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The impact of a Curriculum for Resilience Promotion in Deaf Children and Adolescents

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Resilience is an interactive process involving internal skills that should be promoted, especially in the early stages of development. This study aims to adapt and implement two themes from the European Curriculum for Resilience Promotion – RESCUR, namely, 'Developing Communication Skills' and 'Establishing and Maintaining Healthy Relationships', for deaf and hard-of-hearing (DHH) students. The study included 37 children and adolescents from three Portuguese regions and its impact was evaluated through the perspectives of the students, their guardians and their teachers. Each 90-minute session was implemented weekly. The sessions followed the RESCUR curriculum structure with necessary adaptations to the mindfulness activities, stories, role-play and worksheets. The mean scores increased from pre- to post-intervention assessment on all instruments, namely, KIDSCREEN-10 (children/adolescents), KIDSCREEN-10 (guardians) and CYRM-28 (teachers). The implementation of adapted curricula promoting resilience seems to be beneficial to DHH children, allowing the development of specific resilience-associated skills, and thus enhancing health, well-being and quality of life.

Key words: **resilience, deaf, hard-of-hearing, resilience programmes, health, quality of life**

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Introduction

Resilience provides a person with the ability to adapt to life challenges effectively. According to this definition, resilience includes three features: risk, protective factors and adaptation (Masten & Barnes, 2018). Resilience may be defined as a reflection of the available adaptability at a specific moment and context. Using different approaches and connections, a person can employ resilience to face present and future difficulties positively and successfully (Masten & Barnes, 2018).

Resilience should be promoted throughout life, especially in the early developmental stages of childhood and adolescence (Simões, 2015). These are crucial stages in a person's global development, particularly in neurological structures and personality (Cavioni & Zanetti, 2015). Still, some global issues in childhood adversity present common and wide-ranging concerns, hampering development and welfare during this important phase (Masten, 2014; Wright & Masten, 2005). We underline the role of childhood deafness as one such adversity in the current article.

Resilience and deaf and hard-of-hearing children

When we apply the concept of resilience to the deaf and hard-of-hearing (DHH) population, many questions arise in relation to its definition; namely, the definition of risk associated with deafness, and the protective factors and resilience-related competencies that need to be promoted among DHH children (Johnson et al., 2018).

In a review of the literature on resilience in deaf children, Young et al. (2008) explore three concepts: 'risk', 'results' and 'individualisation'. Regarding the first concept, they report that risk is associated with different factors, depending on medical and cultural-linguistic perspectives. From a medical perspective, deafness is a disability. Deaf individuals are considered to have a sensory limitation that affects their sense of hearing, which may be resolved through technological responses, such as hearing aids and cochlear implants (Hawkins & Arbor, 2009). Therefore, it is considered a risk factor that the deaf person faces daily in the oral world of children (Young et al., 2008). From a linguistic and cultural perspective, deaf individuals are those who, given their biological differences, have a specific language and culture that integrate them into a deaf community (Holcomb, 2013; Lane, 1992). So deafness is not a risk factor, but rather the external factors that the deaf face daily when environments are not properly adjusted. According to this perspective,

the risk is associated with fewer opportunities to develop an identity and a sense of belonging to a group/community of their own (Young et al., 2008).

Although these two perspectives are so different regarding risk – one focusing on the individual and the other focusing on external factors – they share a common idea: the difficulty of interaction between the deaf person and their environment/context. These difficulties are related to skills in terms of communication, language and access to information that will impact on all systems that involve deaf children (for instance, family, school and peer groups) (Hall et al., 2018; Johnson et al., 2018; Mekonnen et al., 2015; Rieffe et al., 2003).

In order to include the largest number of children and to create dynamic and interactive approaches in an inclusive context such as the school, the concept of deafness used throughout this study covers both perspectives described above. This concept is not approached in a monolithic way. It covers not only the type of deafness, deaf identity and how the deaf person uses sign language, but also the orality and the technological responses they use. The results of this study emerge in this interaction of perspectives.

Communication of difficulties and the process of problem-solving is remarkably challenging. As a result, the information shared with DHH children is uniquely explicit, and devoid of accidental learning through, for example, passive exposure to discussions among adults or conversations with their families to address social issues (Johnson et al., 2018; Rieffe et al., 2003). These spontaneous and incidental learnings facilitate learning about the world, problem-solving skills as employed by others, resolution of interpersonal conflict and relationship maintenance (Johnson et al., 2018; Rieffe et al., 2003). Most DHH children are raised by non-DHH parents who, in most cases, are also not fluent in sign language (Rieffe et al., 2003). Consequently, explanation of the details of the problem-solving process (that is, how or why a specific decision was made) is absent from their communication and interaction, since it is more difficult and time-consuming (Rieffe et al., 2003). Thus, even when DHH children are able to provide their hypotheses concerning events' causes and effects, they still might have relative difficulties in the decision-making process (Rieffe et al., 2003).

Yoshinaga-Itano (2011) and Young et al. (2008) point out that failures in the communication between deaf children and the contexts that directly or

indirectly influence their development have consequences for their growth; namely, difficulties in exploring and acquiring knowledge, in the development of their understanding of the world around them, in expressing themselves through efficient language, and in understanding or expressing narratives about themselves and others. Impaired communication results in decreased reciprocal feedback and delayed acquisition of pragmatic language skills (Antia et al., 2011). Goberis et al. (2012) indicate that a delay in acquiring these pragmatic language skills can contribute to difficulties in relationships with peers. Stevenson et al.'s (2015) meta-analysis on the perspective of teachers and parents reports that deaf children present with emotional and conduct problems and problems with peers more frequently than hearing children. The same authors state that these children need the support of social relationships, namely, with their peers. In comparative studies with deaf and hearing children, Cawthon et al. (2018) show that deaf children's experiences regarding identity, communication, education, culture and social relations are different from those of hearing children. Ketelaar et al. (2015) report that deaf children have greater difficulty in recognizing facial expressions and understanding conversations with hearing classmates, especially in noisier environments, such as school playgrounds (Punch & Hyde, 2011). They also have difficulty in maintaining friendships (Mekonnen et al., 2015), in alternative thinking, in the decentralization of the will (Johnson et al., 2018) and in the acquisition of values, attitudes, knowledge and skills (Hall et al., 2018). Mekonnen et al. (2015), in a study carried out with deaf and hearing children at different levels of education, show that the emotional and behavioral problems of deaf children have a greater impact on learning in the classroom.

However, it is noteworthy that deaf children exposed to an environment conducive to language development, whether oral or manual, show the same developmental milestones as a hearing child, in the same sequence and proportion, with some variation due to distinct language structures (Antia et al., 2011).

The education and teaching of this population bring added challenges for hearing parents, who report difficulties in improving communication, managing frustration, encouraging socialization and improving their children's self-esteem (Wright, 2008). It is therefore essential to promote these and other skills that help deaf children face the different challenges they encounter daily.

From resilience to health: an essential element of the school environment

Research related to social–emotional learning and the promotion of resilience underlines the need for the implementation of evidence-based universal prevention programmes involving the entire school community (Collaborative for Academic, Social, and Emotional Learning, 2015; Durlak et al., 2011; Greenberg et al., 2017; Osher et al., 2016; Ungar et al., 2019). As such, opportunities should be made available for every student, especially vulnerable ones, to acquire these essential skills for harmonious development.

These programmes are mostly focused on the individual and their life contexts (Simões, 2015), specifically the child, and their family, teachers and school. Resilience promotion programmes should ideally provide materials to support the development of personal identity, the advancement of supportive relationships and autonomous experiences, social justice and social cohesion, and should be adjusted to fit the context of their implementation (Ungar et al., 2019).

In the case of deaf children, in a literature review that included studies from 1990 to 2015, Cawthon et al. (2018) showed that the research field is currently directed towards promoting socio-emotional skills. Although they are scarce, we now highlight some studies related to intervention programmes in this field with deaf children. A short-term programme carried out by Naeini et al. (2013), with 69 deaf students in a school context, showed a significant improvement in self-image, socio-emotional skills, communication and school adjustment. Also, Greenberg and Kusché (1998), in implementing the PATHS (Promoting Alternative Thinking Strategies) curriculum with deaf children, found a significant increase in problem-solving skills, emotional understanding, cognitive performance, behavior and social skills. Another example is a programme called 'The play breaks the silence mask', which uses games and drama to promote factors associated with resilience and has shown increased communication strategies between deaf and hearing children (Cernea et al., 2014).

Terry et al. (2016) report that resilient individuals are more autonomous in their daily lives and in different kinds of interactions, and enjoy a higher quality of life. A meta-analysis by Taylor et al. (2017), on positive youth development through school-based social and emotional learning interventions, shows a positive impact of social and emotional skill development on well-being.

The European Curriculum for Resilience Promotion – RESCUR was developed through a European project to provide resources to help children face their adversities. RESCUR is a universal curriculum intended to be implemented in schools by educators and teachers (Cefai et al., 2014; Simões et al., 2016, 2021). This curriculum aims to promote and develop cognitive, social and emotional skills to empower children to grow and prosper academically, socially and economically, even when they are faced with significant challenges or adversities (Cefai et al., 2015). RESCUR is based on the SAFE (Sequenced, Active, Focused and Explicit) approach, which was central to the conception of the activities proposed in the guides (Cefai et al., 2015). The curriculum comprises diverse materials, including a Teacher Guide, a Parent Guide and three Activities Guides. The Activities Guides are divided into school levels (preschool or early years; primary education or early primary years; and the second cycle of basic education or late primary years), with detailed sessions described for classroom use and organized into rising complexity levels. All three Activities Guides promote the same six themes, adapted for each age group. Each session integrates (1) mindfulness activities, (2) the exploration of typical resilience challenges, (3) practical and multi-sensory activities such as drawing, drama, games and idea-sharing, (4) worksheets that encourage guardians and students to work alongside each other, and (5) self-assessment checklists (Cefai et al., 2015; Simões et al., 2016).

Promoting social skills programmes for deaf children is essential, and must have explicit and targeted learning – two of the objectives that constitute the SAFE approach (Durlak et al., 2011). These interventions can trigger positive behaviors among deaf children and adolescents, as a systematic literature review has previously indicated (Freitas et al., 2022).

In order to promote the development of resilience skills that are essential for the quality of life of a DHH person – such as sharing experiences and creating emotional and relational strategies with both DHH and hearing peers – two of the RESCUR themes, namely, 'Developing Communication Skills' and 'Establishing and Maintaining Healthy Relationships', were adapted for DHH children in preschool, primary and middle school, in accordance with each guide, for a total of 36 adapted sessions. The selection of these themes was based on a systematic review which concluded that this population was at risk of difficulties with communication and interpersonal relationships (Freitas et al., 2022), and the present adaptation considered the experiences of DHH children. In this study, we intend to investigate the extent to which this adaptation is adequate to promote resilience development, health and well-being in DHH children. We

collect data from multiple sources – the students, their guardians and teachers – to obtain a more comprehensive set of results.

Johnson et al. (2018) point out that primary life contexts, including family, school and peer group, are extremely important for positive and healthy development, specifically in skills and identity development and access to resources. Furthermore, Yoshinaga-Itano (2011) emphasizes that parents and families who are willing to communicate (and who try to understand not only the explicit language but also the underlying affective tone) encourage more positive development in children, regardless of the decision made about *how* to communicate. This then influences the relationships that children establish and maintain with peers. As such, this study includes these contexts: learning at school, peer group interactions and family interactions.

On the basis of the previous literature review (Freitas et al., 2022), the following study hypotheses were proposed:

1. The implementation of RESCUR adapted for DHH children and adolescents is associated with an increased level of resilience-related competencies, as assessed by class teachers.
2. The implementation of RESCUR adapted for DHH children and adolescents is associated with increased health and well-being, as assessed by the children and their guardians.

Method

Participants

A longitudinal study was carried out with 37 DHH children and adolescents aged from three to 15 years (M = 9.21, SD = 3.06) from three different Portuguese regions (south, centre and north), living in both rural and urban areas, and attending specialized public schools for DHH children. The sample characteristics are shown in Table 1. Of the 37 participants, 19 were girls (51.4%) and 18 were boys (48.6%). Regarding schooling, 18.9% of participants were in preschool (n = 7), 59.5% were primary school students (n = 22), 13.5% were middle schoolers (n = 5) and only 8.1% were in high school (n = 3). All children and adolescents in this study communicated in Portuguese Sign Language (PSL).

For all RESCUR participants, data related to the quality of life and resilience features were collected. In addition to the children and adolescents

Table 1: Characteristics of the study sample

	Study sample (N = 37)	
	n	*%*
Gender		
Boys	18	48.6
Girls	19	51.4
Region (*City*)		
North (Penafiel)	6	16.2
Centre (Coimbra)	9	24.3
South (Faro)	22	59.5
Ethnicity		
European	3	8.1
Gipsy	4	10.8
African	1	2.7
Schooling		
Pre-school	7	18.9
Primary school	22	59.5
Middle school	5	13.5
High school	3	8.1
Universal neonatal hearing screening (*UNHS*)		
Yes	21	56.8
No	16	43.2
Degree of hearing loss		
Mild	3	8.1
Mild to severe	2	5.4
Severe	4	10.8
Severe to deep	7	18.9
Deep	21	56.8
	M	**SD**
Age (*years*)	9.21	3.06
Age of diagnosis (*months*)	28.11	29.88
Technological response		
Hearing aids	20	54.05%
Cochlear implant	15	40.54%
Non-user of implant/hearing aids	2	5.41%
Age of cochlear implantation (*months*)	44.33	27.99
Time of cochlear implant use (*months*)	61.73	36.40

Abbreviations: M, mean; SD, standard deviation.

themselves, a proxy family member (guardian) and the child/adolescent's teacher, who is considered the 'person most knowledgeable' (PMK) (that is, someone who knows the participant in the study well) also participated as information sources for data collection.

Thirty-seven guardians (that is, one guardian for each child/adolescent) took part in the data collection. The vast majority of guardians were mothers (75.68%). The mean age of these participants was 39.6 years. Of these, 97.3% were hearing, and 2.7% were DHH. The education levels reported by the guardians show that 20.3% of them had completed primary school, 26.6% had completed middle school, 29.5% had completed high school, and 23.6% were higher education graduates.

In addition, two kindergarten teachers and nine other teachers (seven regular teachers responsible for the class, of whom six were also special education teachers; one special education teacher; and one support teacher) were invited to participate due to their involvement in RESCUR implementation. Most teachers were female (n = 8, 81.8%). The mean age for this group was 48.7 years. In this group, 36.4% have a bachelor's degree, 45.5% held a post-graduate degree, and 18.1% had a master's degree.

Measures

The sociodemographic variables were age, gender, school grade, region, universal neonatal hearing screening (UNHS), degree of hearing loss, age of diagnosis (in months), technological response, age of cochlear implantation and time of cochlear implant use (in months).

The study used KIDSCREEN-10, a quality-of-life-related measure (Ravens-Sieberer & European KIDSCREEN Group, 2006), applied to children/adolescents and proxy family members (guardians). KIDSCREEN-10 is a short version of KIDSCREEN-52 and consists of 10 items (for example, 'Have you felt fit and well?') with a five-point response scale (1 = not at all; 5 = extremely). Both the KIDSCREEN-10 self and proxy report versions were tested in the present study. The proxy report version (for guardians) consists of the same items as the self-report version but from a proxy perspective (for example, 'Has your child been feeling full of energy?'). This instrument is validated for the Portuguese language (Matos et al., 2012). In the present study, this measure showed adequate reliability for the child/adolescent version (α = 0.78 for both pre- and post-assessment) and the proxy version (guardians) (α = 0.66 for both pre- and post-assessment),

based on DeVellis's (1991) criteria. This instrument is one-dimensional and results in an overall Health-Related Quality of Life value. In this study, through KIDSCREEN-10, it is possible to assess the impact of communication and interpersonal relationships skills promotion on well-being, in a global way, in DHH children and adolescents. It should be noted that the KIDSCREEN-10 (children/adolescents) instrument cannot be used with preschool and first-grade children. This instrument can only be applied to individuals from eight to 18 years old (Gaspar & Matos, 2008).

The Child and Youth Resilience Measure (CYRM-28; Resilience Research Centre, 2018; Ungar et al., 2008) is an instrument to assess social-ecological resilience features, and can be filled out by teachers (teacher form) as the PMK. The CYRM-28 is composed of 28 items (for example, 'Does the youth talk to you or the youth's other caregivers about how he/she feels?'), evaluated using a three-point Likert scale (1 = not at all; 3 = a lot). Total scores range from 28 to 140, with higher scores indicating greater global resilience (Resilience Research Centre, 2018; Ungar et al., 2008). This tool was chosen due to its excellent psychometric properties (Liebenberg et al., 2012; Lionel & Michel, 2010). In this study, the teacher form of the CYRM-28 showed good internal consistency ranging from $\alpha = 0.81$ (post-assessment) to $\alpha = 0.82$ (pre-assessment), according to DeVellis's (1991) recommendations.

All the instruments used for the different participants (parents, students, teachers) were well considered, to create a balance between collecting sufficient information for researchers and not overloading any of the participants. In this case, as KIDSCREEN is an instrument designed for parents and students, we chose to use CYRM-28 with teachers.

Procedure[1]

The present study has the approval of the Ethics Commission of the University of Human Kinetics, Portugal.

Participants were recruited from preschools and primary and middle schools in three Portuguese regions (north, centre and south). The recruitment process took place over three school years, in 2016/2017 in the southern region, 2017/2018 in the central region and 2018/2019 in the northern region.

An individual meeting was held with each school's board of directors and then with the teachers involved. Afterwards, a letter was sent to guardians,

including information about the study's goals and an invitation to a meeting. Subsequently, all procedures and information related to RESCUR were explained to the students. All assessment instruments were individually administered in two phases (pre- and post-intervention assessments). Children/adolescents completed the KIDSCREEN-10. Guardians and teachers filled in the KIDSCREEN-10 and the CYRM-28 (PMK), respectively.

The instruments applied to students were translated into PSL during pre- and post-intervention assessments. On average, administration took about 60 minutes on each occasion (pre-assessment and post-assessment).

The children underwent a 14-week RESCUR curriculum which aimed to enhance resilience-related competencies and quality of life. The first theme, 'Developing Communication Skills', included the subthemes 'Effective communication' and 'Assertiveness', divided into six sessions: 'Efficient attention'; 'Understanding emotions in communication'; 'Communicating ideas, negotiating and cooperating'; 'Expressing feelings'; 'Asserting yourself'; and 'Assertive conflict resolution'. The second theme, 'Establishing and Maintaining Healthy Relationships', included the subthemes 'Healthy relationships' and 'Cooperative skills, empathy, and moral reasoning', divided into six sessions: 'Making and having friends'; 'Pro-social behavior'; 'Promoting positive relationships and school environment'; 'Sharing, cooperation and teamwork'; 'Empathy'; and 'Ethical and responsible behaviour'. In total, 12 sessions were implemented. It was necessary to provide two more sessions to explore specific skills that proved difficult for students to acquire, depending on the cycle/age group, namely, 'Asserting yourself', 'Understanding emotions in communication', 'Sharing, cooperation and teamwork' and 'Assertive conflict resolution'.

The sessions followed the structure provided by the curriculum. Topics from themes 1 and 2 retained their original titles except Topic 1; 'Effective listening' was changed to 'Effective attention'. Activities focusing on sound were changed to focus on the gaze since communication with DHH children and adolescents is mainly carried out through gaze. Each session was implemented weekly and lasted for an average of 90 minutes. The sessions were structured following the RESCUR curriculum guidelines with necessary adaptations. Examples of structural adaptations to the sessions are presented in Table 2.

Table 2: Structural adaptations of the sessions

Sequential structure of RESCUR sessions	Adaptations made for DHH children and adolescents
Mindfulness: the sessions begin with a short mindfulness activity chosen from the various activities included in the curriculum, either through audio recording or read aloud by the teacher.	Mindfulness activities directed through the voice begin to focus on sight, touch, smell and taste. All mindfulness activities performed were supported by an image or a concrete object, as abstraction and imagination present difficulties for this population.
Storytelling to introduce the topic: in the textbooks at the preschool and primary level, the stories are based on two specially designed mascots: Samuel, a squirrel that in some stories is described as having an unusual color, and Helena, a hedgehog that has some broken spines. In the second cycle (late primary), the stories are based on real-life stories of resilience and fables.	There was a main character with implants for every story to promote greater student relatability. Each character was given a sign language name. The stories were reduced and presented through dramatization with the forest scenario and respective accessories adapted to each story. Then the students were invited to dramatize the story.
Practical, multi-sensory activities such as drawing, role-playing, and playing as a complement to the story.	Role-playing strategies were given a prominent role for various subthemes to exemplify diverse day-to-day situations in the children's lives, allowing them to understand which different attitudes/behaviors result in different responses.
Take-home activity, including activity sheets, encourages parents and children to work together, discussing and practising the skills learned in school.	Some worksheets were simplified in terms of sentence structure and vocabulary and adapted to the children's context to facilitate understanding and connection to the proposed activities.

In schools in the southern and central regions, the curriculum was applied to bilingual classes of deaf students. In the northern region, the curriculum was applied in an inclusive context with DHH students. The activities (mindfulness, stories, exploration of daily resilience situations, discussion, and practical and multisensorial activities such as drawing and role-play) were developed in sign and oral languages in all classes, since some participants reported PSL as their preferred language. By contrast, others preferred the Oral Portuguese Language.

In preschool and primary school, the researcher organized the sessions in these two languages in partnership with the teachers of the respective classes. Each activity was explained orally and in PSL by the researcher. In middle school, a PSL interpreter mediated the communication between the researcher, the teacher and the students. This distinct procedure for each cycle was related to the organization of the schools' human resources. Whenever necessary, for facilitating specific preschool and first-grade sessions and exploring concepts/vocabulary unknown to students, a partnership was established with PSL teachers and speech therapists from each school.

Data analysis

Firstly, a descriptive analysis of the sample characteristics was performed. Secondly, mean, standard deviation, range and the minimum and maximum scores for each applied instrument were calculated for both assessment timepoints (pre- and post-intervention). Next, due to the small sample size, Wilcoxon signed-rank non-parametric tests were performed to compare the median scores differences in children/adolescents, guardians and teachers between pre- and post-intervention.

Effect size (ES) was calculated using the formula $r = Z / \sqrt{N}$, where N is the total number of pairs, and was interpreted following Cohen's (1988) convention (0.1: small; 0.3: medium; 0.5: large). All statistical procedures were performed with IBM SPSS v.26 (SPSS Inc., Chicago, IL, USA) with a level of significance of 5% ($p < 0.05$).

Results

A summary of KIDSCREEN-10 and CYRM-28 data for both assessment timepoints is provided in Table 3. It should be noted that the KIDSCREEN-10 (children/adolescents) instrument cannot be used with preschool and first-grade children as they do not master reading. Thus, the results are presented for the remaining 26 students.

Table 3: Mean scores and dispersion measures for the instruments used in pre- and post-intervention assessment

	Pre-intervention assessment		Post-intervention assessment	
	M (SD)	Range (min–max)	M (SD)	Range (min–max)
KIDSCREEN-10 (*children/adolescents*)*	38.96 (6.37)	22 (28–50)	41.12 (5.23)	19 (31–50)
KIDSCREEN-10 (*guardians*)	38.81 (4.45)	16 (29–45)	40.61 (4.18)	17 (32–49)
CYRM-28 (*teachers*)	2.73 (0.25)	1.21 (1.93–3.14)	2.89 (0.22)	0.98 (2.25–3.23)

* The results are presented for the 26 students attending second grade or higher.
Abbreviations: Max, maximum; Min, minimum; SD, standard deviation.

Table 4: Median differences between pre-intervention assessment and post-intervention assessment for all measures

	Pre-intervention assessment	Post-intervention assessment			
	Median (IQR)	Median (IQR)	*Z*	*p*	ES
KIDSCREEN-10 (*children/adolescents*)*	39 (9.00)	41 (8.00)	2.18	0.029	0.46
KIDSCREEN-10 (*guardians*)	38 (8.00)	41 (7.00)	2.20	0.027	0.40
CYRM−28 (*teachers*)	2.67 (0.39)	2.92 (0.36)	3.45	0.001	0.58

* The results are presented for the 26 students attending second grade or higher.
Abbreviations: ES, effect size; IQR, interquartile range; p, significance level; Z, test value.

As shown, all instruments' mean scores increased from pre- to post-intervention assessment. Moreover, higher minimum and maximum scores were obtained at post-intervention assessment.

In order to examine whether these mean scores statistically increased from pre- to post-intervention assessment, three Wilcoxon signed-rank tests were performed. As shown in Table 4, the results revealed a statistically significant increase in all measures between pre- and post-intervention assessment (p-values < 0.05). The ES for the median difference of KIDSCREEN-10 for both respondents (children/adolescents and guardians) was medium. A large ES for the median difference was found for CYRM-28 (teachers).

Discussion

The European Curriculum for Resilience Promotion – RESCUR seems to provide a valuable tool for children and adolescents. However, important adaptations were needed to implement the curriculum properly for DHH children and adolescents in a favorable communication environment.

The themes adapted and promoted for this study – communication and interpersonal relationships – are fundamental for the deaf population (Mekonnen et al., 2015; Rieffe, 2012). The adaptation of curriculum dynamics, the provision of information in two languages (PSL and Oral Portuguese Language), and the promotion of sharing skills and of interpersonal relationships among peers, teachers and families allowed the advancement of resilience skills in DHH children, their quality of life, health and well-being, supporting the hypotheses tested in the study. All measurements revealed significant improvements between pre- and post-intervention assessments, with a medium effect size for quality of life and a large effect size for resilience features. These results are in agreement with those found in several other studies. One such example is Naeini et al. (2013), which showed a significant improvement in self-image, socio-emotional competencies, communication and school adjustment. Another example is Greenberg and Kusché's (1998) study, which revealed significant improvements in problem-solving skills, emotional comprehension and cognitive performance.

This is the first study to evaluate the adaptation and implementation of the European Curriculum for Resilience Promotion – RESCUR to DHH children, which prevents comparisons with other studies. However, these results are in accordance with research showing improvement in other dimensions

for hearing children in the educational context, in different parts of Portugal and throughout Europe. The results of a year-long Portuguese study using a mixed methodology, including 1,692 children aged from three to 17 years, were promising (Simões et al., 2020). The results generally showed improvement on several individual and relational dimensions, in both the educational and familial contexts (Simões et al., 2020). Moreover, these improvements in the different dimensions are in line with those obtained with hearing children not only in other regions of the country as in a study by Simões et al. (2021) but also in Italy (Cavioni et al., 2018) in Malta (Cefai et al., 2018) and Greece (Matsopoulos et al., 2020).

It is fundamental to create learning opportunities that are adapted to DHH children, allowing them to acquire the necessary skillset to navigate integrated learning with the development of academic, emotional, social and resilience skills. Schools face an enormous challenge to provide every child with the opportunity to become an autonomous and independent citizen, capable of communicating ideas, emotions and opinions, while maintaining a healthy and cordial relationship with themselves and others, through pro-social and pro-active attitudes, in order to lead satisfactory and high-quality lives.

Despite our results, some limitations of this study should be addressed. Firstly, the sample size was small, which impacted on its statistical power. Future intervention studies should include larger samples. Secondly, there is no control group, which precludes examination of possible changes to participants' quality of life and resilience if they had not been subject to any intervention. Significant results with moderate effect size from the teacher report could result from bias, since the teachers were involved with implementing the adapted RESCUR. Given that the DHH population is highly heterogeneous and language ability is a major factor in the outcomes of this population, there is a lack of data on their language skills. Not all students were invited to participate in the data collection of self-reports, since children between preschool and first grade were not independent readers and therefore did not yet have the ability to reflect on the questionnaire and provide their self-assessment. Another limitation was the impossibility of triangulation between measures, since the questionnaires were not answered by all participants (that is, parents, teachers and students). However, by having three types of respondents and different questionnaires, we had three cumulative perspectives on the impact of the adapted programme. Only two themes were implemented in this

study out of the six that comprise the European Curriculum for Resilience Promotion. These were the first pieces in a complex puzzle that we intend to complete over time. This study had a small number of participants with heterogeneous social and cultural characteristics, as commonly found in the DHH population in general. Results are not presented by school level, or according to attendance of a special class for DHH children or a mainstream class into which DHH children were integrated, given the limited sample size for each of those groups. Nevertheless, given the small number of participants in each group, further research considering group comparisons is needed in this area. Furthermore, a qualitative analysis of curriculum adaptation and implementation should be performed.

Conclusion

Adapting and implementing the European Curriculum for Resilience Promotion – RESCUR was beneficial for DHH children, allowing the specific acquisition of resilience-related competencies and thus enhancing well-being and quality of life. All instruments' mean scores (KIDSCREEN-10 and CYRM-28) increased from pre- to post-intervention assessment time-points. Promoting these skills is vital for the positive and healthy development of children and adolescents with deafness.

From an inclusive perspective of learning, it should be noted that these adaptations are beneficial for all children – DHH and hearing children – if there is a common time and space to promote these activities. Diversity brings other challenges and, in turn, other learnings. The inclusion scenario experienced through the RESCUR implementation supports Tang and Kun-Man Yiu's (2016) proposal to create a bilingual gestural community in a mainstream school, with the inclusion of hearing and DHH students and teachers. Everyone would develop bilingualism and would use both languages to engage in learning and social interactions. For example, during the RESCUR sessions, hearing students showed an increasing interest in learning sign language. This was apparent from the attentive looks of those who tried to memorize and repeat; their curiosity; their willingness to learn to communicate in another way; and their efforts to carry out the proposed tasks jointly (such as role-play and dramatization), interactively and communicatively, through mime, lip-reading, orality and sign language.

Conflict of interest

The authors declare that there are no conflicts of interests.

Data sharing and declaration

The dataset analyzed during the current study is not publicly available but is available from the corresponding author on request.

Endnote

[1] Questionnaire application and adaptation were conducted by the first author, a special education teacher specializing in communication and language. This researcher has developed continuous and systematic work with this population in the classroom context for eight years. The implementation of the adapted curriculum was developed in a strategic partnership between the principal researcher and the teachers of each class.

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