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CONSTRUCTION AND VALIDATION OF A FAMILY RESILIENCE SCALE FOR FAMILY MEMBERS OF PEOPLE WITH DISABILITIES IN THE CITY OF ICA.

CONSTRUCCIÓN Y VALIDACIÓN DE UNA ESCALA DE RESILIENCIA FAMILIAR EN FAMILIARES DE PERSONAS CON DISCAPACIDAD DE LA CIUDAD DE ICA

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ABSTRACT

Objective: To create and validate a family resilience in caregivers relatives of people with disabilities (ERF-PD). **Methods:** The research design is instrumental. The sampling was non probabilistic with a sample of 301 relatives of people with disabilities. Initially, 40 items were created but this number was reduced after the statistics analysis. **Results:** Aiken's V values of 1.00 were obtained in all items. After the item analysis, nine items were removed. From the exploratory factor analysis, 17 items remained that explain 56.0% of the overall variance; whereas the confirmatory factor analysis obtained good fit indexes for this structure (Chi2/gl=1.876; CFI=0.982; TLI=0.979; RMSEA =0.037; SRMR=0.064). Internal consistency showed coefficients above 0.70 in the general scale and its three factors. **Conclusion:** The scale shows evidences of validity and reliability for the evaluated sample, justifying its use in research and professional activity.

Keywords: Psychometry; Resilience; Disabled person. (Source: MESH-NLM)

RESUMEN

Objetivo: Construir y validar una escala de resiliencia familiar en cuidadores familiares de personas con discapacidad (ERF-PD). **Métodos:** El diseño de investigación es instrumental. El muestreo fue de tipo no probabilístico intencional, siendo la muestra 301 familiares de personas con discapacidad. Se construyeron inicialmente 40 ítems, los cuales fueron reduciéndose en la medida que se realizaban los análisis estadísticos respectivos. **Resultados:** Se obtuvo valores de 1,00 en la V de Aiken en todos los ítems. En función al análisis de ítems se depuraron 9 de ellos. Del análisis factorial exploratorio quedaron 17 ítems que explican el 56,0% de varianza total, asimismo, el análisis factorial confirmatorio obtuvo buenos índices de ajuste para esta estructura (Chi2/gl=1,876; CFI=0,982; TLI=0,979; RMSEA =0,037; SRMR=0,064). La consistencia interna evidenció coeficientes por encima de 0,70 en la escala general y en los tres factores. **Conclusiones:** La escala presenta evidencias de validez y fiabilidad para la muestra evaluada, lo que justifica su uso en investigaciones y en la práctica profesional.

Palabras clave: Psicometría; Resiliencia; Persona con discapacidad. (Fuente: DeCS- BIREME)

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INTRODUCTION

According to the World Health Organization(WHO) [1] disability refers to difficulties that may occur in any of these three aspects: impairments, limitations, and restrictions, and is classified as sensory, motor, intellectual, mental and multiple disabilities. Currently, this organization reports that 16% of the world's population has a disability, they have a life expectancy of 20 years less than people without disabilities, and face situations of stigmatization, discrimination, and exclusion in the areas of education, labor, and access to health [2]. According to UNESCO, with data from 25 countries, literacy is much lower among women with disabilities, and they are more vulnerable than men[3].

It is evident that the family of a person with a disability is the main source of support and that this situation of adversity requires the development of family resilience, understood as the set of relational processes within a family consisting of three fundamental elements: belief system, organizational patterns and communicative processes related to problem-solving [4]. In this regard, Oñate and Calvete [5] state that there are internal and external resources that act in the family resilience of persons with disabilities; among the intrinsic factors are acceptance, optimism, active coping, transformation into goals, living in the present, having an occupation and self-care; and among the external factors are formal and informal support and the economy. Therefore, not only the person with functional diversity requires special support but also the family[6].

For this reason, several researchers have developed and studied different instruments to measure this construct. Chew and Hasse [7] validated the Family Resilience Scale (FRAS) in 152 adolescents with epilepsy in Singapore, through exploratory factor analysis (EFA) they found 7 factors that explain 83.0% of the variance and an alpha coefficient of 0.92. The same scale (FRAS) was validated by Chiu et al.[8] in Mandarin Chinese version in 502 relatives of children with developmental disorder in Taiwan, obtaining an internal structure of 6 factors according to the confirmatory factor analysis (CFA) and an appropriate reliability of 0.96. Faccio et al.[9] evaluated the construct validity of the Family Resilience Questionnaire (FaRE) in 209 caregivers of breast and prostate cancer patients in Italy. The CFA yielded the existence of four factors (RMSEA=0.05; CFI=0.94). With an alpha of 0.82. In addition, Chu et al.[10] validated the same questionnaire (FaRE) in 559 patients with breast cancer in China, finding that the AFE obtained four factors with loadings >0.40 and a total variance of 72.1%, which was corroborated by the AFC, and also presented an acceptable internal consistency.

On the other hand, Duncan [11] developed the validity and internal consistency of the Family Resilience Assessment (FRA) instrument, which is based on Walsh's theory, in 113 European, African-American, Hispanic, and Alaska Native women with breast cancer. The results of the FRA showed good model fit (RMSEA=0.05; SRMR=0.03; CFI=0.99; IFI=0.99) for three domains: belief systems, organizational patterns and communication processes and acceptable reliability (alpha=0.92) . Likewise, Duncan et al. [12] corroborated in the same instrument the dimensions of Walsh's theoretical framework in another study in U.S. women with breast cancer, presenting evidence of content and construct validity and adequate reliability. Rocchi et al.[13] adapted the Walsh Family Resilience questionnaire in 421 Italian examinees (family members and patients) with a chronic disease.

Reliability was 0.94, and the AFE showed that the three factors explained 50.4% of the total variance. For their part, Li and Li [14] also translated the Walsh Family Resilience Questionnaire-R (WFRQ-R) into Mandarin Chinese in stroke survivors and respective family members, obtaining acceptable internal consistency reliability (alpha=0.83) and a good fit to the three-factor model according to the AFC (GFI=0.91; RMSEA=0.04).

From the above, it can be deduced that the measurement of family resilience presents adequate theoretical support in the theory of Froma Walsh[15], who determines three domains: belief systems, organizational patterns and communication processes. Therefore, the objective of this research is to construct and validate a scale of family resilience in family caregivers of people with disabilities (ERF-PD by its name in Spanish " Escala de resiliencia familiar en cuidadores familiares de personas con discapacidad") based on the theory mentioned above.

METHODS

Type and design

It is an instrumental design study(16), since its objective is to analyze the psychometric properties of a test.

Population and sample

The population consisted of adult family caregivers of people with disabilities living in the city of Ica. The sampling was non-probabilistic and intentional [17]. The inclusion criteria implied that those evaluated should be family members of the person with a disability and maintain daily contact with them, be between 18 and 70 years of age and live in the city of Ica, and that they should have completely filled out the evaluation protocols and accepted the informed consent. The sample was finally made up of 301 family members, of whom 36.2% had a family member with an intellectual disability, 24.3% with a motor disability, 22.9% with Down syndrome, and 16.6% with a sensory disability.

Instrument

The Family Resilience Scale (ERF - PD) was initially constructed with 40 items, each item is scored from 1 to 5, with response options: strongly disagree, disagree, no opinion, agree and strongly agree. With 40 being the minimum score and 200 the maximum. It measures family resilience through the three domains of Walsh's theoretical construct[15]: belief systems, organizational patterns and communication processes. The wording of the items denotes situations that occur in family members of people with disabilities.

Procedures

Once the items of the scale had been constructed, this version was sent to five judges for evaluation. After the observations made by the judges were collected, the study was applied to family members in two private and one public school, where people with disabilities study. Finally, the responses were transferred to a database for further statistical processing.

Statistical analysis

To evaluate inter-judge agreement, the Aiken V coefficient and its confidence intervals were used, through the application developed by Livia and Merino[18]. The items were analyzed in terms of mean, standard deviation, skewness, kurtosis and item-test correlation. Prior to the AFE, it was verified that the data matrix was factorizable, through the KMO index and Barlett's test of sphericity. The least residuals extraction method and oblimin rotation were used. The parallel analysis method was used to determine the number of factors and to determine the items that make up the final structure, those that presented factor loadings and communalities >0.30 were considered.

The structure found was subjected by means of the AFC with the diagonalized weighted least squares (DWLS) estimation method and the chi-square/gl fit index, Tuker Lewis index (TLI), comparative fit index (CFI), root mean square approximation (RMSEA) and root mean square of the standardized residual (SRMR) were considered. Finally, internal consistency reliability was evaluated with Cronbach's Alpha and McDonald's Omega coefficients.

Ethical aspects

The participants were informed of the anonymous and voluntary nature of their participation, as well as that their data and responses would be used only for the purposes of the study. They also signed the informed consent form.

RESULTS

The five judges evaluated the items for relevance, pertinence and clarity. Their responses were analyzed through Aiken's V coefficient, obtaining values of 1.00 [95%CI 0.61-1.00] for all the items in each criterion, given that the lower CI is >0.50, all the items were considered valid[19]. After applying the instrument, we proceeded with the analysis of the 40 items (Table 1). Values of the skewness and kurtosis coefficients outside the range of -1.5 to 1.5[20] were found in items 2 and 39, indicating bias in the marking of the response options. In addition, the item-test correlations of items 1, 2, 5, 9, 27, 32, 35 and 38 were <0.30, thus, they showed low association with the other items of their respective dimension[21]. Therefore, they were not considered for further analysis.

Table 1. Item analysis of the family resilience scale.

Ítems	Media	Standard deviation	Asymmetry	Kurtosis	CIT*
1	3,7	1,21	-0,85	-0,30	0,28
2	3,9	0,86	-1,17	1,84	0,26
3	4,0	0,89	-0,98	0,97	0,69
4	3,8	0,95	-0,78	0,32	0,69
5	3,5	1,22	-0,57	-0,67	0,28
6	3,9	0,95	-0,88	0,45	0,65
7	3,8	0,95	-0,89	0,52	0,61
8	3,7	1,05	-0,91	0,22	0,56
9	3,0	1,36	0,15	-1,33	0,07
10	3,6	0,98	-0,44	-0,45	0,50
11	3,0	1,17	-0,20	-0,94	0,56
12	2,9	1,14	-0,07	-0,88	0,49
13	3,2	1,10	-0,54	-0,64	0,45
14	3,2	1,08	-0,42	-0,63	0,42
15	2,8	1,14	-0,02	-1,02	0,55
16	3,3	1,06	-0,55	-0,28	0,35
17	3,5	1,01	-0,69	-0,06	0,42
18	2,8	1,26	-0,03	-1,22	0,48
19	3,9	1,03	-1,04	0,60	0,43
20	2,7	1,25	0,01	-1,24	0,41
21	3,9	0,89	-0,99	1,13	0,68
22	3,9	0,87	-1,11	1,86	0,52
23	3,6	1,03	-0,75	-0,04	0,58
24	3,9	0,86	-1,04	1,48	0,60
25	3,8	0,91	-1,18	1,44	0,55
26	3,3	1,12	-0,67	-0,55	0,31
27	3,8	0,91	-0,97	1,11	0,29
28	4,0	0,81	-1,02	1,47	0,49
29	3,6	0,93	-0,70	0,36	0,52
30	3,6	1,02	-0,76	-0,03	0,48
31	3,8	0,88	-0,97	1,16	0,47
32	2,6	1,36	0,21	-1,32	0,14
33	3,7	0,87	-0,83	0,67	0,50
34	3,5	1,00	-0,66	0,15	0,55
35	3,8	0,87	-1,04	1,44	0,23
36	3,6	0,84	-0,56	0,21	0,55
37	3,4	1,09	-0,58	-0,60	0,41
38	3,5	1,05	-0,76	0,12	0,28
39	3,9	0,81	-1,06	1,72	0,63
40	3,9	0,79	-0,89	1,07	0,58

*ITC=item-test correlation

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Next, construct validity was evaluated by means of the AFE for the remaining 31 items. As a preliminary step, it was verified that the KMO index was 0.87 and the Barlett's test of sphericity was 2107.39 (p<0.000), indicating that the data matrix is factorizable. To determine the structure of the test, items with factor loadings and communalities >0.30[22], which did not present factorial complexity and which maintained semantic coherence with the rest of the items corresponding to their dimension, were considered.

Thus, 17 items were selected, which are specified in Table 2. The first factor explains 27.0% of the total variance, corresponds to the belief system dimension and is made up of seven items. The second factor explains 17.0%, corresponds to the organizational patterns dimension and has six items. Likewise, the four items of the third factor have an explained variance of 12.0% and correspond to the communication processes dimension. Finally, the three factors explained 56.0% of the total variance of the test.

Table 2. Exploratory Factor Analysis of the family resilience scale.

N°	Ítem	F1	F2	F3	h²*
3	I accept the fact that I have a family member with a disability.	0,75			0,66
4	Having a family member with a disability strengthens family relationships.	0,84			0,71
6	My family is like any other family, even if we have a member with a disability.	0,88			0,72
7	I can reconcile household chores, even though I have a family member with a disability.	0,81			0,66
10	I can reconcile the tasks of my social life, employment, or other type of work, despite having a family member with a disability.	0,57			0,41
21	Having a family member with a disability has made me a better person.	0,66			0,68
22	I am optimistic in how I approach the challenges of raising a family member with a disability.	0,60			0,45
11	In the community where I live, I find the necessary health supports for a family member with a disability.		0,79		0,61
12	In the community where I live, I find the education/rehabilitation supports needed for a family member with a disability.		0,76		0,57
13	Employment of specialized professionals (specialist teachers, doctors, therapists, psychologists, etc.), being a family member of a person with disabilities.		0,52		0,36
15	The professional support I find in the community where I live is sufficient for our family needs.		0,74		0,61
18	In the community where I live, there are leisure, recreation and entertainment activities for a family member with a disability.		0,64		0,51
20	In the community where I live, is there a place to guide a family member with a disability in the future, when I can no longer do it?		0,69		0,47
28	I try to find solutions that are advantageous to me, to my family member with a disability, and to the people I value.			0,77	0,64
31	I believe that I have good self-esteem to cope with the situation of having a family member with a disability.			0,63	0,51
34	I have friends to share my concerns about my family member with a disability.			0,44	0,37
40	I can see the fun/positive side of the difficult situations of having a family member with a disability.			0,49	0,54

*h²=community

Once the test structure was determined, it was confirmed by means of the CFA (Table 3). The fit indices showed a Chi2/gl coefficient <3, and both the TLI and CFI obtained values greater than 0.95.

In addition, the RMSEA and SRMR indices showed values <0.08. All of the above indicates a good fit of the 3-factor model[23].

Table 3. Confirmatory factor analysis of the family resilience scale.

Adjustment indexes	Chi2/gl	IFC	TLI	RMSEA (CI-90%)	SRMR
Three-factor model	1,876	0,982	0,979	0,037(0,022–0,049)	0,064

Table 4 shows that the alpha and omega coefficients in the general variable and in the three dimensions were above 0.70, indicating that the scale is reliable[24].

Table 4. Internal consistency reliability of the family resilience scale.

	N°	Alpha	Omega
Family resilience	17	0,837	0,857
F1: belief system	7	0,881	0,883
F2: organizational patterns	6	0,813	0,816
F3: communication processes	4	0,722	0,729

DISCUSSION

In general, the ERF-PD confirms the theoretical construct of family resilience from Walsh's perspective, consisting of 3 dimensions: belief systems, organizational patterns and communication processes, and it also meets the statistical criteria of validity and reliability. The AFE results indicate that the three factors explain 56.0% of the total variance, which is similar to that found by Rocchi[13] with the same three-factor theoretical model, which explained 50.4% in family samples of Italians with chronic diseases. Regarding the CFA, the results confirming the theoretical structure (Chi2/gl=1.876; CFI=0.982; TLI=0.979; RMSEA=0.037; SRMR=0.064), agree with the findings of Li and Li[14] in Chinese stroke survivors and respective relatives (GFI=0.91; RMSEA=0.04).

In addition, to that found by Duncan[11] in European, African American, Hispanic and Alaska Native samples, relatives of people with breast cancer (x2/df= 3.74; RMSEA=0.05; SRMR=0.03; CFI=0.99; IFI=0.99) and later by Duncan et al.[12] in another study with U.S. women also with breast cancer. On the other hand, the Cronbach's alpha and McDonald's Omega reliability coefficients were higher than 0.70 in the general scale and the dimensions, a result similar to the report of Li and Li[4] who obtained an internal consistency of 0.83. Furthermore, it coincides with the findings of Rocchi et al.[13] with an internal consistency of 0.94, and, finally, with the values obtained from the alpha (0.92) of Duncan's study[11] and Duncan et al.[12] (0.929). For a more specific analysis of the results, it is necessary to consider that, although Walsh's theory considers three domains, each of these is subdivided, in turn, into 3 dimensions[15]. Belief system contains attributing meaning to adversity, positive outlook, transcendence and spirituality. Organizational patterns are made up of: flexibility, cohesion, and social and economic resources. And communication processes are subdivided into clarity of messages, open emotional expressions and problem solving.

From this, the items of the ERF-PD also assume these dimensions, thus in belief system items 3, 4, and 6, are linked to the dimension of attributing meaning to adversity, because it describes the valuation of interpersonal relationships and coherence with the crisis situation, while items 7, 10 and 22 are linked to the dimension of having a positive outlook, because they describe initiative, courage, perseverance, coping capacity, hope, and item 21 is linked to transcendence, which describes the transformation of learning and growing through adversity. In organizational patterns, items 11 and 12 are linked to cohesion because they describe mutual support, collaboration and commitment, while items 13, 15, 18 and 20 are linked to

the dimension of social resources, since they describe the mobilization of the family with the social network for the construction of a community network that works together. And in communication processes, items 34 and 40 are linked to the dimension of open emotional expressions, because they denote shared feelings, empathy and sense of humor, while items 28 and 31 are linked to the dimension of problem solving by describing a proactive stance, decision making, participatory proposals and focusing objectives.

Finally, it should be noted that, although the phenomenon of family resilience has been studied in different vulnerable samples, such as war veterans[25], rural African communities[26] and African-American students[27], it has not been developed in family members of people with disabilities, which is why this study constitutes an important contribution.

CONCLUSION

The general conclusion of the study is that acceptable psychometric evidence of validity and reliability has been found for the ERF-PD in family members of people with disabilities, which is based on the theoretical construct of family resilience from Walsh's perspective, consisting of 3 dimensions: belief systems, organizational patterns and communication processes. Therefore, this scale will be useful for further research in similar samples or others that seek to evaluate this construct.

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