

**Full title of the manuscript:** Intergenerational psychological intervention programme - PIN - Exploratory study with children and seniors

**Short title of the manuscript:** Intergenerational psychological intervention-PIN

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**Acknowledgements**

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**Abstract**

Intergenerational programs involving children and seniors are a form of psychological and social intervention that promote the development of cognitive, linguistic, motor, emotional and social skills and well-being, with significant results and benefits described for both children and seniors, such as intergenerational socialization and increased self-esteem and self-efficacy, intellectual development, increased happiness, and improved quality of life. In Portugal, programmes intervening in the psychological domain are scarce, which justifies our proposal. We present a P-IN Program: Intergenerational Psychological Intervention Program: Cri(activ)age, Health and Well-Being focused on the promotion of creativity, cognitive preservation/development and well-being associated with intergenerational coexistence.

The P-IN programme aims to: (i) Promote through an intergenerational psychological

intervention, cognitive development/preservation, creativity and well-being, in children (5-6 years) and seniors (+60). (ii) To evaluate the effectiveness of the intervention on cognitive development/preservation, creativity and well-being. This paper presents the conceptual structure of the programme, its organization into three main components: Beliefs and attitudes; Emotions and well-being; Cognitive stimulation and creativity, and its operationalization in 10 90-minute sessions. Finally, we present the evaluation plan of the quality and effectiveness of the programme based on a qualitative methodological approach using semi-structured interviews to the participants (N= 23 children and 18 seniors; professionals= 4). Of the results we highlight: increase in autonomy, self-confidence and social participation in both groups. In specific terms, the increase in the emotional well-being and psychosocial and physical autonomy of the seniors is highlighted.

*Keywords:* Intergenerational program, psychological intervention, well-being, cognitive preservation, creativity.

## **Introduction**

Population aging is happening at an accelerated pace. Global aging poses significant challenges for health and social systems worldwide. From 2015 to 2050, the global population aged over 60 will nearly double, reaching 22%. In 2020, the number of people aged 60+ exceeded those under 5 years old.

People worldwide are living longer, with most expecting to reach their sixties and beyond. By 2030, approximately 1 in 6 individuals globally will be aged 60 or older, increasing from 1 billion in 2020 to 1.4 billion. By 2050, this demographic will double to 2.1 billion, and those aged 80+ will triple to 426 million.

While population aging initially began in high-income countries, low- and middle-income countries are now experiencing the most significant changes. By 2050, two-thirds of the global population aged 60+ will reside in these nations.

Portugal's experience mirrors the global trend of the demographic aging phenomenon. In 2022, the aging index, which compares the population aged 65 and older (elderly population) with the population aged 0 to 14 years (young population), reached a value of 185.6 elderly individuals per 100 young individuals (compared to 181.3 in 2021) (INE,

2023).

This significant increase in the aging index underscores the ongoing shift in Portugal's demographic landscape. It reflects the fact that the proportion of elderly individuals in the population is steadily growing in comparison to the younger generation. One contributing factor to this trend is the progressive improvement in life expectancy, which has led to a higher number of individuals reaching older ages (INE, 2023).

This transformation in the age structure of populations across the globe necessitates a comprehensive approach to address the unique needs and challenges associated with an aging society.

To adapt to this demographic shift, it is imperative to implement policies and initiatives that promote active and healthy aging, as outlined in the WHO's Active Aging Framework (WHO, 2022). This approach not only improves the quality of life for older individuals but also enhances societal well-being and productivity.

Ageing is a natural process that all human beings go through and is an integral part of the life cycle. During this stage, older individuals often have expectations regarding their quality of life, which are closely tied to the development of degenerative diseases and the challenges associated with them (Bressan Valentini et al., 2010).

Aging results from molecular and cellular damage over time, leading to declining physical and mental abilities, disease susceptibility, and mortality. These changes vary and are loosely related to chronological age. Aging often involves life transitions like retirement and changes in social relationships. Older age commonly brings conditions like hearing loss, cataracts, pain, osteoarthritis, chronic diseases, depression, and dementia. Geriatric syndromes, like frailty, incontinence, falls, delirium, and pressure ulcers, also become more common (WHO, 2022).

Ageing can be defined as a multidimensional process that encompasses three fundamental dimensions: biological, psychological, and social. Biological ageing is characterized by the gradual deterioration of bodily functions and increased vulnerability to diseases, often referred to as senescence (Kennedy et al., 2014). Psychological ageing refers to an individual's ability to adapt to the challenges and changes that come with ageing, including emotional well-being, cognitive functioning, and the capacity for self-regulation. Positive psychological traits such as optimism and resilience have been linked to better psychological ageing outcomes (Chopik et al.,

2020). Social ageing pertains to the changing social roles that align with societal expectations for individuals of this age group, which evolve over time (Schroots & Birren, 2009). In this study, we focus on the role of intergenerational programs, such as mentoring and community involvement, in helping older individuals sustain a sense of purpose and social connection (Greenfield & Greenfield, 2021). Additionally, activities that provide cognitive stimulation and foster a positive outlook can contribute to successful psychological aging (Hertzog et al., 2009).

Recent studies also highlight the significance of social interaction and engagement in maintaining cognitive preservation and overall well-being in older individuals (Canedo-García et al., 2017; Kuiper et al., 2015). Engaging in social activities, participating in lifelong learning programs, and staying connected with one's community have been linked to better cognitive function and emotional well-being in aging populations.

Furthermore, the importance of optimism and hope in promoting mental and emotional health among older individuals cannot be overstated (Carstensen et al., 2011; Canedo-García et al., 2017).

Maintaining a positive outlook on life and nurturing a sense of hope can significantly contribute to successful psychological aging and overall life satisfaction.

In summary, this study underscores the multifaceted factors that influence the aging process and highlights the critical role of lifestyle choices, intergenerational programs, social engagement, and psychological well-being in promoting healthy and fulfilling aging experiences for older individuals. Intergenerational programs involving children and seniors represent valuable psychological and social interventions that foster the development of cognitive, linguistic, motor, emotional, and social skills, leading to improved well-being.

Research indicates significant positive outcomes for both children and seniors, such as enhanced intergenerational socialization, increased self-esteem and self-efficacy, intellectual development, greater happiness, and an overall improvement in the quality of life (Zeanat Ebrahimi et al., 2020).

Intergenerational psychology programs bring together individuals from various age cohorts to engage in shared activities, often with a focus on enhancing social connections, well-being, and personal development. These programs can take various forms, such as mentorship initiatives, joint educational activities, community service

projects, or simply opportunities for casual interactions between generations. The fundamental goal is to bridge generational gaps, encourage understanding, and promote positive interdependence. In a systematic review conducted by Canedo-García et al., (2017), aimed to identify key indicators ensuring the effectiveness of empirically based intergenerational interventions (EBI). The results confirmed that various factors such as participants' disorders, academic or literacy levels, membership of an organization, and risk of exclusion also modulate program effectiveness (Canedo-García et al., 2017). Furthermore, the study highlighted the need for programs to adapt to users' personal circumstances to enhance efficiency. The study also noted that as participants' disorders intensify, the impact of the interventions increases, particularly in cases of mental disorders effectiveness (Canedo-García et al., 2017).

Findings also suggest intergenerational programs are appropriate and effective for people with dementia effectiveness. Moreover, studies have been completed on their role in the development of generativity and psychological well-being in old age effectiveness. All this provides more than sufficient evidence of the useful role that these programs may play in reducing negative stereotypes, prejudice, and discrimination associated with older adults and aging effectiveness (Canedo-García et al., 2017). In conclusion, intergenerational psychology programs are valuable tools for promoting positive interactions between generations, offering numerous advantages such as enhanced social and emotional development, positive aging, academic benefits, and community building.

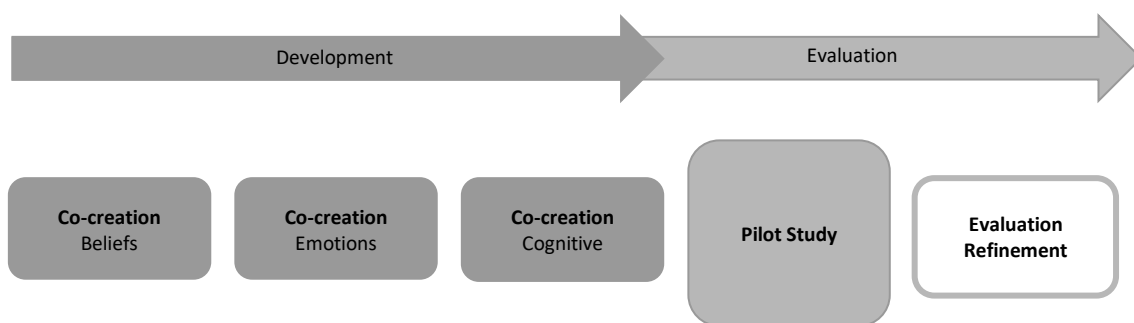
However, they also face limitations related to logistics, generation gap challenges, resource constraints, and the evaluation of their impact. Despite these challenges, intergenerational programs continue to play a crucial role in fostering connections and improving the overall well-being of individuals across different age groups. In Portugal, there is a lack of psychological interventions in this domain, which provides the rationale for our proposal. We introduce the P-IN Program: Intergenerational Psychological Intervention Program - Cri(activ)age, Health, and Well-Being (Candeias & Felix, 2023). This program focuses on fostering creativity, cognitive preservation/development, and overall well-being through intergenerational coexistence.

## Methods

This study presents the development of the Program Intergenerational PIN into two main stages: the programme development phase and the evaluation phase. During the development phase, we opted for a method of co-designing the sessions, considering the content to be worked on - beliefs, emotions and cognitive enrichment. After this moment of co-creation, we moved on to the pilot study, which was followed by a moment of evaluation and refinement of the programme (Figure 1).

**Figure 1.**

*An overview timeline.*



### *Development of the intervention program*

#### *Overview*

Many interventions are developed using a deficit-based method, where researchers create a general program without considering the specific needs of the participants. However, research has shown that this approach leads to higher dropout rates and lower participation. To address this, a co-creation design process involves actively involving end-users, which includes seniors and children, along with input from the professionals. This collaborative approach aims to customize the program to better suit the target group. Co-creation has gained increasing attention in recent years as a way to improve the effectiveness of interventions, particularly in the field of health promotion, and to reduce dropout rates (Canedo-García ET AL., 2017; Greenhalgh et al., 2016; Leasket al., 2019). In this project the co-creation was carried out in three sessions, focussed on changing beliefs, after this moment of co-creation, we moved on to the pilot study, with three sessions on emotions and four sessions of cognitive enrichment. At the end of each session, the participants were asked to tell us what their favorite activities were and their expectations for the next session, what games or activities they

wanted to play or teach, and on the basis of this information, the next session was organized.

### *Program Implementation*

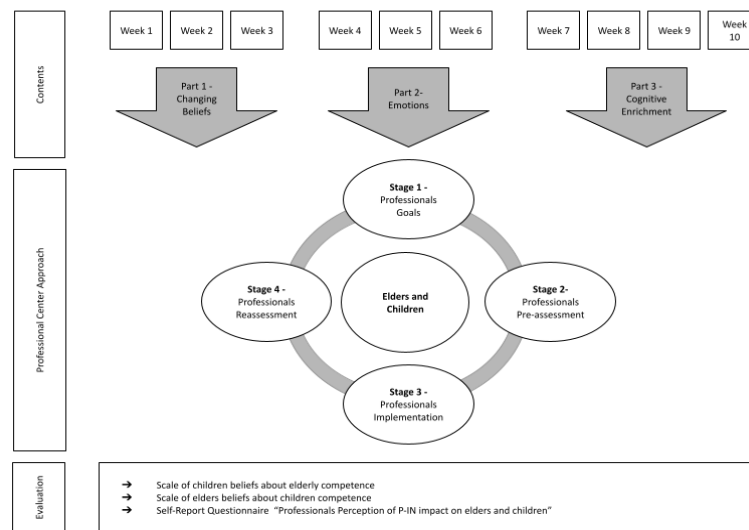
The intervention program was developed based on previous studies about psychological intergenerational intervention programs. We based our work on the Behavior Change Wheel model (BCW) as well as in the proposals derived from the studies from Illiano et al. (2022).

The Behavior Change Wheel (BCW) is a comprehensive theoretical framework that guides the development of health interventions through eight systematic steps - Step 1: Define the Problem, Step 2: Select Target Behavior, Step 3: Specify Target Behavior, Step 4: What needs to change?, Step 5: Intervention Functions, Step 6: Categories of action, Step 7: Behavior Change Techniques (BCTs), and Step 8: Mode of Delivery. It commences by precisely defining the behavioral issue, followed by selecting and specifying the target behavior. Steps 4 through 8 entail a collaborative process with participants, encompassing an understanding of determinants influencing behavior change (capability, opportunity, motivation), selecting intervention functions, identifying supportive policy categories, choosing behavior change techniques (BCTs), and determining practical delivery strategies for the selected BCTs. This structured approach offers a systematic and thorough method for designing effective interventions that address complex health behavior challenges. The BCW considers a wide range of factors influencing behavior and provides a comprehensive process for developing interventions that lead to meaningful change.

Our approach was based on this model but adapted for specific areas identified as areas of need for intergenerational intervention with Portuguese children and elders: Beliefs, Emotions and Cognitive Enrichment.

**Figure 2**

*implementation model for this programme.*



### *Co-creation Trajectory*

Development of the Intergenerational movement program. The co-creation was done across all the phases of the project (Figure 3), and supported in a Co-creation and Feedback Checklist (CFC), that addressed specific objectives in each session, as we describe bellow.

Session 1: Many children and elderly people do not usually have contact with each other, they have idiosyncratic beliefs about what they can do together, so in this first step "Define the Problem" we start by mapping the beliefs and the target behaviours and attitudes to be worked on in the following steps.

Session 2: After gathering beliefs, we move on to step 2 "Select Target Behaviour". In our case, these are the beliefs about the competences of both age groups in relation to each other. In this session the aim was to start changing beliefs through mutual knowledge activities. Elderly-child pairs were created and mini intra-pair interviews were encouraged in order to acquire as much information as possible about their new friend.

Session 3: "Specify Target Behaviour" This session focused on expressing positive attitudes towards others through physical, emotional and cognitive knowledge games. After the third session, it was decided which psychological components would be



addressed in the intervention and how they would be presented and worked on. Here the Intervention Functions were assessed, the Behaviour Change Techniques (BCTs) were defined and the Mode of Delivery was developed.

Session 4: "What needs to change?" In order to change one's beliefs, one needs to know about oneself. This session sought to deepen personal self-knowledge about emotions and behaviours in interaction with the other age group. Self-knowledge activities were used, which were carried out by the elderly-child pairs together.

Session 5: With the results obtained in the previous session, it was concluded that there was a need to work on the expression of emotions, which was the aim of the fifth session. Work was done on communicating and expressing emotions (poems, drawings, dramatizations...).

Session 6: In this session, they again worked on emotions and self-awareness, this time together with their peers in order to assess their emotional literacy, using stories, dramatization, body expression, facial expression, games, music, physical movement, dance, painting, drawing and conversation (using guidelines).

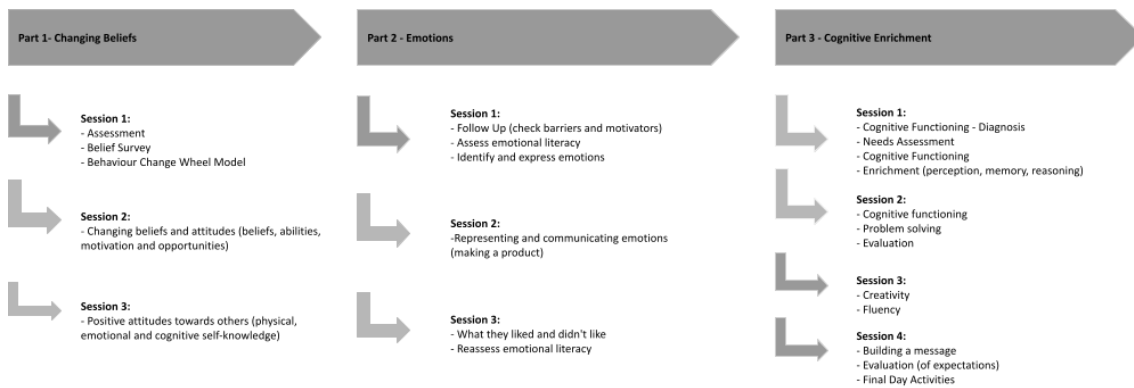
Session 7, 8 and 9: At this stage of the project, work began on the cognitive level. A needs assessment was carried out, also based on the participants' initial evaluation, and points to work on were established. During these three sessions, cognitive functioning, problem-solving and creativity were worked on, using games, music, physical movement, dance, painting, drawing and conversation (using guidelines).

Session 10: The last session was a final activity where it was possible to evaluate the expectations and objectives that had been met and to foster the bond created between each pair and in the group in general.

All the sessions followed the same general structure, starting with an icebreaker activity and preparation of the content to be worked on in the session. Once the initial moment was over, the programmed activities began, ending the sessions with moments of physical activity together and the collection of information through the Co-creation and Feedback Checklist.

**Figure 3**

*Summary description of P-IN sessions*



*Pilot Study*

*Design*

This study employed an intervention design based in pre-test, intervention, and post-test phases, without the inclusion of a control group. To acquire a more profound insight into the beliefs and customs of a particular group of participants, the research utilized a qualitative framework rooted in the principles of phenomenology and hermeneutics, as outlined by Fuster (2019). The investigation adhered to Fuster's (2019) suggested four-stage method, which encompassed gaining a thorough comprehension of the significance attributed to the subject matter, elucidating the viewpoints of the research team, gathering data from the participants, and recording this firsthand experience in written format.

*Participants*

After contacting the institutions (senior residence and pre-school) that agreed to collaborate in the study, participants were selected according to age and cognitive functionality criteria (performance on a cognitive task of performance  $\geq$  15th percentile).

*Children*

Twenty-four children took part in the project, one of whom didn't finish due to health reasons (N=23). These children were aged between 5 and 6, 14 (60.9%) being 5 years old. In terms of gender, the sample was made up of 15 (60.9%) males. As far as the household is concerned, these children mostly live with their fathers, mothers and

siblings, with only two also living with their grandparents. The number of siblings varies between 0 and 4, with the majority having only 1 sibling (56.5%).

### *Elders*

A total of 30 seniors were assessed prior to the start of the project and the project ended with only 18 seniors due to health-related problems. At the first assessment point, 30 seniors were interviewed, 19 (61.3%) of whom were female. Their ages ranged from 72 to 95 (mean=85; median=86). With regard to year of schooling, 14 (45.2%) had attended up to the fourth year of schooling, which was the highest level of schooling attended by the participants, while 4 (12.9%) did not attend school. With regard to marital status, 21 (67.7%) of the participants were widowed. When asked which family members they had frequent contact with, 20 (64.5%) mentioned immediate family members, 3 (9.7%) mentioned distant family members and 7 (22.6%) said they had frequent contact with both immediate and distant family members.

At the second assessment point, 18 seniors were interviewed, 11 (35.5%) of whom were female. Their ages ranged from 78 to 95 (mean=87.63; median=88). With regard to year of schooling, 7 (22.6%) had attended up to the fourth year of schooling, which was the highest level of schooling attended by the participants, while 4 (12.9%) did not attend school. With regard to marital status, 12 (38.7%) of the participants were widowed. When asked which family members they had frequent contact with, 10 (32.3%) mentioned immediate family members, 1 (3.2%) mentioned distant family members and 7 (22.6%) said they had frequent contact with both immediate and distant family members.

### *Professionals*

Four professionals took part in this project, two kindergarten educators and two technicians from the senior residence.

### *Procedures*

This study was authorized by the Ethics Committee of the University of Évora. In order to ensure ethical compliance, informed consent was obtained from participants prior to the initiation of the program. Following this, an initial assessment was conducted using

a predefined protocol incorporating various assessment instruments. It should be noted that there were no conflicts of interest involved in the study. Following the completion of all sessions, a final assessment phase was initiated, consisting of a follow-up interview and the administration of relevant questionnaires. This phase was crucial in evaluating the overall effectiveness of the program.

### *Instruments*

Three research instruments were used, all qualitative in nature.

The "*Scale of Children's beliefs about elderly competence*" (SCBEC) was used to measure the children's beliefs about the competence of elderly people. It consists of three open questions: 1) "What would you like to do with a senior?"; 2) "What can you teach a senior?"; and 3) "What do you think a senior can teach you?".

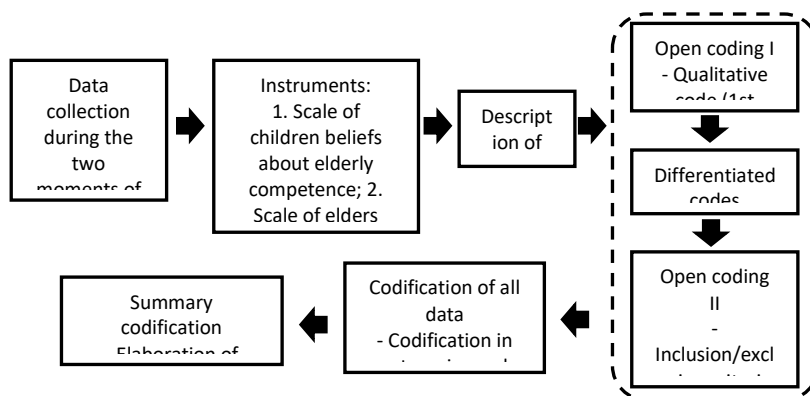
The *Scale of elders' beliefs about children's competence* (SEBCC) was used to measure the elders' beliefs about the competence of children. It consists of three open questions: 1) "What activities would you like to engage in with children?"; 2) "What can you teach to a child?"; and 3) "What do you believe young people can teach you?".

We also use a *Self-Report Questionnaire - "Professionals Perception of P-IN impact on elders and children"* (SRQ-PPI) professionals' perceived impact of the intervention on children and seniors. In this report the professionals wrote the most positive and most negative aspects of the intervention to each one of the participants.

Data were analyzed using a qualitative approach. The data collected from the SCBEC, SEBCC and SRQ-PPI were analyzed using content analysis and responded to the phases of content analysis of the phenomenological-hermeneutic method. First, successive readings were made of the entire corpus and then, preliminary coding was done for each actor in order to have a manageable subset of data (Fuster, 2019). To do this, we organized the information around the themes of the interviews, and the self-reported questionnaire, respectively and assigned emergent codes within each theme (See figure 4). To guarantee the validity and consistency of the analysis, the preliminary coding was made by three educational experts (with PhD in Sciences of education and/or Psychology of Education, and training in teachers coaching) separately, and after they compared coding and organize a final code to each theme by consensus or 85% of accordance.

**Figure 4.**

*Diagram of the Methodology of P-IN Development*



### *Data Analysis*

In this study, we categorize the beliefs into two main groups: positive and negative. Negative beliefs encompass a lack of knowledge about potential activities involving older individuals, as well as beliefs infused with a sense of hopelessness regarding one's ability to engage with seniors. Positive beliefs signify an anticipation and willingness to partake in enjoyable, active, creative, and social pursuits alongside older individuals. These positive beliefs can be further subdivided into seven distinct categories: (1) play and games, (2) arts, (3) music, (4) sport, (5) memory, learning, and cognitive activities, (6) interactions with animals, and (7) Modern things and technology.

### *Children*

#### *First evaluation moment (M1)*

A content analysis was carried out on the answers given by the children to the three questions relating to their beliefs about senior citizens (Table 1). For the first question "What would you like to do with a senior?" (C3), it was possible to record 1 answer representing a negative belief and 28 associated with positive beliefs, totalling 29 recording units. With regard to positive beliefs, it was possible to see 12 (42,86%) recording units in the subcategory "Play and games". For the question "What can you teach a senior?" (C4), it was possible to record 8 answers representing a negative belief and 21 associated with positive beliefs, totalling 29 recording units. In this question, the subcategory of positive beliefs with the most recording units was "memory, learning and

cognitive games”, with 7 (33.33%) recording units. As for the question "What do you think a senior can teach you?" (C5), it was possible to record 12 answers representing a negative belief and 15 associated with positive beliefs, totalling 27 recording units. With regard to positive beliefs, the subcategories with the most recording units were "memory, learning and cognitive games" and "animals", with 4 (26.67%) recording units each.

### *Second evaluation moment (M1)*

On the second moment of evaluation, the same questions about beliefs and content analysis were made (Table 1). For the first question "What would you like to do with a senior?" (C3), we didn't record any answer representing negative beliefs. On the other hand, 30 answers associated with positive beliefs were registered. Of these 30, 14 (38.89%) belong to the "Play and Games" category and 9 (25%) to the "sports" category. For the question "What can you teach a senior?" (C4), it was possible to record just 1 answer representing a negative belief and 25 associated with positive beliefs, totaling 26 recording units. In this question, the subcategory of positive beliefs with the most recording units was "Arts and music", with 13 (39.39%) recording units. As for the question "What do you think a senior can teach you?" (C5), it was possible to record 4 answers representing a negative belief and 22 associated with positive beliefs, totaling 26 recording units. With regard to positive beliefs, the subcategories with the most recording units was "memory, learning and cognitive games", with 13 (37.14%) recording units.

**Table 1.**

*Content analysis of the beliefs of children about senior citizens.*

Subcategories	C3		C4				C5					
	M1		M2		M1		M2		M1		M2	
	F	F(%)	F	F(%)	F	F(%)	F	F(%)	F	F(%)	F	F(%)
<b>Play and Games</b>	12	<b>42.86</b>	14	<b>38.89</b>	3	14.29	3	9.09	3	20.00	6	17.14
<b>Arts and music</b>	3	10.71	6	16.67	5	23.81	13	<b>39.39</b>	3	20.00	6	17.14
<b>Motor Activity and Sports</b>	7	25.00	9	25.00	5	23.81	5	15.15	1	6.67	2	5.71
<b>Memory, Learning, and Cognitive Activities</b>	4	14.29	3	8.33	7	<b>33.33</b>	8	24.24	4	<b>26.67</b>	13	<b>37.14</b>
<b>Nature and Animals</b>	1	3.57	1	2.78	1	4.76	1	3.03	4	<b>26.67</b>	3	8.57
<b>Communication, Empathy and Affection</b>	1	3.57	3	8.33	0	0.00	3	9.09	0	0.00	5	14.29
<b>Total</b>	28	100	36	100	21	100	33	100	15	100	35	100

## *Elders*

### *First Moment of evaluation (M1)*

Regarding the elderly participants, a similar process was undertaken. An analysis of the responses provided by the elders to the three questions pertaining to their beliefs about children was conducted (see Table 2).

For the initial query, "What activities would you like to engage in with children?" (E4c), 3 responses were recorded reflecting a negative belief, while 55 were aligned with positive beliefs, totaling 58 recorded instances. Within the realm of positive beliefs, the subcategory "Play and games" stood out with the highest number of recorded instances, totaling 24 (43.64%).

In the case of the question, "What can you teach to a child?" (E5c), 4 responses were recorded indicating a negative belief, contrasted with 56 associated with positive beliefs, summing up to 60 recorded instances. Within this question, the subcategory of positive beliefs exhibiting the highest number of recorded instances was "memory, learning, and cognitive games", accounting for 15 (26.79%) recorded instances.

As for the query, "What do you believe young people can teach you?" (E6c), 4 responses reflecting a negative belief were recorded, while 41 were aligned with positive beliefs, totaling 45 recorded instances. In terms of positive beliefs, the subcategory with the most recorded instances was "Modern things and technology", comprising 15 (36.59%) recorded instances.

### *Second evaluation moment (M2)*

During the second evaluation phase, we revisited the same set of questions regarding beliefs, and conducted a content analysis (see Table 2).

For the initial question, "What activities would you like to engage in with children?" (E4c), 3 responses were recorded reflecting a negative belief, while 39 were aligned with positive beliefs, totaling 42 recorded units. Among these, the categories "Play and Games", "Arts and music", "Motor Activity and Sports" and "Memory, Learning, and Cognitive Activities" had 7 (17.95%) recording units each.

Regarding the query, "What can you teach to a child?" (E5c), 4 responses reflecting a negative belief were recorded, while 30 were associated with positive beliefs, resulting in a total of 34 recorded units. Within this question, the subcategory of positive beliefs

with the highest number of recorded instances was "Communication, Empathy and Affection", accounting for 14 (46.64%) units.

As for the inquiry, "What do you believe young people can teach you?" (E6c), we recorded 3 responses reflecting negative beliefs, alongside 24 aligned with positive beliefs, totaling 27 recorded instances. In terms of positive beliefs, the subcategories with the most recorded unit were "Arts and music", "Memory, Learning, and Cognitive Activities" and "Communication, Empathy and Affection", with 6 (25%) recording units each.

**Table 2**

*Content analysis of the beliefs of elders about children.*

Subcategories	E4c				E5c				E6c			
	M1		M2		M1		M2		M1		M2	
	F	F(%)	F	F(%)	F	F(%)	F	F(%)	F	F(%)	F	F(%)
Play and Games	24	43,64	7	17,95	7	12,50	1	3,33	6	14,63	5	20,83
Arts and music	6	10,91	7	17,95	8	14,29	4	13,33	4	9,76	6	25,00
Motor Activity and Sports	10	18,18	7	17,95	5	8,93	0	0,00	4	9,76	0	0,00
Memory, Learning, and Cognitive Activities	6	10,91	7	17,95	15	26,79	8	26,67	9	21,95	6	25,00
Nature and Animals	0	0,00	3	7,69	7	12,50	3	10,00	0	0,00	0	0,00
Communication, Empathy and Affection	8	14,55	5	12,82	14	25,00	14	46,67	3	7,32	6	25,00
Modern things and technology	1	1,82	3	7,69	0	0,00	0	0,00	15	36,59	1	4,17
<b>Total</b>	55	1000	39	100	56	100	30	100	41	100	24	100

### *Professionals' Perception of Impact*

Following the completion of the project's final phase, a project evaluation questionnaire was administered to the involved technicians, including educators and nursing home staff. This questionnaire aimed to solicit their perspectives on the intervention's most positive and negative aspects for each participant. Subsequently, this information was subjected to content analysis (See Figure 5).

Concerning the most positive aspects observed in children, we categorized them into two groups: "Positive Emotions" and "Coexistence and Interpersonal Relations", yielding 17 (40.48%) and 25 (59.52%) recorded instances respectively.



For seniors, the most positive aspects identified were classified into the categories of "Positive Emotions", accounting for 8 (35%) recorded instances, "Coexistence and Interpersonal Relations", comprising 10 (40%) recorded instances, and "Sense of Utility", with 6 (25%) recorded instances.

As for the most negative aspects experienced by the children, educators reported concerns related to "Anxiety and Shyness", which amounted to 3 (10.71%) recorded instances, and "Health-Related Conditions", which constituted 25 (89.29%) recorded instances.

In the case of seniors, the most negative aspects noted by the professionals were segregated into two categories: "Apathy and Demotivation", accounting for 19 (44.44%) recorded instances, and "Health-Related Conditions", totaling 24 (55.56%) recorded instances.

**Figure 5**

*Professionals impact evaluation of the project*

<u>Most positive aspects</u>					
<u>Children</u>			<u>Elders</u>		
Categories	Frequency	%	Categories	Frequency	%
Positive emotions	17	40.48%	Positive emotions	8	35%
Coexistence and Interpersonal Relations	25	59.52%	Coexistence and Interpersonal Relations	10	40%
			Sense of Utility	6	25%
<b>Total</b>	<b>42</b>	<b>100%</b>	<b>Total</b>	<b>24</b>	<b>100%</b>
<u>Most Negative Aspects</u>					
<u>Children</u>			<u>Elders</u>		
Categories	Frequency	%	Categories	Frequency	%
Anxiety and shyness	3	10.71%	Apathy and demotivation	19	44.44%
Health-related conditions	25	89.29%	Health-related conditions	24	55.56%
<b>Total</b>	<b>28</b>	<b>100%</b>	<b>Total</b>	<b>43</b>	<b>100%</b>

## Discussion

The empirical findings strongly align with the theoretical framework discussed earlier. The positive shift in beliefs observed in both children and elderly participants signifies an encouraging trend in intergenerational perceptions. This evolution is in line with the understanding that aging is a multidimensional process, encompassing biological, psychological, and social dimensions.

The data reflects a growing recognition of the diverse capabilities and contributions that individuals from different age groups can bring to intergenerational interactions. The findings regarding children's beliefs about seniors and elders' beliefs about children provide valuable insights into the dynamics of intergenerational interactions in the context of population aging and the changing demographic landscape, as highlighted in the introduction. These insights are particularly relevant given the global trend of accelerated population aging and the specific case of Portugal, where the aging index is steadily increasing (INE, 2023).

#### *Children's Beliefs:*

The positive shift in children's beliefs about seniors, as indicated by the increase in positive responses in M2, is encouraging, especially in a society where an increasing proportion of the population is reaching older ages (INE, 2023). This positive change suggests that intergenerational programs and initiatives may be effective in shaping children's perceptions and combating negative stereotypes associated with aging.

Moreover, the continued significance of the subcategory "memory, learning, and cognitive games" in both evaluation moments underscores the potential for intellectual exchange between generations (WHO, 2022). In an aging society, this type of knowledge transfer can be particularly valuable in promoting cognitive preservation and well-being. The emergence of "Arts and music" as a prominent positive belief in M2 aligns with the idea of promoting a healthy lifestyle through creative engagement, as a means to mitigate the adverse effects of aging (Benavente, 2020).

The reduction in negative beliefs between M1 and M2 is a positive trend, reflecting an opportunity to shape more positive views about seniors among children (WHO, 2022). This shift could be attributed to the exposure children have to seniors as active and knowledgeable individuals through intergenerational programs.

#### *Elders' Beliefs:*

Elders' evolving beliefs about children also reveal promising trends, particularly in a society with an increasing aging index (INE, 2023).

The transition from a focus on "Play and games" in M1 to a more diverse range of activities in M2 indicates that elders are adapting to the changing interests of younger generations. This adaptability is crucial in promoting positive intergenerational relationships and aligns with the concept of active and healthy aging (WHO, 2022).

The shift from emphasizing "memory, learning, and cognitive games" to "Communication, Empathy, and Affection" highlights the recognition of the emotional and social dimensions of teaching. In an aging society, where the emotional well-being of older individuals is a critical concern, this shift indicates that elders value the quality of their relationships with younger generations (WHO, 2022).

The consistent belief that young people can teach about "Modern things and technology" is in line with the idea that a longer life offers opportunities for continued education and new career pursuits (WHO, 2022). This belief underscores the importance of technological knowledge in today's digital age and the potential for mutual learning between generations.

However, the persistence of a small number of negative beliefs among elders is a concern that necessitates further exploration (Bressan Valentini et al., 2010). Understanding the nature of these reservations is vital to ensure that intergenerational interactions can be as positive and beneficial as possible.

Overall, the data suggests a positive evolution in the beliefs of elderly participants about children, with a broader range of activities and teaching preferences emerging in the second evaluation moment. This information can inform the development of more effective intergenerational programs and initiatives.

## **Conclusion**

To conclude we could point out that the data reveals a notable positive shift in the beliefs of both children and elderly participants regarding their perceptions of each other across two evaluation moments. In the initial assessment, children exhibited predominantly positive beliefs, expressing a strong inclination towards engaging in playful activities with seniors and recognizing the potential for cognitive and memory-based interactions. Concurrently, the elderly participants demonstrated a keen interest in sharing their knowledge, particularly in the realms of memory, learning, and cognitive games, with a notable emphasis on modern technology (Greenfield & Greenfield, 2021;

Hertzog et al., 2009).

However, in the subsequent evaluation, both age groups displayed a broadening of interests and preferences. Children expressed a desire for a more diverse range of activities with seniors, including sports, arts, and cognitive engagement. Simultaneously, the elderly participants highlighted the importance of communication, empathy, and affection in teaching children, indicating a nuanced understanding of the emotional dimensions of intergenerational interactions. These findings underscore the value of tailored intergenerational programs that facilitate a wide array of activities and foster meaningful exchanges between generations (Canedo-García et al., 2017; Kuiper et al., 2015).

Furthermore, the significance of optimism and hope in promoting mental and emotional health among older individuals cannot be overstated. Maintaining a positive outlook on life and nurturing a sense of hope can significantly contribute to successful psychological aging and overall life satisfaction (Carstensen et al., 2011; Canedo-García et al., 2017). The evolving landscape of beliefs presented in this study signifies a promising foundation for the cultivation of enriching intergenerational relationships. It is essential to continue advancing intergenerational programs, tailoring them to the evolving beliefs and preferences of both children and elderly participants, and addressing any persisting negative beliefs to ensure the continued success of such initiatives in an aging society.

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**“The authors declare that there is no conflict of interest.”**