; Zayas & Guil, 2018), women with breast cancer who scored higher on resilience also reported greater life satisfaction, more positive affect and less negative affect. As life satisfaction and affectivity are both components of wellbeing, these findings also suggest that wellbeing is greater among women with a higher level of resilience. Also consistent with previous studies in cancer patients (Burga et al., 2016; García, 2014; Munday et al., 2018), these results indicate that women with breast cancer who score higher on resilience also score higher on emotional clarity and repair, that is to say, they perceive themselves as better able to understand their feelings and to manage their negative emotions and focus on the positive.

The mean score on the CD-RISC 10© in the present sample ($M=25.35$) was lower than that reported in previous studies involving a normative population. For example, Antúñez, Navarro, and Adan (2015) reported a mean of 29 ($SD=0.1$) in the general population in Spain, while the mean score in the US population studied by Campbell-Sills, Forde, and Stein (2009) was 31.78 ($SD=5.41$). Our result is consistent, however, with previous studies involving individuals exposed to trauma (Davidson, 2019) and may reflect cancer-related stressors and the emotional distress associated with facing the illness.

One of the limitations of the present study is that all the participants were women diagnosed with breast cancer, which restricts the generalizability of results. A related issue concerns the fact that we used convenience sampling, with all participants being recruited through a breast cancer association, and hence it is unclear whether the findings reflect all women with this disease. Future studies should therefore aim to recruit samples comprising both women and men with other types of cancer and who are not members of a patient association. A further limitation to consider is that the variables of interest in this study were measured by self-report and we did not collect data about social desirability, in other words, we did not control for the possibility of social desirability response bias. Finally, our focus in this study was solely on the psychometric properties of the CD-RISC 10© and we did not analyse whether resilience scores vary as a function of sociodemographic or disease-related variables. Further research is needed to extend knowledge about the relationship between resilience and these kinds of variables. In addition, it would be interesting to compare resilience scores between clinical and non-clinical samples, and also to study factorial invariance for the single-factor structure reported here.

In conclusion, the Spanish version of the CD-RISC 10© showed satisfactory psychometric properties in the sample studied. The instrument is quick and easy to apply and may be used in both clinical and research contexts. Given

that resilience is associated with variables related to psychological adjustment, high resilience may be considered a protective factor that helps individuals cope with a cancer diagnosis (Lim et al., 2014; Schrier et al., 2011). Intervention programmes aimed at women with breast cancer should include strategies for developing resilience so as to enhance their mental health, quality of life and wellbeing and help them deal more effectively with the experience of cancer (Greup et al., 2018; Harms et al., 2018; Luo et al., 2018; Matzka et al., 2016; Popa-Velea et al., 2017).

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