Construction and Validation of a brief Resilience Skills Scale for Children, answered by Mothers, Fathers, and Caregivers (ECR-P/9-12)

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Introduction: This research was aimed to prepare and analyze psychometric properties of a brief Resilience Skills Scale for children. It was answered by mothers, parents and care takers (ECR-P/9-12). Method: A four-stage instrumental design was followed: (1) items implementation; (2) content validity, (3) cognitive interviews and; (4) analysis of psychometric properties. Results: Initially 345 questions were devised. Finally, only eight questions were used, based on cognitive interviews results and evaluation of several judges. The questions were applied online to 267 children´s Guardians of the Metropolitan Region. The factor analysis reported satisfactory goodnes-of-fit indicators for the model with a (RMSEA=0,071; CFI=0.980; TLI=974) factor and proper internal consistency (α=0,723). The scale was finally devised with seven items. Conclusion: ECR-P is a valid and reliable tool for evaluating resilience skills in childhood. It is a contribution for promoting, preventing and intervening mental health.

Keywords: Resilience, child & adolescent mental health, scale

INTRODUCTION

Childhood is a stage where unfavorable conditions may threaten children´s development. The effects of these threats may be mediated by various inter/intra personal skills which allow people to face and overcome troublesome situations and adversity. This set of skills has been named as resilience which comprise optimism, emotional regulation, problems solving, prosocial behavior, self-esteem, perseverance and acceptance to diversity. These skills may be learned, developed and strengthened by means of resilience promotion programs[1,2,3].

Resilience skills during childhood are evaluable; however, there are few instruments for this age group, as most have been made for adolescents and adults[4].

In LatAm there are scales for measuring resilience at school: Inventory of Personal Resilien-

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ce Factors,[5] the Resilience Scale GA-RE14[6], which was further shortened[7] and the Scale of Personality Factors Associated to Resilience[8].

In Chile, validations have been made for the Scale of Family Resilience, RES-F[9] and Resilience Scale SV-RES[10] for adolescents and adults. The latter was further adapted for school children and was named as the School Resilience Scale, ERE)[11]. These Tests have some weaknesses, both in their application and in their results analysis. RES-F must be used by trained personnel, as it is an observation scale aimed to evaluate three family processes: power, self-esteem and communication. On the other hand, ERE has 27 items with 5 answer points. Usually, it is hard to discriminate for this age group.

Resilience measurement is populated with information coming from various observers (parents, teachers and care takers), as during school period self-perception, self-awareness and reading comprehension are under development. Chile does not have instruments for mothers, parents or children´s Guardians aimed to measure resilience skills in children.

In order to easily apply the scales, it is recommended to use brief instruments/scales providing short versions, aimed to quickly evaluate the construct[12,13], which must be adapted to the cultural context.

The purpose of this research is to implement and analyze psychometric properties of a brief scale, dealing with resilience skills in children. It was answered by mothers, parents and care takers. This paper was made in the context of the research associated to the Kite Resilience Promotion Program (Programa Promoción de Resiliencia Volantín" ©), developed by Halpern, Larraguibel and Montt (2017) at the Child & Adolescent Psychiatry Unit, Clínica Psiquiátrica Universitaria, Universidad de Chile.

MATERIALS AND METHOD

A four-stage instrumental design was followed: (1) items implementation, (2) content validity, (3) cognitive interviews and (4) analysis of psychometric properties[14]. The project has been approved by the Committee of Research Ethics in Human Beings (Comité de Ética de Investigación en Seres Humanos). Faculty of Medicine, Universidad de Chile (Project: # 066-2019. Archive Act: # 070).

(1) Implementation of Items.
Students attending the courses held by the researchers were invited to devise items for each of resilience skills. Those who accepted to participate, filled out an online/anonymous/voluntary survey. 21 psychology students and 8 residents of infant and & adolescent psychiatry participated in the process. 72.41% of the participants were women; the average age was 33.72 years old (D.S.=12.33). The proposed items were evaluated by each of the researchers, using a 5-point scale. The average was calculated and the items with scores higher than 3.5 were selected (70% of the scale).

(2) Content Validity.
In order to review the content of the items the agreement-among-judges was used. An evaluation guideline was submitted to widely experienced national experts on child & adolescent mental health. The guideline included valuation of clarity/coherence/relevance criteria[15]. Each item was scored with a 4-point scale.
6 psychiatrists and 6 psychologists were selected as expert judges. Most of them were women (75%). 7 of the experts had post graduate/master/doctorate degrees. In order to evaluate consistency among judges the same previous procedure was followed. In order to implement a screening scale, one item per capacity was selected[16].

(3) Cognitive Interviews
In order to find out if the items complied with the purpose to evaluate resilience skills, from significant adults perspective, 13 cognitive interviews were made to mothers, parents and care takers of boys and girls, aged from 9 to 12 years old. 10 participants were mothers. The average age was 40.92 years old (DS=6,47).
Even though there are various aspects to be evaluated for cognitive interviews, this research only included the general test with a paraphrase request[17].

(4) Analysis of Psychometric Properties
An 8-item scale was made by using the previous steps. For each of the items, mothers, parents

and care takers were requested to compare their son/daughter with boys and girls of their age. WhatsApp was used to apply the Scale in groups of children´s guardians in schools of the Metropolitan Region. The sample was made with 267 participants who signed an informed virtual consent. Table 1 describes the sample features.

Psychometric properties were analyzed by means of a confirmation/reliability/descriptive factor analysis (AFC). For AFC, the estimation WLSMV method was included. As goodnes-of-fit indicators, CFI/TLI parameters (acceptable values >0.95) and RMSEA (optimum <0.8) were included. An exploratory factor analysis was not performed, as we wanted to compare the hypothesis that items are part of only one dimension, which is expressed in a single factor model.

Reliability was calculated by using Cronbach´s Alpha. As optimum value, a score higher or equal to 0.7 was included[18]. As descriptive statistics central tendency/dispersion measures were used. For statistical analysis, software SPSS 23 and MPLUS were used.

RESULTS

Items Implementation
345 items were proposed. 43 items for average resilience skill. Optimism was the skill with the fewest items devised (35). Problems solving had the highest amount of items (49). After the researchers made an assessment, 73% of the items were discarded. Only 94 were validated for the next stage.

Content Validity
Clarity ($\square$=3.92; DS=0.10), coherence ($\square$=3.98; DS=0.06) and relevance ($\square$=3.82; DS=0,12) were positively evaluated by judges. Given the results homogeneity, for selecting the best items an average of these three indicators, for each one was made. General average was 3.90 (DS=0.05). With this value a ranking was made. Comments made by the judges were reviewed, and writing mas adjusted. For each resilience skill, the item that best hedged its extent and specificity was selected. In this way, seven items were selected.

Table 1. Characteristics of the Sample (n=267)

Mothers, parents and care takers	n	%	Boys and girls	n	%
Gender			**Gender**		
Feminine	229	85,8	Feminine	134	50.2
Masculine	38	14.2	Masculine	133	49.8
Other	0	0	Other	0	0
Kinship			**Age**		
Father or Mother	261	97.8	9 years old	75	28.1
Relative responsible of Care	4	1.5	10 years old	68	25.5
Another person, not a relative responsible for Care	2	0.7	11 years old	65	24.3
Education			12 years old	57	21.3
Grammar School			**School**		
High School	18	6.7	State/Public School	30	11.2
Technical College Studies	44	16.5	Private/State Subsidized	89	33.3
College Studies	129	48.3	Private	144	53.9
Postgraduate	76	28.5	Other	4	1.5

Cognitive Interviews

Cognitive Interviews analysis reported that only two of the seven items had comprehension/writing problems. The item - ¿Do you mind if people are different from him/her? - (diversity acceptance) generated social desirability responses. Therefore, it was replaced by the next item in the ranking (Do you accept that people like things he/she does not like?). The second item with problems was - Do you like his/her skills and talents? (Self- esteem): When this item was reviewed a Double barreled was found. Based on this finding, the item was eliminated and two new items were included: Do you feel proud of yourself? and Do you like the way you are? (See Table 2). With these changes, the scale was made up of 8 items.

Confirmatory Factor Analysis and Reliability

The factor analysis reported satisfactory goodnes-of-fit results for the one-factor model. The TLI Indicator got a score of 0.977; while CFI got a score of 0.984. On its part, the RMSEA Indicator reached a value of 0.065. These values allow to conclude that these eight items are within a single dimension. According to the conceptual framework of this research, these are consistently interpreted as resilience skills. The analysis of factor loadings reported that diversity acceptance item had a very low regression weight (<0.3); Therefore, the adjustment indicators were deleted and calculated once again. The second analysis reasserted the single-dimension factorial structure (RMSEA=0.071; CFI=0.980; TLI=974). In this second model, even though the problems solving

Table 2. Items evaluated by means of a Cognitive Interview

| Capacity	Definition	Item	Example of answer of the Cognitive Interview (What were you thinking about when you answered the question? What did you have in mind, when you answered the question?)	Type of problem identified and decision.
Self-esteem (au)	It is the capacity to recognize, appreciate and value himself/ herself	Do you like his/her skills and talents?	Choose thing that are easier and do not get frustrated when things go wrong. Like what it is (ID8).	Double barreled. Inclusion of Items: Do you feel proud of yourself? (au1) Do you like the way you are? (au2)
Optimism (op)	It is the capacity to recognize, identify and value positive aspects of a situation, thus expecting a favorable resolution	Are you optimistic?	She is a girl who always makes it. For instance, the problems she had one year at school. When the girl suffered *bullying*, she never felt down and loved her friends. She always coped with her problems (ID 11)	No problems reported
Emotional Regulation (re)	It is the capacity to recognize, modulate and express emotions	Do you express your emotions?	Usually She expresses his/her joy and anger. But when she is sad, it is hard to express such emotion end he/she asks you to leave him/her (ID8)	No problems reported

Prosocial Behavior (cp)	Set of behaviors having positive social consequences aimed to benefit others	Do you help other who need your help?	Usually, she has behaviors with positive social consequences. She is constantly concerned about others, trying to help other people, etc. She has a friend who has learning/behavior impairments. He is very violent with most of the boys in his classroom, but not with my daughter. She is his "Godmother", and helps him with all the stuff that is hard for him. This has been a very good relationship for both (ID 9)	No problems reported
Perseverance (pr)	Capacity to keep working on in the time, and constance aimed to achieve goals.	Is he/she a hard working person in terms of her personal goals?	She is capable to do her best, and be constant, in order to achieve her goals. I remembered this last semester, she was frustrated, because she wanted to play soccer, but that is a sport practiced mostly by men. Additionally, she was not a good player in that sport. Finally, she started training every week with her father and uncles. She invited her friends to participate, as well. By the end of the semester she became a member of the soccer team, and of course she enjoyed that very much. (ID9)	No problems reported
Problems solving (rp)	The capacity to identify a problem, find solutions and do his/her best to apply an effective strategy to find a solution.	Is it hard for you to solve your problems?	According to his age, he is very smart to solve her problems. As long as people are not unfair with him. If the rules are fair, he is capable to solve his problems. (ID7)	No problems reported
Acceptance of the diversity (ad)	It is the capacity to recognize, validate and respect people and their differences, preferences, interests, ideas, way of thinking, conduct, etc.	¿Do you mind if people are different from him/her?	She goes to a multi-cultural school (more than half of the students come from other countries); therefore, I think she is used to diversity. Additionally, this is a skill that has been worked with during the classes (ID9)	Social Desirability. This Item is to be replaced.

Note= ID: identification of the Participant

item reported a low factor loading, it was included in the test, in order to keep theoretical coherence on resilience skills.

Cronbach´s Alpha reported the scale had a sa-

Figure 1. Unifactorial Model of the Resilience Skills Scale for Parents and Children´s Guardians. Factor Loads and Standard Errors.
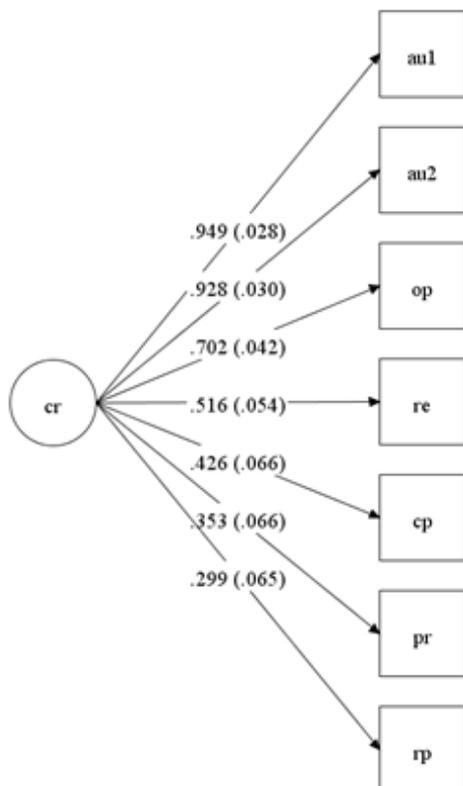
tisfactory internal consistency (α=0,723). A gender differential analysis reported that internal consistency is higher in girls (α=0.751) than in boys (α=0.692).

Descriptive Analysis

Table 3 displays descriptives of Resilience Skills Scale for mothers, parents and care takers, regarding their children´s characteristics. Mean differences tests reported the total score only differs significantly regarding gender of the respondent (t (264) =-2.870; p<0.05). Men evaluate their children´s resilience skills better (□=17.131) than women (□=15.771).

DISCUSSION

This research is aimed to implement and analyze psychometric properties of a brief Resilience Skills Scale in children. It was answered by mothers, parents and care takers. The scale implementation was developed along with undergraduate psychologists/psychiatrists, who proposed a set of items to be further valued by the research team. It was finally evaluated by national experts on mental health.

The best items were selected, in order to propose a screening scale, whose content was drilled down by means of cognitive interviews. These items allowed to identify comprehension and desirability constraints. This caused the modification of the items to be further subject to psychometric evaluation. The factor analysis confirmed the scale has a unidimensional structure. Additionally, this suggests that diversity acceptance is a skill that could not directly belong to a resilience construct. Diversity acceptance aims to create links or networks with different people; however, the question of the scale (¿Do you mind if people are different from him/her?) highlighted acceptance (cognitive level) more than integration with others (behavioral level).

The final scale was made up of seven items, aimed to evaluate self-esteem, optimism, emotional regulation, prosocial behavior, perseverance and problems solving. Despite these skills are quite diverse, internal consistency of the scale was satisfactory. Future research must identify the cutoff point and develop more comprehensive instruments, aimed to further describe resilience skills to lead preventive/health promotion interventions.

The scale scores did not differ much as per age, gender or type of school of the evaluated children, but it did differ according to respondent´s gender. Male respondents tend to perceive children as more resilient than women do. This highlights the need to generate multiple evaluation systems aimed to balance hetero-perceptions (for instance, parents, mothers, teachers) thus favoring precession when measuring resilience skills.

Resilience skills scale contributes to prevent and promote child & adolescent mental health in Chile. It is a scale based on cultural sensiti-

Table 3. Descriptive Scale of Resilience Skills for Mothers, Parents and Care Takers.

Variables	n	Medium	TD	UL	UL
				[CI 95%]	
Gender					
Feminine	134	15.985	2.896	15.484	16.485
Masculine	133	15.895	2.568	15.454	16.335
Age					
9 years old	75	16.284	2.551	15.693	16.875
10 years old	68	15.897	2.462	15.301	16.493
11 years old	65	16.215	2.660	15.556	16.875
12 years old	57	15.228	3.229	14.371	16.085
School					
State/Public School	30	15.750	3.099	14.548	16.952
State Subsidized	89	16.348	2.788	15.761	16.936
Private	144	15.685	2.607	15.254	16.116
Total	267	15.966	2.741	15.635	16.297

vity. It is innovative, as it considers children´s parents, mothers and care takers as informants. This allows to perform an early evaluation of resilience skills; therefore, it allows to take early/proactive interventions before support needs.

The main constraints of this research were -at least- two. First, the application of cognitive interviews was reduced to the items selected by the researchers. It was not done with all the items evaluated by the experts. The second constraint is the sample was mainly taken from better-off groups. Both constraints were related with the lockdown context of the COVID-19 pandemic and the digital platform the data were collected in. Such has been a common situation of researches made during this period[19].

The Scale ECR-P/9-12 turned out to be a reliable/brief/easy to manage instrument providing information about perception of parents and/or care takers on resilience skills in children. It is the only one existing in Chile aimed to evaluate resilience from the parents´ point of view. It may be applied for evaluating promotion/prevention programs on mental health implemented in our country. Children´s evaluations are enriched with instruments to be answered by many informants.

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