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CHALLENGES ON IMPLEMENTING A SCREENING SYSTEM WITH AGES AND STAGES QUESTIONNAIRES (ASQ-PT) IN PORTUGAL

DESAFIOS NA IMPLEMENTAÇÃO DE UM SISTEMA DE RASTREIO DE DESENVOLVIMENTO COM O AGES AND STAGES QUESTIONNAIRES (ASQ-PT) EM PORTUGAL

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Abstract

"Ages and Stages Questionnaires" is a screening instrument that has already been translated, standardised and validated to the Portuguese child population. This study was conducted to understand professionals and parents' perceptions on the use of Ages and Stages Questionnaires (ASQ-PT). Families and professionals (early intervention, health and education) from three geographical areas of Portugal (North, Center and Lisbon and Tagus Valley) used this instrument to screen children previously referenced from community services. After the analysis of the screening system implemented and the collected data, a set of keywords allowed us to reflect on the practical implications of the screening and the ASQ system: Motivation; Collaboration; Trust; Knowledge/empowerment; Coordination; Dissemination; Training. Results of this qualitative study are presented with suggestions on enhancing ASQ-PT usage.

Keywords: Ages and Stages Questionnaires, development screening, professionals/families collaboration

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Resumo

O "Ages and Stages Questionnaires" é um instrumento de rastreio de desenvolvimento já traduzido, aferido e validado para a população infantil portuguesa.

Este estudo foi realizado para compreender a perceção dos profissionais e dos pais sobre o uso do Ages and Stages Questionnaires (ASQ-PT). Famílias e profissionais (de intervenção precoce, saúde e educação) de três áreas geográficas de Portugal (Norte, Centro e Lisboa e Vale do Tejo) utilizaram este instrumento para rastrear crianças, previamente referenciadas, nos serviços da comunidade. Após a análise do sistema de rastreio de desenvolvimento implementado e os dados recolhidos, um conjunto de palavras-chave permitiu refletir sobre as implicações práticas do rastreio e do sistema ASQ: Motivação; Colaboração; Confiança; Conhecimento/capacitação; Coordenação; Divulgação; Formação. Os resultados deste estudo qualitativo são apresentados com sugestões para melhorar o uso do ASQ-PT.

Palavras-chave: Questionários "Ages and Stages", triagem de desenvolvimento, colaboração profissionais/famílias

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Introduction

Early identification of developmental problems in children is essential for achieving their maximum potential and, if necessary, for providing children and their families early intervention as soon as possible. To ensure early identification, it is necessary and fundamental to routinely screen children in child health or pediatric care, as well as in day care centres and kindergartens. It is crucial for each country to have an adequate developmental screening system in place for the early detection of children with special needs or at risk of developmental problems. To implement such a system, a local and regional network must be developed, emphasising the collaboration between services and professionals to promote screening and its importance (Bricker et al., 2013).

Developmental screening determines, through the use of brief tests, if children are developing as expected for their age. This procedure is expected to detect and/or identify children with developmental problems, those who are at risk of developmental delays, requiring a formal assessment, and those who have an age-appropriate development (American Academy of Pediatrics, 2001; Glascoe, 2005; Meisels, 1989). The importance of developmental screening relies on the malleability of development and the manifestations of delays over time, which can be detected at specific ages (Glascoe, 2005). Therefore, standardised developmental screening instruments must be used to check a child's development at specific ages. The screening process must be efficient, using an instrument that: screens a large number of children, is easy to apply and administer quickly, is easy to interpret, has good psychometric qualities (such as sensitivity, specificity, reliability and validity), is cost-effective, and is norm-referenced (American Academy of Pediatrics, 2001; Bricker et al, 2013; Division for Early Childhood, 2007; Meisels & Atkins-Burnett, 2008; Oliveira, 2017; Squires et al., 2009).

Screening instruments based on parents' reports have shown positive results in economically and culturally diverse populations by providing precise information about

child development (American Academy of Pediatrics, 2001). Parental involvement is essential in the screening process, as they are the primary source of information about a child and are those who know their child the best. They can provide valid and essential information that, possibly, may not be otherwise known. Researches have corroborated that the information provided by parents can effectively predict and identify developmental delays (American Academy of Pediatrics, 2001; Bricker et al., 1997; Bricker et al., 2008; Glascoe, 2000).

Screening instruments are seldomly used in Portugal and most children are identified through observation, mostly done with professionals in the healthcare and education areas. This leads to a potential failure to identify children with developmental problems. It is considered that a screening network for all children is essential to identify developmental problems as soon as possible and to ensure that all children have the same opportunity to maximise their potential and access to early childhood intervention.

Development and adoption of Ages and Stages Questionnaires in the Portuguese population

Ages and Stages Questionnaires, 3rd edition (ASQ-3), is a screening tool that meets the requirements for early identification. It promotes family involvement, in collaboration with health and education professionals to identify developmental problems in children. The questionnaire is expected to be filled out by parents and caregivers, and the results are interpreted by professionals. ASQ-3 also creates opportunities for the promotion of new skills.

ASQ-3 has been developed since the 1980s by Diane Bricker and Jane Squires, along with their collaborators. It emerged in the United States of America to involve parents and families of children in identification screening and intervention for children with special needs or at risk of developmental delay.

ASQ-3 is composed of 21 questionnaires distributed over well-defined age ranges: 2, 4, 6, 8, 9, 10, 12, 14, 16, 18, 20, 22, 24, 27, 30, 33, 36, 42, 48, 54 and 60 months. The questionnaires screen the areas of communication, gross motor, fine motor, problem solving and personal-social. Each questionnaire has 30 items and also has an overall section for general parental concerns.

ASQ-3 questionnaires have an information summary sheet to be filled out by professionals who score it. This sheet includes information about the age interval and a brief child identification information, as well as a graphic bar where each development area's results are placed. The graphic has information about the relation to the cut-off scores for children referral and monitoring. There is also an overall section to write families answers and a guide for score interpretation and follow-up (Squires et al., 2009).

Much more than a screening instrument, ASQ-3 is also a screening system. The ASQ research team developed not only the screening instrument but also a flexible system that can be used in different contexts and services and by different professionals. ASQ-3 is used to screen and monitor children who require development assessment to those

who do not. The ASQ-3 system is composed of four phases: planning the screening/monitoring; preparing, organising and managing the screening programme; administering and scoring ASQ-3 and following up; evaluating the screening/monitoring programme (Squires et al., 2009).

The questionnaires administering and scoring procedures can include several options previously analysed accordingly with the human resources available, with families' characteristics and families' decisions on how they will fill out the questionnaire. Some families might need help from professionals, while others may feel more comfortable filling it out at home and then returning it for scoring and results analysis.

The questionnaires are easy to administer and understand, taking about 15 minutes to be filled out. Professionals who present the results to parents can score it in about 5 minutes. The results can be shared with family immediately or at a later moment.

The ASQ-3 has been translated, standardised and adapted for the Portuguese child population and is denominated ASQ-PT (Graça, 2013; Lopes, 2013; Teixeira, 2013).

Lopes (2013) developed her research with the questionnaires of 2, 4, 6, 8, 9, 10 and 12 months with a sample of 441 children. Teixeira (2013) developed her research with the questionnaires of 14, 16, 18, 20, 22, 24 and 27 months with a sample of 541 children. Graça (2013) developed her research with the questionnaires of 30, 33, 36, 42, 48, 54 and 60 months with a sample of 926 children. These research samples were representative from the Portuguese population from all the Portuguese geographical territory.

The calculated psychometric measures, reliability and validity of the translated version of the ASQ, included studies of internal consistency by the values of Cronbach's alpha and Pearson's or Spearman's Rho, test-retest and interobserver agreement (reliability) and factor analysis and comparative studies with a risk sample and a sample undergoing therapeutic follow-up (validity).

According to Lopes (2013), Teixeira (2013) and Graça (2013), the results of their standardisation researches demonstrated that the ASQ-PT (2 to 60 months) meets the requirements of a validated screening instrument for the Portuguese population, allowing the early identification of children with development problems.

We conducted a qualitative study to understand the perceptions of early intervention, health and education professionals, as well as families, about the use of ASQ-PT, to understand how parents collaborate during the use of ASQ-PT and to raise awareness among practitioners about its use in early identification. We also aimed to understand if the perceptions of professionals and families in our study were similar to those found in other countries where the ASQ instrument is already validated.

Methods

Our participants were professionals from 3 Local Early Intervention (LEI) teams, health professionals from 4 health centres and one pediatric hospital service, education professionals from 12 kindergartens and day-cares and families. We conducted our

research in three geographical areas of Portugal: North, Centre and Lisbon and Tagus Valley, to get a representation of LEI teams from different regions. All health and education professionals worked in the LEI teams' geographical areas.

Portuguese LEI teams have professionals from different professional areas and from the three coordinated Ministries of National Early Intervention System (SNIPI): Health, Education and Social Security, as established in the Decree-law of Early Childhood Intervention in Portugal (Decreto-Lei n.º 281/2009). The LEI teams have a flexible composition, and have different professionals depending on their specific Ministry. The North LEI team has 12 professionals, the Centre LEI team has 8 professionals and the Lisbon and Tagus Valley LEI team has 12 professionals, as presented in Table 1. Not all the professionals received training in early intervention.

Table 1

LEI teams' constitution

LEI team' constitution **Ministry**	**North LEI**	**Centre LEI**	**Lisbon and Tagus Valley LEI**
Health	1 Physician 4 Nurses 2 Psychologists 2 Social Workers	2 Nurses	1 Nurse
Education	3 Early Childhood Educators	2 Early Childhood Educators	3 Early Childhood Educators
Social Security		1 Psychologist 1 Social Worker 1 Speech Therapist 1 Physiotherapist	1 Psychologist 2 Social Workers 2 Speech Therapists 1 Occupational Therapist 1 Psychometrician 1 Physiotherapist

The participants from the health area were 18 professionals: 4 physicians/pediatricians, 12 nurses, 1 psychologist and 1 social worker. From the education area, 49 professionals participated: 47 early childhood educators, 1 psych pedagogue and 1 director from an education institution. The professionals' geographical areas are presented in Table 2.

We interviewed 14 families that were selected randomly. Interviews were conducted with 13 mothers and 1 tutor of the children screened with ASQ-PT.

Each family decided differently how to fill the questionnaire: parents with the child (4 families), parents without the child (3 families), mother with the child (5 families), mother alone (1 family) and mother with the professional (1 family).

In order to use ASQ-PT instrument in our study, a permission contract with Paul H. Brookes Publishing was signed. We also got authorisation from the authors of the Portuguese version of Ages and Stages Questionnaires.

Table 2

Geographical area of health and education professionals

	Health		Health	
	Number of institutions	**Professionals**	**Number of institutions**	**Professionals**
North	4	2 physicians 10 nurses 1 psychologist 1 social worker	3	13 early childhood educators
Centre	0	0	3	8 early childhood educators
Lisbon and Tagus Valley	1	2 pediatricians 2 nurses	6	26 early childhood educators 1 psych pedagogue 1 director

To carry out our research, we introduced the ASQ-PT instrument and system to professionals whose main goals were to identify developmental problems in children and make referrals for early intervention. Based on the ASQ-3 system (Squires et al., 2009), we defined the phases of screening for the professionals:

1. Planning the screening: determine target population and the resources and administration methods;
2. Organising and managing the screening: identify screening procedures;
3. Administering and scoring ASQ-PT: support parent's completion of ASQ-PT, communicate results with families;
4. Evaluating the screening process.

Early intervention professionals used ASQ-PT to screen children referred to their service. Health and education professionals used the development screening in their services by choosing randomly children to be screened, explaining ASQ-PT screening to families, obtaining families consent for the research and the screening, providing the questionnaires and the results of the screening to families. From a total of 278 questionnaires provided to the different locations of the study, we obtained 91,4% of questionnaires used and scored.

After the screening with the ASQ-PT, to collect our data, we conducted semi-structured interviews using two different script guides - one for interviewing professionals and the other for interviewing individual families.

The interviews were made with sound recording, with the authorisation of the interviewees. One of the health centres did not allowed sound recording so we wrote notes about the information provided.

All interviews were transcribed so we could do a descriptive analysis of the data. We carried out exploratory procedures and a content analysis that allowed us to obtain sets of themes and categories to identify the difficulties experienced by professionals during the implementation of the screening, advantages and fragilities to the use of ASQ-PT, the changes that professionals and families considered that would improve the

screening process and if the interviewees would recommend the ASQ system and the ASQ-PT instrument to other professionals and families. Some challenges were highlighted by professionals and families that can help us to understand the changes that can be taken into consideration when implementing the ASQ system in Portugal.

Results

Our research aimed to gain knowledge about participant's perceptions concerning the positive aspects and aspects to improve when using ASQ-PT by professionals and families as well as the changes they would like to implement in the system or if they would recommend ASQ-PT screening to other families and professionals.

The analysis of the data allowed us to identify seven categories, presented in Table 3, that helped us to reflect on the practical implications of early identification, screening and, more specifically, the ASQ system.

Table 3

Categories and themes

Categories	Themes
Motivation	**Health professionals**: ✓ When more motivated, talk more with families about screening and its importance and gather information about follow up services that can help families with their child's development. ✓ Service organization and collaborative work. **Education professionals:** ✓ The need to be actively involved. **Families**: ✓ More motivated when professional is involved. ✓ Value the opportunity of sharing their knowledge about their children with professionals.
Collaboration	**Key for relations/interactions between professionals and families** **Professionals**: ✓ More involved and active participation in the screening. ✓ Empower their trust on: parents' answers, the screening result and feel more secure through the process. **Education professionals**: ✓ Difficulties managing lack of control during the questionnaires filling.
Trust	**Professionals**: ✓ Lack of trust in families about development difficulties and filling the questionnaires. **Families**: ✓ Trust in professionals' development knowledge. ✓ Increase trust in professionals due to their involvement in the screening. ✓ Felt their development perceptions about their child were valued by professionals.
Knowledge/ empowerment	**Professionals**: ✓ Reflected on development. ✓ Increased their attention about children's skills. ✓ Got more information about children.

	✓ Gain knowledge of families' perceptions about their children. ✓ Adapted their practice to empower families **Families**: ✓ Got more knowledge about development. ✓ Reflected, observed and gain more knowledge about their children's competencies. ✓ Felt empowered to help their children develop more competencies and abilities.
Coordination	**Between professionals** ✓ More communication is needed. ✓ More shared information about children's skills and abilities. ✓ Education professionals' work needs to be more valued by health professionals. ✓ Need to increase families' involvement. ✓ Need to increase professionals and families trust.
Dissemination	**Increases the importance of early identification.** **LEI Teams Professionals**: ✓ Early intervention system, methodology and referral process. **Health and Education professionals**: ✓ Early identification and development screening – for a better acceptance by parents and the community. **Families**: ✓ Mouth to mouth promotion about screening.
Training	**Health and Education professionals**: ✓ Development and red flags; Early identification; Early childhood intervention; Collaboration work with other professionals and with families. **Professionals**: ✓ ASQ-PT system and instrument.

About **motivation**, we understood that most health professionals from health centres found difficulties in implementing the screening due to a lack of time and human resources. But we did not detect this specific difficulty in one of the health centres or in the hospital, where professionals decided to work together and take advantage of the opportunity to screen children from their community.

When professionals are more motivated about early identification, it is easier for them to communicate with families about the children's development, screening, and its importance, as well as to provide information about community services referrals.

Education professionals felt they need to be actively involved in the screening process and not just act as intermediaries, as they did in our study.

Families felt more motivated to fill out the ASQ-PT questionnaire when professionals were involved in the screening process. Some families believed that they were the ones who should fill out the questionnaire because of their knowledge about their children. At the same time, they felt more secure in this task whenever they could get professional help to clarify their doubts or when, after filling out the questionnaire, families and professionals reviewed the answers together.

All interviewees considered fundamental the **collaboration** between families and professionals. It is very important that professionals have a good knowledge of their

community so they can identify families who can fill out the questionnaires alone or need help from professionals.

Some professionals reflected on the importance of being more involved and having an active participation to increase their trust in parents' answers on the questionnaires, on the results of screening and to feel more secure during the process. Particularly, some early childhood educators had difficulty managing lack of control in the questionnaire filling when handed to families to be filled by them. This may have happened because some professionals chose not to be involved in the screening process and only delivered the questionnaires and the results to parents, believing that this was a way to not influence families.

Most professionals need to increase their trust in families when it comes to development knowledge and especially when families have the opportunity to fill out questionnaires about their children's development. Despite this, we found that some professionals' motivation is related to a greater sense of trust in families.

According to health and education professionals, families, particularly the disadvantaged ones, may devalue screening because they do not know about development, which means they might not value specific competencies acquisitions.

Education professionals were the group who most referred lack of trust in a screening process when development questionnaires are filled out by families and in the parents' abilities to fill out development questionnaires. We considered some hypothesis: this feeling may come from insecurity issues or difficulty in giving families this task because the professionals feel they are the ones, as development specialists, that should present children's competencies and abilities. Simultaneously, the use of ASQ-PT screening reinforced education professionals' perception of children's development through a formal instrument, giving them the tranquillity and security needed to identify children's developmental problems.

Families confirmed in their interviews that they trust professionals' knowledge about development, and that they contact professionals for information about development, to clear doubts, and to share their concerns. Professionals must be aware of the important role they have in providing families with the necessary development information, guiding them and/or empowering them with newer knowledge to enhance the children's development opportunities. This role also requires on part of professionals' sensitiveness and positive communication, respecting culture and unique ways that each family has of educating their child.

For most professionals, the ASQ-PT questionnaires provide important **knowledge** about child development to families. Some health and education professionals found that the ASQ-PT screening made them reflect on child development and focus more on children's competencies and abilities that may not have been previously detected. These professionals felt that, after the screening, they had the opportunity to gain new information about children and adjust their practices to empower families in specific areas of development and understand parents' perceptions of their children's competencies.

Health professionals working in the hospital stated that if families filled out the questionnaire before the child's appointment, they would be able to make more accurate interpretations of the screening results, allowing them more time to focus on communication with families about their child's development as opposed to focus only on the child's growth and health.

All families interviewed mentioned that they got new knowledge about the development and competences of their children. They were also able to reflect and observe their children differently. By filling out the questionnaires, families became aware of developmental competences that their children had and became more conscious of the competence's children should have at a specific age. For families, receiving the screening results allowed them to have more knowledge about their child's development, understand how to support their child development in following developmental steps, and expand the range of activities they can engage their children to support learning and development.

The importance of **coordination** between different services and professionals is well-known, but there are still gaps. For effective collaborative work among services, better communication is needed and services should not work in isolation.

Education professionals reported difficulties when discussing children's development problems to parents, being afraid of parents' reactions. Additionally, these professionals reported that health professionals do not value their concerns about children's development difficulties.

About **dissemination**, we believe that there are different levels of dissemination that need to be done in Portugal. LEI teams should disseminate information about SNIPI, the work made by early childhood intervention (ECI) professionals and the referral process to primary prevention professionals in health and education sectors.

Health and education professionals should disseminate information about early identification and developmental screening to demystify what it is and increase acceptance among families and society.

Implementing a screening system in Portugal, organised in various contexts, such as health centres, paediatric appointments, kindergartens, day-cares, and LEI teams, will have positive benefits and in turn these experiences will make parents talk about the subject among themselves. Word-of-mouth dissemination by families is a powerful marketing tool.

We believe that all professionals should have access to **training** in their specific areas. Education and health professionals need to be trained in: development, to gain a deeper understanding of milestones and development red flags; early identification and early intervention, so that all children with development problems or at-risk can be detected and referred to SNIPI; and collaboration with families, particularly when families have concerns about children's development and when professionals validate family needs, especially during crisis moments when they are confronted with their children's development difficulties.

Education professionals should also have training in collaborative team work and screening and assessment instruments.

All professionals, including health, education, ECI professionals, and staff members in health and education contexts, should be trained on the ASQ-PT so that they can assist families in filling out the questionnaire if needed.

Changes to the ASQ-PT system suggested by professionals and families were based on their experiences and participation, and focused on identified aspects to improve the ASQ-PT system. These changes reveal a reflection on the process, the difficulties encountered or observed, ways to overcome them, and the level of involvement of the participants.

Education and health professionals would recommend the use of ASQ-PT to their peers to increase an earlier identification of children with development difficulties. For education professionals, this instrument would help to screen children who need early childhood intervention, to clear their doubts about children's development, validating the need of intervention on specific areas of development. Through the screening results, these professionals would validate their perceptions and feel more confident in their referral decisions.

All families would recommend the use of ASQ-PT to other parents for the knowledge about child development achieved, for promoting reflection and for gaining knowledge about their children's competencies. Families viewed collaboration with health professionals as a positive way of understanding better their children's development and making early identification possible. Regarding collaboration with education professionals, families mentioned that these professionals have more knowledge about their children than health professionals.

Discussion

This study, along with the use of ASQ-PT as a development screening instrument, enabled early identification of children who required further assessment and referral to other services, such as early childhood intervention. Professionals working in LEI teams reported an increase in referrals as a result of our research. This validated the importance of primary prevention (Sameroff & Fiese, 2000), early identification (Bricker et al, 2013) and development screening (AAP, 2001; Glascoe, 2005; Squires et al, 2009). By using the same development screening instrument, ASQ-PT, primary prevention professionals can work together to improve early identification and standardised services and procedures.

The ASQ system is flexible and can be used in different contexts and by different professionals. Our research in Portugal was conducted on a small scale, but it helped us to identify the challenges that professionals and families face actually when implementing this screening system. We concluded that professionals and families recognised a large number of advantages on the screening process and the screening instrument, and also for professionals, families and children. Aspects to improve identified by professionals and families focus on organization and dynamics of

professional work, lack of trust in families to fill a development questionnaire, lack of security by some professionals in talking to parents, and lack of importance placed on development screening for early identification of children with development difficulties. These issues can be addressed by increasing collaboration between professionals and families, and by creating and implementing a screening system that is disseminated in the communities so that its importance can be understood.

In our research, some health professionals (in the hospital and in one of the health centres) viewed the ASQ-PT screening as an opportunity to focus families on their children's development and to assist them in their appointments by setting specific goals for development. These professionals considered that the developmental screening with ASQ-PT was the foundation to get accurate results about children's development and to establish better communication with families. They also felt they could explore more about the parents' concerns regarding their child, as mentioned by Bricker et al. (2013). These health professionals demonstrated a good knowledge of their population/community. Not only the motivation but also the organization of services, the relationship between professionals and the emphasis on collaborative work may have had a positive influence on these specific professionals. We concluded that less motivated professionals viewed ASQ-PT screening as an additional activity that would take time away from their other responsibilities. Dworkin (1989) and Direção-Geral de Saúde (2013) highlighted the need for knowledge about development, the motivation factor and the professionals' experience to screen children development.

In health centres, nurses and physicians have a limited amount of time for each appointment. If the ASQ-PT screening is implemented in Portugal in this context, families may get help filling the questionnaires from professionals other than nurses and physicians, to overcome time limitations (Squires et al., 2009).

Health professionals from the hospital emphasised that with ASQ-PT screening they could focus their appointments not only in growth and health but also in development. This way they could gather missing information to complement the screening results and explore some parents' concerns about their children and their competencies specifically (Bricker et al, 2013).

Education professionals mentioned their lack of trust on families to fill a development questionnaire, however they also referred that ASQ-PT validated their concerns and doubts about a child's development as the screening results confirmed their perceptions. This issue validates family's ability to reflect and accurately fill out a development screening questionnaire (Bricker et al, 1997; Graça, 2013; Lopes, 2013; Teixeira, 2013).

Even if education professionals didn't have an active participation, they showed interest in ASQ-PT screening and understood the importance of being more involved in the process, which can increase their motivation in the screening.

By increasing coordination between education and health professionals, we believe that there will be a greater appreciation of the work done by education professionals; better sharing of information about children's competencies and difficulties, earlier

identification and intervention, more active family involvement, and stronger trust relationship may be built or strengthen between professionals and families (Della Barba et al., 2018; Dunst, 2017; Squires et al., 2009).

When the focus is the dissemination about early identification, developmental screening and ECI, the advantages for children, families and society are emphasised (Alves et al., 2018; Bricker et al., 2013).

Some families might associate development screening with a "label" for children by professionals, as difficulties are the focus (Bricker, 1996), but there are families who understand the developmental screening goal as a way of getting information or clearing doubts about their children's development and how to support the child's development.

Families' motivation to fill a development questionnaire when they can show their knowledge about their children and the increase security through the screening process due to a collaboration with the professionals corroborates the results of Squires at al. (2009). Families felt valued and important because they had the opportunity to share their knowledge about their children with professionals. They considered that the ASQ-PT screening increased their confidence in professionals because they were actively involved in the process. Some families mentioned the screening showed them how professionals value their perceptions about their children's development, as the ones who know their child best. These results are compatible with the ones of Bricker et al., (2013), Division of Early Childhood (2014) and Squires et al. (2009).

Families with the ASQ-PT screening felt more informed about their children development and empowered to help their children achieve new competencies and abilities (Squires et al., 2009). ASQ-PT was considered important for promoting their interest, attention and reflection on development and children's specific competencies. They felt that their involvement and interaction were valued and highlighted the promotion of collaboration between families and professionals, which will increase parental knowledge and skills.

Most professionals mentioned that questionnaires should be filled out collaboratively by families and professionals and their collaboration was considered fundamental in the screening process by all interviewed, which corroborates the results of Della Barba et al. (2018). But professionals must help families with low literacy levels or comprehension difficulties (Bricker et al., 2013; Squires et al., 2009), so previously they need to identify these families. This collaboration would be a way of overcoming possible biases in families' responses when filling out the questionnaire without professional assistance, as there can be different perceptions of child development between families and professionals. In Portugal, there still is a perception of professionals as specialists (Carvalho et al., 2016) when it comes to development and assessment. When families and professionals share information and their own perceptions about a child's development, families get greater knowledge and information about their children development and understand better professionals' recommendations (Meisels & Atkins-Burnett, 1999). Parents can also detect developmental difficulties in their child, so professionals must validate these concerns (Glascoe, 2005).

With ASQ-PT screening, families and professionals became more empowered about child development as they gained a better understanding of children's abilities and increased family involvement, particularly in education contexts (Bricker et al., 2013).

Education professionals showed us to be unsure if parents will accept what they are sharing and, especially, parents and professionals may have different perceptions of a child's development. These results are compatible with the ones from Germano (2011). When discussing development problems with families, education professionals provide important information and suggest that families talk with the child's physician or pediatrician (Castro & Gomes, 2000). It is important that health professionals stop using development justifications such as "the child is young", "the child has time to develop", "the child will develop at day-care/kindergarten" (Pinto, 2009). This information validates education professionals' perceptions and highlights a gap in service coordination, as well as a possible obstacle to detecting children's problems. Health professionals should value education professionals' perceptions of children's development to enable partnership work between these two primary prevention areas.

Organising a developmental screening system that uses an instrument with strong psychometric qualities, adapted to the Portuguese child population, and involving primary prevention professionals from health, education and early intervention sectors is crucial. In Portugal, there is a need to increase the early identification of children with developmental problems so that they can be referred for early childhood intervention as soon as possible. Additionally, based on neurosciences research, it is important to recognise the potential to positively shape developmental trajectories during critical periods.

In our opinion, the ASQ-PT instrument is suitable for this purpose and its ease of application and scoring will facilitate the screening of a large number of children. Implementing and standardizing a national screening network using this instrument will improve service coordination and strengthen collaboration among professionals.

In the future, the organization of the ASQ-PT system in Portugal should be flexible and adaptable to different contexts and services. A training plan is also essential to empower professionals and ensure they are confident in all screening steps. Disseminating Early Childhood Intervention and SNIPI, screening and its importance and ASQ is crucial to promote family involvement in the process. These are the foundation for enabling professionals to carry out the necessary procedures for referral allowing, this way, universal accessibility to SNIPI support for children with Special Needs and their families.

References

Alves, A. P., Monteiro, I., Silva, P., Santos, P. (2018). *Relatório de Atividade – Avaliação do Funcionamento do SNIPI- 2017*. Comissão de Coordenação do SNIPI.

American Academy of Pediatrics (2001). Committee on Children with Disabilities. Policy Statement: Developmental Surveillance and Screening of Infants and Young Children. *Pediatrics*, *108,* 192-196. http://doi.org/10.1542/peds.108.1.1922

Bricker, D. (1996). Assessment for IFSP development and intervention planning. In S. J. Meisels, & E. Fenichel (Eds), *New visions for the developmental assessment of infants and young children* (pp. 169-192). Zero to Three: The National Center for Infants, Toddlers, and Families.

Bricker, D., Allen, D., Clifford, J., Pretti-Frontczak, K., Slentz, K., & Squires, J. (2008). The Relationship Between the Ages & Stages Questionnaires (ASQ) and the Assessment, Evaluation, and Programming System for Infants and Children (AEPS). *Early Intervention Management and Research Group*, White Paper n. 1.

Bricker, D., Squires, J., & Potter, L. (1997). Revision of a parent-completed development screening tool: Ages and Stages Questionnaires. *Journal of Pediatric Psychology, 22,* 313-328. http://doi.org/10.1093/jpepsy/22.3.3133

Bricker, D., Macy, M., Squires, J., & Marks, K. (2013). *Developmental Screening in Your Community: An Integrated Approach for Connecting Children with Services*. Paul H. Brookes Publishing, Co.

Carvalho, L., Almeida, I. C., Felgueiras, I., Leitão, S., Boavida, J., Santos, P. C., Serrano, A., Brito, A. T., Lança, C., Pimentel, J. S., Pinto, A. I., Grande, C., Brandão, T., & Franco, V. (2016). *Práticas Recomendadas em Intervenção Precoce na Infância: Um Guia para Profissionais* (1.ª ed.). Associação Nacional de Intervenção Precoce.

Castro, S., & Gomes, I. (2000). *Dificuldades de Aprendizagem da Língua Materna.* Universidade Aberta.

Decreto-Lei n.º 281/2009, de 6 de outubro (2009). *Diário da República – 1.ª Série,* n.º 193, 7298-7301.

Della Barba, P. C. S., Mazak, M. S. R., Miyamoto, E. E., & Ramos, M. M. A. (2018). O Ages and Stages Questionnaires (ASQ-BR) e ações colaborativas entre pais e educadores. *Temas em Educação e Saúde*, *v. 14*, n.º 1, jan-jul, 31-40. https://doi.org/10.26673/rtes.v14. n1.2018.10581

Direção-Geral de Saúde (2013). *Saúde Infantil e Juvenil: Programa Nacional.* Direção-Geral da Saúde. http://www.dgs.pt/documentos-e-publicacoes/programa-tipo-de-atuacao-em-saude-infantil-e-juvenil.aspx

Division for Early Childhood (2007). *Promoting positive outcomes for children with disabilities: Recommendations for curriculum, assessment, and program evaluation.* Division for Early Childhood.

Division for Early Childhood. (2014). *DEC recommended practices in early intervention/early childhood special education 2014*. http://www.dec-sped.org/recommendedpractices.

Dunst, C. J. (2017). Family systems early childhood intervention. In H. Sukkar, C. J. Dunst, & J. Kirkby (Eds.), *Early Childhood Intervention: Working with Families of Young Children with Special* Needs (pp. 36-58). Routledge.

Dworkin, P. H. (1989). Developmental screening – Expecting the impossible? *Pediatrics, 83*(4), 619-622.

Germano, C. M. G. (2011). *Processos de identificação e sinalização de crianças com problemas na linguagem oral pelos educadores de infância*. [Master's Thesis, Escola Superior de Educação de Lisboa]. Repositório Institucional do Instituto Politécnico de Lisboa. http://hdl.handle.net/10400.21/1394

Glascoe, F. P. (2000). Evidence-based approach to developmental and behavioral surveillance using parents' concerns. *Child Care Health Development, volume 26*(2), 137-149. http://doi.org/10.1046/j.1365-2214.2000.00173.x

Glascoe, F. P. (2005). Screening for Developmental and Behavioral Problems. *Mental Retardation and Developmental Disabilities Research* Reviews*, 11,* 173-179. http://doi.org/10.1002/mrdd.20068

Graça, P. (2013). *Aferição para a população portuguesa da Escala de Desenvolvimento: Ages & Stages Questionnaires (ASQ3) dos 30 aos 60 meses*. [Doctoral Dissertation, Universidade do Minho]. Repositório Institucional da Universidade do Minho. https://hdl.handle.net/1822/25609

Lopes, S. (2013). *Aferição para a população portuguesa da Escala de Desenvolvimento: Ages & Stages Questionnaires (ASQ3) dos 2 aos 12 meses*. [Doctoral Dissertation, Universidade do Minho]. Repositório Institucional da Universidade do Minho. https://hdl.handle.net/1822/27384

Meisels, S. J. (1989). Can Developmental Screening Tests Identify Children Who Are Developmentally at Risk? *Pediatrics*, *83*(4), 578-585.

Meisels, S. J., & Atkins-Burnett, S. (1999). Assessing intellectual and affective development before age three: A perspective on changing practices. *Food and Nutrition Bulletin, 20*(1), 23-33.

Meisels, S. J., & Atkins-Burnett, S. (2008). Evaluating Early Childhood Assessments. In K. MacCartney, & D. Phillips, *Blackwell Handbook of Early Childhood Development* (pp. 533-549). Blackwell Publishing, Ltd.

Oliveira, G. (2017). Neurodesenvolvimento e comportamento. In G. Oliveira, & J. Saraiva (Coord.), *Lições de Pediatria. Volume I* (pp. 212-232). Imprensa da Universidade de Coimbra. http://doi.org/10.14195/978-989-26-1300-0

Pinto, M. (2009). Vigilância do desenvolvimento psicomotor e sinais de alarme. *Revista Portuguesa de Clínica Geral*, *25*, 677-687. http://dx.doi.org/10.32385/rpmgf.v25i6.10694

Sameroff, A. J., & Fiese, B. H. (2000). Transactional regulation: The developmental ecology of early intervention. In J. P. Shonkoff, & S. J. Meisels (Eds.), *Handbook of early childhood intervention* (2nd Ed., pp. 135-159). Cambridge University Press.

Squires, J., Twombly, E., Bricker, D., & Potter, L. (2009). *ASQ-3 User's Guide*. Paul H. Brookes Publishing Co.

Teixeira, S. (2013). *Aferição para a população portuguesa da Escala de Desenvolvimento: Ages & Stages Questionnaires (ASQ3) dos 14 aos 27 meses*. [Doctoral Dissertation, Universidade do Minho]. Repositório Institucional da Universidade do Minho. https://hdl.handle.net/1822/25573

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