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Stress-Inducing Factors and Coping Scale for Children (SICoS–C)

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ABSTRACT

The main goal of this study was to establish the psychometric characteristics of the Stress-Inducing Factors and Coping Scale for Children (SICoS–C). This work also identified stress-inducing situations and coping mechanisms within educational settings, as reported by professionals working with children aged 3–10 years. The study surveyed 215 professionals, including Preschool Teachers and Psychologists who completed the SICoS–C, a new scale composed by items related to stress-inducing situations and coping strategies. An Exploratory Factorial Analysis revealed that the SICoS–C encompasses three distinct dimensions/factors. Subsequent Confirmatory Factorial Analysis suggested a good adjustment for a two-dimensional model, which includes “Events” and “Fears”, as well as a separate one-dimensional dimension construct labelled “Directed Activities”. Internal consistency revealed adequate values and demonstrated evidence of divergent and convergent validity. This exploratory study uncovers a scale with promising psychometric attributes that uniquely combines the identification of stress-inducing situations with coping strategies within a single instrument. This study should be replicated as a starting point for other cross-cultural studies. The implications of this exploratory study point to the usefulness of this instrument in the planning of educational practices and in contexts of psychological evaluation, but studies with larger samples are needed.

1. Introduction

Human have experienced social isolation during the COVID-19 pandemic, which constitutes stressful situations (Figueiredo et al., 2021) having negative impact on the children’s well-being, but also in adult population (e.g., Carr et al., 2022; Schmitz & Krüger, 2022). Even as the acute phase of social isolation due to COVID-19 has waned, other forms of isolation continue to affect individuals, particularly children (e.g., children spend a lot of time alone because their parents working extended hours; Genadek & Hill, 2017). In the context of social isolation, individuals, including children, experience fear, loneliness (Carvalho et al., 2020) and even psychological problems such as anxiety, stress, and depression (Cao et al., 2020; Chen et al., 2020; Guler, 2022). In the current global landscape, war represents a profoundly stress-inducing situation (e.g., Bürgin et al., 2022). The child population is also exposed to biopsychosocial implications following social isolation

measures and the exodus of children from war settings, such as loneliness, uncertainty, fear, and irritability (Almeida & Silva-Júnior, 2021; Thabet & Vostanis, 1999). Thus, there is a need to develop instruments adjusted to these ages, in order to identify stress-inducing situations (Pereira et al., 2019) and strategies capable of giving adequate responses to them by education context. While stress is a necessary aspect in daily life of individuals, when reaching very high levels, can become dysfunctional (Lazarus & Folkman, 1984), negatively impacting children’s mental health and development (e.g., Smith & Pollak, 2020). An individual experiences dysfunctional stress when the demands of a situation exceed their coping resources (Lazarus & Folkman, 1984; Salleh, 2008), this can affect anyone regardless of the factors age, race, gender, or socio-economic status. Stressors can be physical, psychological, and social, with physiological, cognitive, and behavioural implications (Escobar et al., 2013; Lipp, 2014).

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Childhood stress can stem both from external and internal causes (Gunnar & Quevedo, 2007) much like in adults, but these causes are tended to differ (Gomes et al., 2015). Some of the external sources that cause the most stress in childhood are significant or constant changes, excess responsibilities, overload of activities, fights or parents' divorce, death in the family, demand or rejection by colleagues, confused discipline from parents, birth of a sibling, ex-change in teachers or school, and hospitalization. Internal sources of stress originate within the individual and influence their reactions and feelings. These can include anxiety, depression (Dougherty et al., 2013; Guler, 2022), as well as shyness, the desire to please, the fear of failure, worries about parental death and that he/she will be alone and the fear of being ridiculed by friends. A situation may or may not be stress inducer depending on the stage of socio-affective development a person is in, as well as their personal evaluation of the situation and the environment in which it is located. Understanding stress-inducing factors is important, particularly in childhood, for two key reasons: (1) there is a lack of comprehensive research on stress during this crucial stage of human development; (2) the current context of social isolation appears to elevate stress levels in individuals, which could be especially challenging for children who are still undergoing cognitive, affective, and social development.

Through interactive and dialogic approaches, identifying stressors enables Preschool Teachers and Psychologists to tailor constructive curricula/interventions to each child's needs, fostering positive coping with life's tensions and challenges. Salleh (2008) and Lipp (2014) found that some children exhibit distress and negative emotional responses to certain life events (Dougherty et al., 2013), which leads to reflect on the presence of stressors already in childhood.

Studies report that the foundational aspects of educational practices aimed at managing stress in childhood are linked to collaboration between families and schools, preventative measures, enhancing child well-being amid heightened stress, and psychoeducational planning as form of coping strategies (Pereira et al., 2017; Raccanello et al., 2023; Rodríguez et al., 2016). When children are facing stressful situations, educational interventions can act as a safeguard by engaging at multiple levels of the ecological system - individual, familial and social - to foster positive interactions (Gomes & Pereira, 2021). Such support, akin to that provided by colleagues and friends, helps the child feel valued and respected as a social member of the community (Veiga & Fernandes, 2012).

Research on stress within the specific age group of 3–10 years remains limited (Noronha et al., 2019; Hirshfeld-Becker, 2010). Nevertheless, studies examining Preschool Teachers' perspectives on childhood stress, reveal that Portuguese children are susceptible to stress (Gomes et al., 2015; Gomes & Pereira, 2021) due to external factors, beyond their control. The current research emphasis includes raising awareness among school Psychologists and Preschool Teachers about stressors affecting children in this age bracket. Additionally, there is a push to develop assessment tools tailored to the Portuguese context.

The main goal of the current study was to provide psychometric characteristics of the Stress-Inducing Factors and Coping Scale for Children (SICoS-C).

This scale is designed to identify stress-inducing situations and coping strategies for children aged 3–10 years, as reported by Preschool Teachers and Psychologists who work with this age group. The SICoS-C is a new instrument that assesses both stressors and coping strategies within the same tool. Based on the content of its items (e.g., Blount et al., 2008; Davis & Turner-Cobb, 2023), our hypothesis is: the SICoS-C encompasses at least two factors/dimensions: one related to stress-inducing situation(s) and another to coping strategies. Additionally, we aimed to understand which dimension(s) represent(s) the most significant source of stress-inducing situations in comparison with other dimension(s).

In the current paper, we present information about study design, sample characteristics, and a description of the SICoS-C (items in Portuguese and English). It also presents the psychometric characteristics

for the SICoS-C, and discusses the results, highlighting implications for practice and future directions for research.

2. Method

2.1. Study design

The present study was conducted in 2020 with the objective of identifying stress-inducing situations among children aged 3–10 years, in collaboration with professionals from various backgrounds, including Preschool Teachers, Psychologists and Students specializing in education and psychology. The research also sought to adapt and validate an instrument for assessing stress-inducing situations and coping strategies. This instrument is intended to enable professionals to engage in preventive intervention and consequently to adopt educational practices that promote well-being in kindergartens. It facilitates direct collaboration with psychologists and other educational stakeholders directly involved in early childhood education. It is important to note that the implementation of this instrument occurred during the COVID-19 pandemic and participants were asked to provide their responses within the context of the ongoing health crisis.

2.2. Sample

Two hundred and fifteen valid answers from Portuguese professionals who develop their professional activity as Preschool Teachers

Table 1
Demographic data.

Variable	Frequency	%	
Gender	Female	209	97,2
	Male	6	2,8
	Total	215	100
Job title	Educators/Teachers	159	73,3
	Psychologists	25	11,5
	Master's students in Internship (Education)	11	5,6
	Master's students in Internship (Psychology)	5	2,7
	others	15	6,9
	Total	215	100
Age	21–30	48	22,3
	31–40	57	26,5
	41–50	46	21,4
	51 and higher	64	29,8
	Total	215	100,0
Graduation	pre-Bologna degree	98	45,2
	Bologna degree	20	9,7
	Master's degree	70	32,3
	Doctor's degree	5	2,3
	Other's degree	22	10,5
	Total	215	100,0
Length of service	0–10	73	35,4
	11–20	53	25,7
	21–30	37	18,0
	31–40	40	19,4
	41–49	3	1,5
	Total	206	100,0
	Age groups of children	3, 4, 5 and 6 years	53
3, 4 and 5 years		40	18,6
6, 7, 8, 9 and 10 years		42	19,5
7, 8, 9 and 10 years		10	4,7
3 years		25	11,6
4 years		6	2,8
5 years		13	6,0
7 years		12	5,6
10 years		14	6,5
Total		215	100,0

(73,3%) and Psychologists (11,5%) were considered in data analysis (See descriptive data in Table 1).

2.3. Instruments

The first Instrument utilized in the study comprised a socio-demographic questionnaire with nine closed-ended questions covering gender, the age of children (with instructions for specifying a single age for homogeneous age groups or multiple ages for heterogeneous groups, and for psychologists to indicate the typical ages of the children they work with), professional profile, academic degree, and country. The questionnaire primarily consisted of single-answer questions except for age, the institution awarding the degree and length of service, which were open-ended questions.

Additionally, the study introduced the “Stress-Inducing Factors and Coping Scale for Children”, a scale specifically developed by the authors for this research. The initial version of the scale comprised 25 items and was developed based on several stress-inducing situations and coping strategies reported in existent literature (e.g., Blount et al., 2008; Davis & Turner-Cobb, 2023; Davis & Turner-Cobb, 2023). For each item, respondents (Preschool Teachers and Psychologists) were asked to select one option in a Likert scale (0 = Never, 1 = Rarely, 2 = Sometimes, 3 = Often). The scale’s items are design to identify potential stress-inducing situations that children may encounter in various life contexts (e.g., excessive use of electronic devices like smartphones or tablets, and child maltreatment and neglect as stressors) as perceived by the professionals who work with them. The scale also explores strategies that these professionals suggest, particularly in the form of pedagogical activities.

2.4. Procedures

This study forms part of a larger research project where the inclusion criteria of the participants were to be Preschool Teachers, Psychologists or Students engaged in internships following either the 1st or 2nd cycle courses in Education or Psychology. The exclusion criteria specified that professionals working with children over the age of 10 were not eligible to participate. The sample was collected during March and April 2020, via an online questionnaire, hosted on Google Drive forms. The link to access the questionnaire was distributed by email, accompanied by informed consent, and detailed information about the objectives and conditions of the study. The questionnaire settings ensured that only one response per IP address was accepted, maintaining anonymity and confidentiality through self-completed questionnaires.

Ethical Considerations: Preschool Teachers, Psychologists and Internship Master’s students in education were assured of the study’s confidentiality and anonymity. They were informed that their participation was entirely voluntary and that they could withdraw from the study at any time. The study was conducted in accordance with the principles outlined in the Helsinki Declaration.

All ethical protocols were respected, ensuring the voluntary participation and informed consent. Each questionnaire was accompanied by an explanation of the research conditions, and the study complied with the General Data Protection Regulation (GDPR) requirements. This ensured the security, anonymity and confidentiality of all data provided by participants throughout the research process.

2.5. Data analysis

Descriptive statistics were used to characterize the sample and describe the sociodemographic characteristics of the professionals (Preschool Teachers or Psychologist) and Students (trainees of 1st or 2nd cycle courses) who participated in the study. Variables such as age, gender, age of children involved professional practice, level of education (bachelor’s, graduate, master’s or doctoral) and length of service were

examined. The analysis began with an exploratory factor analysis (EFA) using the SPSS (Statistical Package for Social Sciences) software, version 25.0, for MS Windows. This was followed by a confirmatory factor analysis (CFA) using IBM SPSS Statistics (v.28). The data was scrutinized for normality and multi normality, outliers and absent values were validated. The factorial structure was analysed through confirmatory factor analysis (CFA) with AMOS software, v28.0. The maximum likelihood estimator (ML) was used to determine robust standard errors due to non-normality and chi-square. The fit of the models was judged based on several criteria: (a) $\chi^2/df \leq 5$; (b) the Comparative Fit Index (CFI); (c) the Tucker Lewis Index (TLI) ≥ 0.95 ; (d) the Root-Mean Square Error Approximation (RMSEA) < 0.08 ; and (e) the Standardized Root Mean Square Residual (SRMR) < 0.05 (Hu & Bentler, 2009).

Convergent and discriminant validity were assessed using the average variance extracted (AVE) and the maximum shared variance/square mean (MSV/ASV) were used. The AVE value must be above 0.5 to be an indicator of good convergent validity. The MSV/ASV values must be lower than the result of the AVE value to be considered an indicator of good divergent validity. To test internal consistency, Cronbach’s alpha (α) was used.

3. Results

3.1. Construct validity

3.1.1. Exploratory Factor analysis

The exploratory factor analysis (EFA) was initially conducted on a scale consisting of 25 items. During the EFA, items 2, 3, 6, 7, 8, 14, 15 and 19 were removed due to inadequate factor loadings such as cross loads, loads below .40. This refinement resulted in a more robust structure for the scale. Which was then comprised of 17 items. The factor analysis was conducted using varimax orthogonal rotation and with Kaiser normalization. The Kaiser-Meyer-Olkin (KMO) value was 0.79, reflecting moderate adequacy of the sample for analysis. Bartlett’s test of sphericity was $\chi^2(136) = 1332.37, p < 0.001$, which allowed conducting the factor analysis. The next step in the analysis was to determine the number of factors to extract. According to Field (2013), factors must be extracted until the level of 50%, of the accumulated variance is reached. The results indicated that only three components were extracted explaining 52.45% of the total variance. The factor loadings ranged from .483 to .902 as detailed in Table 2 of the study.

The exploratory factor analysis (EFA) resulted in a three-factor model for the scale, with the components labelled as: Directed Activities (F1), Life Events (F2), and Fears (F3). The items that measure Factor 1 (Directed Activities) are in decreasing order of Factor loadings the items: 22, 21, 24, 23, 25, and 20, explaining 23.29% of the variance. Factor 2 (Life Events) is measured by items 11, 10, 1, 5, 4, and 18, explaining 19.38% of the variance. Factor 3 (Fears) is measured by items 16, 12, 13, 9, and 17, explaining 9.78% of the variance. The correlation values within the rounded components matrix (Table 2) ranged from adequate to excellent according to DeVellis (2012). The total explained variance by this three-factor model was 52.45%, and the overall Cronbach’s Alpha for the scale was .78 [Directed activities ($\alpha = .88$); Life Events ($\alpha = .70$); and Fears ($\alpha = .78$)].

The final structure of the scale thus consisted of 17 items divided into subscales of: (a) “Life Events” (Factor 2), example: (item 11: “The child’s chronic disease is stress-inducing”), (item 10: “The hospitalization of the child for health reasons is a stress inducer”); (b) “Fears” (Factor 3), example: (item 16: “Rejection by colleagues is stress-inducing”); (item 12: “The fear of abandonment on the part of parents is stress-inducing”); (c) “Directed Activities” (Factor 1), example: (item 22: “Directed motor expression activities are stress-inducing”) and (item 21: “Directed activities of plastic expression are stress inducers”).

Table 2
Principal Components Analysis (PCA) (17 items).

Items	Factors		
	1	2	3
1. Situations of social and/or economic crisis are stress-inducing.		.691	
4. The mistreatment and neglect of children are stress inducers.		.568	
5. The death of direct family members is a stress inducer.		.607	
9. Conflicting interactions with colleagues are stress inducers.			.581
10. The hospitalization of the child for health reasons is a stress inducer.		.777	
11. The child's chronic illness is stress-inducing.		.798	
12. The fear of abandonment on the part of parents is stress-inducing.			.712
13. The exaggerated fear of dark environments is stress-inducing.			.710
16. The rejection of colleagues is a stress inducer.			.767
17. Not being invited to colleagues' birthday parties is a stress inducer.			.535
18. Social isolation (e.g., COVID-19), motivated by crisis situations, is a stress inducer.		.483	
20. Free activities that result from the child's initiative are stress-inducing.	.581		
21. Directed activities of plastic expression are stress inducers.	.869		
22. Directed motor expression activities are stress-inducing.	.902		
23. Directed activities of fine motricity are stress-inducing.	.790		
24. The directed activities of exploitation of environment themes are stress inducers	.818		
25. The activities that induce Spontaneous Social Play (make-believe) are stress-inducing.	.730		
Explained variance %	23.29	19.38	9.78
Total (Explained variance) %		52.45	
α of the Factors	.88	.70	.78
Global α		.78	

Note. Extraction method: Principal component analysis. Rotation method: varimax, for components with eigenvalues greater than 1. Only factor loadings $\geq .40$ are shown. N = 215.

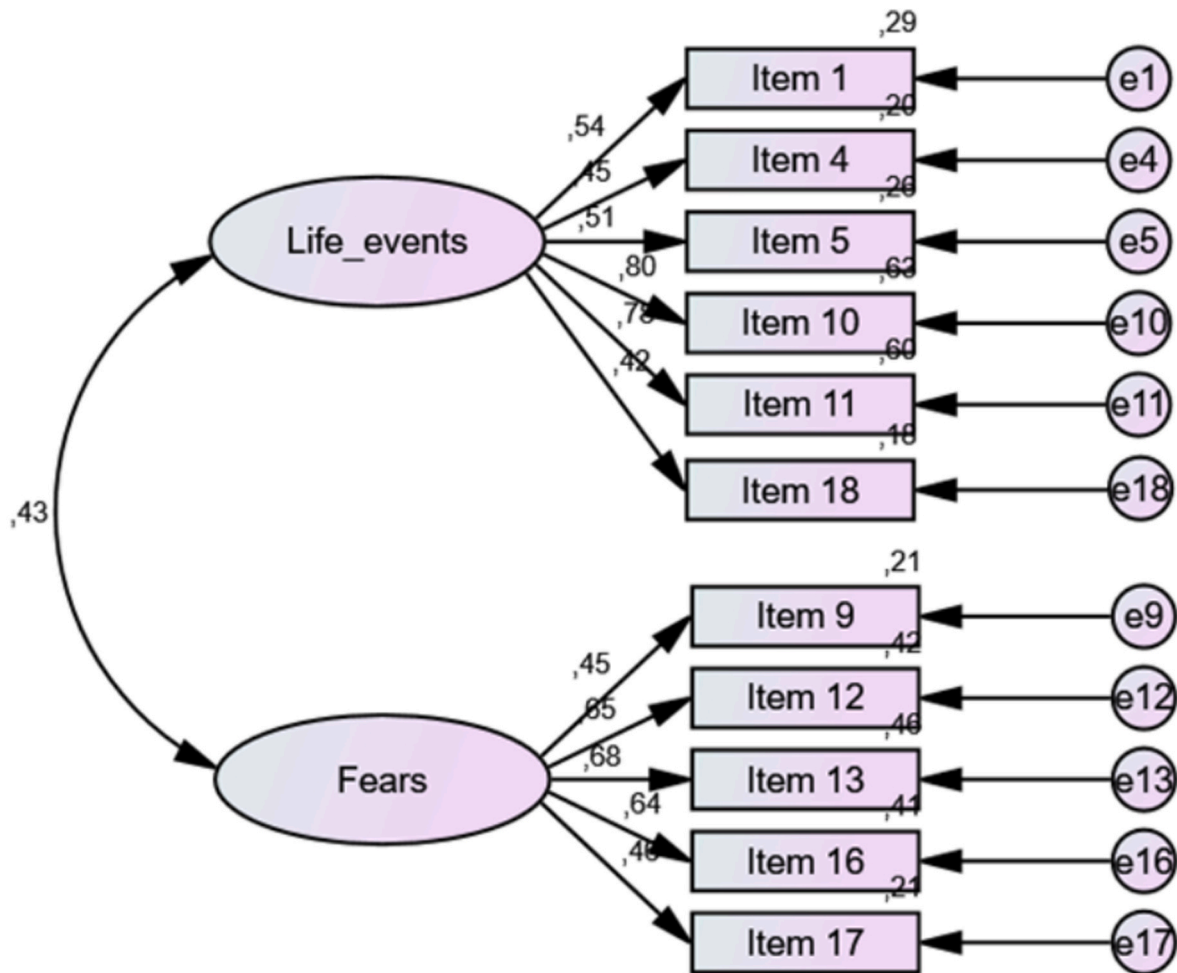


Fig. 1. Confirmatory factor analysis of the life events and fear scale.

3.1.2. Confirmatory Factor analysis

Following the EFA, a confirmatory factor analysis (CFA) was conducted. The CFA results supported a two-dimensional model for the scale of stress-inducing situations, which demonstrated good fit indices, $\chi^2/gf=1.75$, $p<0.001$; GFI=0.941; AGFI=0.909; TLI=0.917; CFI=0.935; RMSEA= 0.059. Additionally, a one-dimensional model named “activities”, also showed good fit levels, $\chi^2/gf=0.406$, $p<0.001$; GFI=0.996; AGFI=0.989; TLI=1,010; CFI=0.1000; RMSEA= 0.000 = $p < =0.001$.

All items in the scale showed significant loadings on their respective original dimensions, $p < .001$, with saturations above 0.50, except for items 9 and 20. However, these items were part of a one-dimensional dimension within the Stress-Inducing Factors and Coping Scale for Children (SICoS-C) scale that was not considered as a stress inductor. To achieve a good fit for the one-dimensional activities, item 25 was removed from the scale. It is worth mentioning that the correlations between items and factors were predominantly strong (0.42–0.93) (Figs. 1 and 2). Consequently, the final stress-inducing situations scale consisted of 11 items and the one-dimensional activities dimension comprised 5 items.

3.1.3. Convergent and divergent validity between the dimensions of SICoS-C

The values of the mean variance extracted (AVE) and the maximum variance and shared square mean (MSV/ASV) proved to be adequate (Table 3).

3.1.4. Internal consistency

Each dimension of the scale demonstrated acceptable levels of internal consistency, with Cronbach’s alpha valued ranging from 0.70 to

0.77. These values indicate good data reliability. The adequacy measures, which assess the quality of the scale’s fit to the data, fell within the recommended values, confirming that a good adjustment has been achieved (Table 4).

3.1.5. Most stress-inducing situations

Based on the three identified dimensions, we conducted an ANOVA analysis to identify the most stress-inducing situations. The ANOVA results revealed significant statistical differences among the three dimensions [$F(2, 428) = 1141.44$, $p < .001$]. The most stress-inducing situations are “Life Events” ($M = 14.56$, $DP = .18$), followed by “Fears” ($M = 11.90$, $DP = .16$), and finally by “Directed Activities” ($M = 3.75$, $DP = .20$). The multiple comparisons revealed that the three dimensions present statistical differences, $p < .001$.

4. Discussion

The primary objective of this study was to establish the psychometric properties of the SICoS-C for European Portuguese Population. The study also aimed to identify the most stress-inducing situations in children aged 3–10 years. The study is exploratory in nature, and as such, the results should be interpreted with caution. Being an innovative study in Portugal involving a specific population and a new evaluation instrument, there is a lack of national data for comparison with the results obtained from the studied age group. It is important to highlight that the SICoS-C was developed by the authors of this paper based on existing scientific literature that identifies stress-inducing situations (e.g., Blount et al., 2008; Davis & Turner-Cobb, 2023; Davis & Turner-Cobb, 2023).

The results showed that the final version of the SICoS-C is composed by 16 items grouped in two-dimensional model “Life Events” and “Fears” plus a one-dimensional dimension “Directed Activities”. We could conclude that the SICoS-C has a multidimensional structure for stress situations (Life Events and Fears) and a one-dimensional structure for coping strategies (Directed Activities), adjusted to the age group of children attending preschool and primary education. Life events were the most stress-inducing situations, corroborating several studies (e.g., Graham-Bermann & Seng, 2005; Smith & Pollak, 2020). The coping strategies of directed activities are such as plastic expression, motor expression, fine motor skills and environmental exploration, are learning and development opportunities when applied in educational settings. Incorporating motor activities into the curriculum as coping strategies can enhance child development and well-being by providing relaxation and play opportunities (Bosgraaf et al., 2020; Wawrzyniak et al., 2021). Ecological transitions experienced by children, such as (e.g., school, extracurricular activities, social isolation), can lead to specific or permanent biopsychosocial disturbances, that holistic development and may have long-term effects if not addressed (Guler, 2022), in adolescence and young adulthood. Studies like (Figueiredo et al., 2021) highlight the benefits of outdoor play and nature exposure during periods of social isolation (e.g., COVID-19). Nature exposure, along with the implementation of reflective practices (Virmani et al., 2020) by early childhood professionals can contribute for stress reduction, support biopsychosocial development, and enhance children’s well-being.

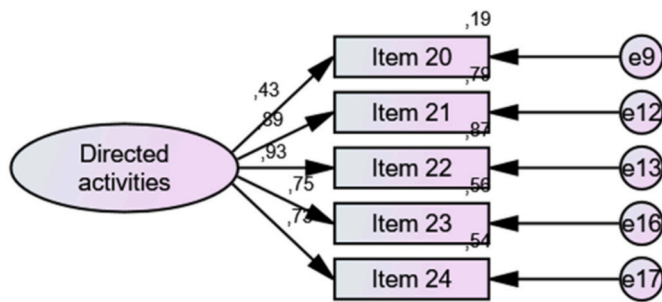


Fig. 2. Confirmatory Factor Analysis of the unidimensional dimension Activities.

Table 3
Convergent and divergent validity of the SICoS-C scale.

Dimensions	AVE	MSV	ASV
1. Life Events	0.61	0.18	0.18
2. Fears	0.58	0.18	0.18

Note: AVE: average variance extracted; MSV: maximum shared squared variance; ASV: shared mean square variance.

Table 4
Results of validity measures.

SICoS-C scale			Unidimensional dimension		
Dimension	Items number	Alpha/CR*	Dimension	Items number	Alpha/CR
Life Events	(6)	.75	Directed activities	(5)	.86
Fears	(5)	.70			
Total	(11)	.77			

Note: * Alpha/CR (Composite reliability).

5. Conclusions

This preliminary study introduces a scale with promising psychometric characteristics, including both stress-inducing situations and coping strategies within a single instrument. This study should be replicated as a starting point for other cross-cultural studies with larger samples. The Stress-inducing factors and Coping Scale for Children - SICoS-C (Table A5) has the potential to be an effective tool for Preschool Teachers and Psychologists to identify stress-inducing situations in children aged four and nine years of both genders. The scale also suggests activities for tailored coping strategies. However, further confirmatory studies with a larger and more diverse sample, particularly including more psychology professionals are necessary to validate these findings. The study acknowledges that educational practices centred on the child vary across cultures (Campbell-Barr, 2019) highlighting the importance of considering cultural factors in future research.

Another potential limitation of this research is the reliance on self-reports measures from participants. It would be useful for similar future studies to included convergent measures of stress such as observational studies (with children) in educational contexts. In summary, given the limitations mentioned, the results indicate the need for replicating this study and complementing it with more direct research involving children. This approach aims to achieve a deeper understanding of these variables. It would also be important in future studies to collect data in a sample with greater equivalence in terms of the number of educators and psychologists. Although this instrument was developed to assess stress-inducing situations and coping strategies in children aged 3–10 years, the current sample included a small number of (residual) responses related to children in other age groups.

The educator’s role in curriculum development and implementation is crucial, especially in contexts of vulnerability and stress, to promote holistic child development (Rodríguez et al., 2016; Pereira et al., 2017; Campbell-Barr, 2019) and integrate physical and cognitive development (Wawrzyniak et al., 2021) within the educational program. Active coping styles are associated with better psychological adjustment and adaptation outcomes (Morales & Trianes, 2010; Raccanello et al., 2023), in the face of stress situations, active coping is associated with a better psychological adjustment and better results in relation to adaptation (Vagos & Pereira, 2019), while the use of avoidance strategies to deal with stress are related to misfits and behavioural problems in childhood.

The implications of this exploratory study point to the usefulness of this instrument in the planning of educational practices, in psycho-educational intervention, in the contexts of psychological evaluation and in psychomotor intervention. Importantly, the psychometric results confirm that the SICoS-C includes crucially constructs related to stress-inducing situations and coping strategies in children reported in scientific literature.

Playing increases the child’s problem-solving skills, self-confidence, and relationships with others. The analysis of the SICoS-C model has broader implications both for the understanding and achievement of

pedagogical ideals in initial education, but also in continuing education from a lifelong perspective. Our recommendation for future research is to replicate the present study with a larger sample and with children as participants in order to provide further evidence of the validity and reliability of the SICoS-C as a research tool.

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Institutional review board statement

All subjects gave their informed consent for inclusion before they participated in the study. All data was obtained in an anonymized form and data are not externally accessible. The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Review Board.

Informed consent statement

Informed consent was obtained from all subjects involved in the study.

Data availability statement

Data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy and ethical restrictions.

CRedit authorship contribution statement

Rosa Maria Gomes: Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Supervision, Validation, Writing – original draft, Writing – review & editing. **Pedro F.S. Rodrigues:** Conceptualization, Methodology, Validation, Writing – review & editing. **Blezi Santos:** Methodology, Validation. **Anabela Pereira:** Conceptualization, Funding acquisition, Supervision, Writing – original draft, Writing – review & editing. **Maria Edite Oliveira:** Writing – review & editing, Visualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A

Table A5
Stress-Inducing Factors and Coping Scale for Children (SICoS-C)

Items	4-point Likert **			
Acontecimentos de vida <i>Life events</i>				
1 (1). As situações de crise social e/ou económica são indutoras de stress <i>Situations of social and/or economic crisis are stress-inducing.</i>	0	1	2	3
2 (4). Os maus-tratos e negligência das crianças são indutores de stress. <i>The mistreatment and neglect of children are stress inducers.</i>	0	1	2	3

(continued on next page)

Table A5 (continued)

Items	4-point Likert **			
3 (5). A morte de familiares diretos é indutora de stress. <i>The death of direct family members is a stress inducer.</i>	0	1	2	3
4 (10). O internamento da criança por motivo de saúde é indutor de stress. <i>The hospitalization of the child for health reasons is a stress inducer.</i>	0	1	2	3
5 (11). A doença crónica da criança é indutora de stress. <i>The child's chronic illness is stress-inducing.</i>	0	1	2	3
6 (18). O isolamento social (e.g., COVID-19), motivado por situações de crise, é indutor de stress. <i>Social isolation (e.g., COVID-19), motivated by crisis situations, is a stress inducer.</i>	0	1	2	3
Medos				
Fears				
7 (9). As interações conflituosas com os colegas são indutoras de stress. <i>Conflicting interactions with colleagues are stress inducers.</i>	0	1	2	3
8 (12). O medo de abandono por parte dos pais é indutor de stress. <i>The fear of abandonment on the part of parents is stress-inducing.</i>	0	1	2	3
9 (13). O medo exagerado de ambientes escuros é indutor de stress. <i>The exaggerated fear of dark environments is stress-inducing.</i>	0	1	2	3
10 (16). A rejeição dos colegas é indutora de stress. <i>The rejection of colleagues is a stress inducer.</i>	0	1	2	3
11 (17). Não ser convidado(a) para as festas de aniversário de colegas é indutor de stress. <i>Not being invited to colleagues' birthday parties is a stress inducer.</i>	0	1	2	3
Atividades dirigidas				
Directed activities				
12 (20). As atividades livres que resultam da iniciativa da criança são indutoras de stress. <i>Free activities that result from the child's initiative are stress-inducing.</i>	0	1	2	3
13 (21). As atividades dirigidas de expressão plástica são indutoras de stress. <i>Directed activities of plastic expression are stress inducers.</i>	0	1	2	3
14 (22). As atividades dirigidas de expressão motora são indutoras de stress. <i>Directed motor expression activities are stress-inducing.</i>	0	1	2	3
15 (23). As atividades dirigidas de motricidade fina são indutoras de stress. <i>Directed activities of fine motricity are stress-inducing.</i>	0	1	2	3
16 (24). As atividades dirigidas de exploração do meio ambiente são indutoras de stress. <i>The directed activities of exploitation of environment themes are stress inducers.</i>	0	1	2	3

Note: *(0) Nunca /Never; (1) Raramente /Rarely; (2) Algumas vezes /Sometimes; (3) Muitas vezes /Often.

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