

ARTICLE

# Current practices of Portuguese speech-language pathologists with preschool-age children with pragmatic impairment: A cross-sectional survey

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## Abstract

This study aims to investigate the practice patterns used by Portuguese speech-language pathologists (SLPs) with preschool-age children with pragmatic impairment and to identify the actual need(s) perceived by SLPs in this field. A total of 351 SLPs responded. The results reveal that 81.5 per cent of the respondents (n=286) reported working or had previously worked with preschool-age children with pragmatic impairment arising from autism spectrum disorder, developmental language disorder, or both. Considering the clinical practice, similarities and differences were found, many of which are due not to the inherent characteristics of each disorder but to the scarcity of research in clinical pragmatics. These results are also reflected in the needs perceived by SLPs and the degree of confidence with which they work with these children. Implications for clinical practice and directions for future research are discussed.

**Keywords:** autism spectrum disorder; developmental language disorder; pragmatic language; speech-language pathologists; assessment; intervention

## Introduction

The development of language and the ability to use oral language to communicate effectively play a central role in education, social involvement, and economic participation across the lifespan (Organisation for Economic Cooperation and Development (OECD), 2017). Children's pragmatic language includes a wide range of abilities, from initiating a conversation and taking turns to inferences, presuppositions, or understanding an ironic comment in everyday use of language. Research on child language acquisition shows that pragmatic language skills start to develop in the first year of life and are crucial for language development in general (Cummings, 2017).

The development of pragmatics and the successful application of pragmatic skills are based on the interaction of two crucial skills: (1) adequate social skills, supported by social cognition; and (2) language skills through which the message is realised by applying

various pragmatic devices (Adams et al., 2005). According to Prutting and Kirchner (1987), initial definitions of pragmatics involved three aspects that are mastered synchronously: verbal (e.g., speech acts, topic selection, introduction, and maintenance; turn-taking response and initiation), paralinguistic (e.g., prosody, fluency) and non-verbal (e.g., gestures, facial expression, eye gaze). More recently, Parsons et al. (2017) stated that this definition has been extended to embrace social, emotional, and communicative aspects of language (Adams et al., 2005), which reflects an understanding that social and emotional skills are interconnected with pragmatics (Parsons et al., 2017).

Children with autism spectrum disorder (ASD) and developmental language disorder (DLD) frequently face pragmatic language difficulties that have a negative impact on learning, socialisation, and mental health, and these may persist into adulthood (McGregor, 2020), so early and timely intervention is crucial (Rinaldi et al., 2021). Speech-language pathologists (SLPs) play a crucial role from prevention to intervention in the presence of pragmatic impairment, which may or may not be associated with a known biomedical condition (Fogle, 2019).

The application of linguistic concepts, theories, and methods to the study of language disorders is essential and clinical pragmatics has contributed in significant ways to the clinical management of people with pragmatic disorders (Cummings, 2017). Additionally, not only does the research in clinical pragmatics influence the clinical practice of SLPs, but the practice of SLPs can influence research in this field, identifying patterns, needs and opportunities for research with a direct impact on people's lives.

Accordingly, practice patterns among SLPs vary, as clinical decisions are affected by clinical experience, resources, clinical guidelines, and currently available evidence (Conway & Walshe, 2015). An evaluation of practice patterns provides an important opportunity to examine factors that impact evidence-based practices and service delivery. It is important to understand SLPs practice patterns to identify current approaches and needs in patient management, to improve services, and to guide future research, education, and practice. Although several studies across the world have studied the practice patterns of SLPs (Altaher et al., 2021; Barrow et al., 2021; Gillon et al., 2017; Pring et al., 2012), our literature search does not reveal previous studies about the current practices of Portuguese SLPs working with preschool-age children with pragmatic impairment. Considering that pragmatic impairment can be present in both ASD and DLD, it would also be helpful to analyse to what extent the pragmatic language differences and similarities between conditions are reflected in clinical practices.

### *ASD and DLD: Pragmatic language similarities and differences*

Difficulties with pragmatics are consistently reported in children with ASD, but they have also been described in children with other neurodevelopmental disorders, including children with DLD. The extent of impairment in each population and the underlying causes are under debate (Andrés-Roqueta & Katsos, 2020; Norbury, 2014).

In order to analyse the existing literature on the pragmatic language of children with ASD and children with DLD, Andreou et al. (2022) carried out a systematic review. The authors included information about general and specific aspects of pragmatic language abilities to generate an accurate profile for both clinical groups. According to the authors, the term 'general pragmatic language' concerns the basic features of pragmatics, which are assessed by measures of global pragmatic function (Matthews et al., 2018), while specific aspects of pragmatic language are considered as some of the skills that affect pragmatic

language abilities and are examined by the researchers, such as the use of fillers, narrative skills, the use of quantifiers and article choice. Andreou et al. (2022) found that the two clinical groups exhibited several similarities but also differences in their general and specific pragmatic abilities.

Considering general language abilities, Loucas et al. (2008) studied the pragmatic language of children with DLD and children with ASD using the second edition of the Children's Communication Checklist (CCC-2). Children with ASD were separated into two groups: children with ASD and language impairment (ASD-LI) and children with ASD without language impairment. The results of the study showed no statistically significant differences between children with DLD and children with ASD-LI considering stereotyped language parameters. Geurts and Embrechts (2008) also found similarities between children with ASD and children with DLD in their performance of speech output, syntax, coherence, and semantics and on the scale of stereotyped language. Whitehouse et al. (2008) also attempted to describe the language profiles of children with ASD and children with DLD. In their study, the children with ASD were also separated into two groups: the first included children with ASD and structural language difficulties, the second included children with ASD without structural language difficulties. The results showed that the differences between groups did not reach significance in terms of speech, syntax, and semantics. Also, children with ASD and structural language difficulties exhibited similar performance to children with DLD.

Hage et al. (2021) also compared the pragmatic language skills of children with ASD and children with DLD using the Assessment of Pragmatic Language and Social Communication questionnaire. The results showed that both ASD and DLD presented impaired pragmatic skills, but children with ASD presented more severe impairments in social and pragmatic abilities than children with DLD. Accordingly, Georgiou and Spanoudis (2021) examined the language profile of children with ASD, children with DLD and typically developing peers using CCC-2 (Bishop, 2003) separated into two subscales: the general communication composite (GCC), which includes the subscales of speech, syntax, semantics, coherence, inappropriate initiation, stereotyped language, use of context and non-verbal communication; and the social interaction deviance composite (SIDC), which is obtained by summing the scales for inappropriate initiation, nonverbal communication, social relations, and interests and then subtracting the scales for speech, syntax, semantics, and coherence. The results showed that both clinical groups face impairments in pragmatic language, but children with DLD exhibited impairments in GCC, while children with ASD presented difficulties in both GCC and SIDC.

Other studies have also reported differences between the pragmatic profiles of children with ASD and DLD. In the study by Geurts and Embrechts (2008), children with ASD showed statistically significantly more difficulties in the use of context than children with DLD, while children with DLD presented significant differences compared to typically developing children. Additionally, children with ASD had difficulties with initiating conversation, nonverbal communication, social relationships, and interests compared to both children with DLD and typically developing peers, while children with DLD did not present any differences compared to typically developing children. These results are in accordance with the study by Whitehouse et al. (2008), which found statistically significant differences between the two conditions in conversation initiation, use of context, nonverbal communication, social relationships, and interests. In contrast, in the study by Loucas et al. (2008), the performance in inappropriate initiation was similar between children with ASD and children with DLD, despite the children with DLD performing higher than children with ASD, though still below average.

Considering specific aspects of pragmatic language and particularly in terms of narratives, the study by Manolitsi and Botting (2011) assessed narrative skills using the Test of Pragmatic Language (TOPL) (Phelps-Terasaki & Phelps-Gunn, 1992) and separated into macro-skills (the ability to sequence a story coherently – the story grammar or story structure) and micro-skills (structural linguistic ability at sentence level evident in the narrative). Children with ASD and children with DLD exhibited similarities in combined microlevel narrative tasks and in referencing; however, statistically significant differences were observed in macro-level abilities and children with DLD performed better. Norbury and Bishop (2003) also studied the narrative skills of children with ASD and children with DLD and found that all children embellished their narratives with additional details and there was a fine line between reasonable additions and bizarre ones. Moreover, they noticed similarities in cohesion and supported the hypothesis of an overlap between the two clinical groups. However, they also found that children appeared to differ in terms of referencing, particularly in the production of ambiguous nouns and pronouns, and this type of error was more common in children diagnosed with ASD than in DLD.

More recently, Andrés-Roqueta and Katsos (2020) found a lot of similarities between ASD and DLD in pragmatic abilities using linguistic-pragmatic tasks and social-pragmatic tasks. More specifically, the results of their study showed that both children with ASD and children with DLD faced severe difficulties in the linguistic-pragmatic domain and their performance in the task was similar. In contrast, in the social-pragmatic task, children with ASD performed worse than children with DLD. The authors emphasised that the distinction between linguistic and social pragmatic competencies can serve as a basis for assessment and intervention procedures in different populations.

The critical and comparative analysis of the studies included in Andreou et al. (2022) systematic review revealed that children with ASD and children with DLD shared some common features in pragmatic language abilities. However, children with ASD exhibited more profound pragmatic difficulties than children with DLD (Geurts & Embrechts, 2008; Hage et al., 2021). Further research is needed to clarify the pragmatic language profile of children in the two clinical groups and to examine whether pragmatic language could be considered a differentiating factor between the two conditions (Andreou et al., 2022).

The literature reports both similarities and differences in the pragmatic language of children with ASD and DLD. This study will analyse how this influences the clinical practice of Portuguese SLPs and what other factors may condition the similarities and differences in clinical practice.

Concerning the instruments used, some studies are focused on a specific task or skill; others use parents' and teachers' reports or standardised instruments to compare language profiles between disorders. However, as pointed out by Félix et al. (2022), future studies should also be performed through spontaneous speech and include longitudinal data to characterise language profiles better and investigate if these similarities and differences persist over time. This will produce valuable information for assessment and intervention.

## **Assessment**

It is crucial to identify and assess children at risk for language disorders in order to implement effective early interventions. Thus, valid and reliable assessment instruments

are needed (Hyman et al., 2020; Shipley & McAfee, 2021). Pragmatic language is highly dynamic and context-dependent, which presents a challenge for the assessment. Given its complex nature, pragmatic language can be particularly difficult to evaluate using structured standardised instruments (Shipley & McAfee, 2021; Tager-Flusberg et al., 2009), although this is the method used most frequently to evaluate children's language (Binns & Cardy, 2019). Other methods such as parent/teacher reports and structured/direct observation have been used to assess pragmatic language skills (Norbury, 2014). However, the bias introduced in several studies with the use of parent/teacher-rated measures highlights the need for further development around pragmatic language measurement. Instruments that capture the complex nature of social interactions are required so that researchers and clinicians can obtain unbiased measurements of pragmatic language skills for the evaluation of change following both intervention and generalisation (Jensen de López et al., 2022; Parsons et al., 2017; Pereira & Lousada, 2023).

For each of the disorders, this study will analyse the type of assessment carried out by SLPs in Portugal and the implications for clinical practice and research.

## Intervention

Interventions can be: direct, meaning that the SLP bears full responsibility for delivering the intervention; indirect, meaning that either a parent or other professionals, supervised by an SLP, in some respects help deliver the intervention (Boyle et al., 2009); or mixed, being a combination of both. Ideally, the type of intervention should be based on the needs of the child and family (Knudsen et al., 2022). There are many treatment options to support the pragmatic language skills of preschool-age children with ASD (Binns & Cardy, 2019). International guidelines suggest that providing verbal or minimally verbal preschool-age children with effective interventions for early developing pragmatic language skills may have a vital impact on social and linguistic development. Additionally, any intervention should include developmentally appropriate activities and individualised goals, take place in an inclusive setting, and incorporate caregivers and family. When children do not communicate spontaneously, augmentative and alternative communication may be introduced (e.g., the Picture Exchange Communication System) (Hyman et al., 2020).

A systematic review conducted by Parsons et al. (2017) included 22 studies and 20 pragmatic language interventions for children with ASD. A majority (71%) of pragmatic language interventions were set in the clinic, and approximately half of the interventions (11) included strategies for generalisation, such as the involvement of parents in interventions and the inclusion of out-of-session practice. Among the interventions reviewed, non-verbal communication was the most targeted skill.

Considering intensity, although the frequency of the intervention and the total duration were highly variable across the included studies, the most common frequency reported was weekly; the total intervention duration most frequently reported was 12 weeks. In 13 studies, the intervention was delivered in groups. Of these, all except one included ASD peers. According to data in the meta-analysis conducted by Parsons et al. (2017), group interventions were more effective than individually focused interventions, although by a small magnitude. The clinic was found to be the most effective setting when compared to home or school; however, even though strategies to enhance skill generalisation were included in most of the clinic-based interventions, little is known about whether these strategies were effective. The analysis of intervention characteristics

indicated that intervention setting and mode of delivery were not significant mediators of intervention effect. Outcome measurement often assessed pragmatic language in the context in which the intervention was administered or via a decontextualised assessment instrument, so conclusions cannot be drawn as to the generalisability of skills following these interventions. This highlights the need for researchers to consider including assessment instruments in their investigations that capture behavioural observations of pragmatic language skills in varying contexts.

As a part of the European COST Action IS1406, a systematic review of the efficacy, targets, mode of delivery, and intensity of pragmatic interventions for children with DLD was conducted by Jensen de López et al. (2022). The evidence from the 11 studies analysed suggested that pragmatic intervention is feasible for all models of delivery (individual, small and large groups) and that the interventions are mostly focused on encouraging conversation and narrative skills, observed through parent-child interaction or shared book-reading activities. This study highlights the importance of promoting and explicitly teaching pragmatic skills to children with DLD in structured interventions, and a narrative synthesis of the included studies revealed that, in addition to direct intervention, indirect intervention can contribute to improving the pragmatic oral skills of children with DLD.

The results obtained by Jensen de López et al. (2022) revealed that the main targets of the interventions were conversation and narrative skills. The interventions were delivered directly and indirectly (the results point to the contribution of indirect intervention as an effective type of intervention), and the dominant mode of delivery was individual (although the results showed that pragmatic language interventions were appropriate for group therapy). Approximately half of the interventions (six) were set in educational settings, followed by home (three) and clinic (two). The agent of delivery was a non-specialist in nine of the total (11) pragmatic language interventions included.

Regarding intensity, the authors analysed three quantitative aspects of dosage: session length, dose frequency, and total intervention duration, which were highly variable across the included studies. The session length ranged from 15 to 150 minutes, dose frequency ranged from one to four times per week, and duration intensity ranged from one to 18 weeks. The total number of intervention sessions ranged from four to 32. Thus, considering the high degree of diversity in reporting relevant components to confirm intervention effectiveness in the included studies, the authors declared that the results did not show a clear picture of which interventions were most effective, confirming the results of Gerber et al.'s (2012) systematic review. Segura-Pujol and Briones-Rojas (2021), in a systematic review of treatment intensity for DLD, considered that while in some areas the intensity of the intervention was associated with a greater effect (e.g., grammar), in others, greater exposure to the stimulus did not necessarily predict better performance. However, pragmatics was not one of the studied areas. Additionally, a recent study by Frizelle et al. (2021) of part of the COST Action IS1406 aimed to ascertain to what degree the quantitative aspects of dosage have been specifically manipulated in intervention studies with children with DLD and to identify optimal quantitative dosage characteristics. Although pragmatics was not one of the studied domains, the authors state that is not yet possible to conclude which are the optimal and most efficient dose forms used in interventions, and it is clear from the review that we are a long way from being able to make definitive recommendations (Frizelle et al., 2021). These studies, although they have highlighted the need for further research, are also in accordance with Jensen de López et al. (2022), who state that defining effective interventions in pragmatics and other

clinical populations has been the goal of many studies, but only a few have focused on pragmatic language skills for children with DLD.

This study will analyse the use of methods, programmes or approaches in intervention; the context and type of intervention preferred by SLPs in Portugal; the frequency and duration of each session; the communicative partners involved; the level of confidence of SLPs in the clinical management of each of the disorders; and how the differences and similarities that the literature reports between ASD and DLD are translated into Portuguese SLPs' clinical practice with these children.

### **Aims of the study**

Considering that research and clinical practice go hand in hand, it is essential to know current practices and needs in order to improve future practices and guide research and education. However, few studies have analysed and compared the practice patterns in the pragmatic field regarding the two neurodevelopmental disorders, DLD and ASD. Therefore, the aims of this study, carried out in Portugal, were: (1) to explore the current practices of SLPs working with preschool-age children with pragmatic impairment arising from ASD, DLD or both; and (2) to identify the needs perceived by SLPs in the field of pragmatics.

### **Method**

A national cross-sectional survey was conducted in Portugal to explore the current practices of SLPs with preschool-age children<sup>1</sup> with pragmatic impairment and to identify the needs perceived by SLPs in this field. Before data collection, ethical procedures were properly ensured and written informed consent was obtained from all participants.

### **Participants**

Potential participants were recruited through e-mail, websites and social media. The Portuguese Association of SLPs and the Portuguese Society of Speech and Language Therapy were both contacted and invited via e-mail to cooperate and disseminate the survey through their website and social networks. The invitation included a link to the online survey, and an announcement containing that link was posted on Facebook. An announcement containing a link to the survey was also shared by the authors on social media (Facebook), in four private groups of SLPs, and through e-mail.

SLPs who wished to participate in the survey were able to do so at any location and time of their choosing during the data collection period. The survey was available online and open for completion for a period of two months, from 14 April to 14 June 2021.

### **Sample size calculation**

According to official Portuguese government data in Portugal, there were 3,328 SLPs in Portugal in 2020 (Administração Central do Sistema de Saúde, 2020). Once the population number was known, the following formula was used to determine the sample

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<sup>1</sup>In Portugal, preschool education is the first stage of basic education in the process of lifelong learning, aimed at children aged between three and the age at which they enter primary school.

size:  $n = Np(1-p)/(N-1)(d^2/z^2) + p(1-p)$  (Thompson, 2012), and an approximated number of 345 was reached.

### *Questionnaire development*

The questionnaire was developed following a literature review which involved surveying current textbooks and articles considering pragmatic impairment. Other surveys that aimed to explore the clinical practice of SLPs with other populations and disorders were also considered. The questionnaire included questions that covered five dimensions: (1) sociodemographic information; (2) academic education; (3) professional experience; (4) additional education in the field of pragmatics; and (5) professional practice in the field of pragmatics (see [supplementary material](#)). Information was elicited via closed multiple-choice questions and an open-ended format. Open-ended questions were only used for the respondents to state what assessment tools and methods/approaches or intervention programmes they use in their clinical practice. An initial draft of the questionnaire was piloted by ten SLPs (median age  $31.8 \pm 4.1$ ; females) with extensive experience of working with children with pragmatic impairment and sent through e-mail. After analysing the survey, SLPs involved in the pilot test completed an additional questionnaire and stated their opinions about the content, readability, and general format of the questionnaire. Specifically, they were asked about the clarity of the instructions; the clarity and ambiguity of the questions; possible resistance about answering some questions; the adequacy of the response options; the adequacy of the sequence and transition of the evaluated dimensions; possible information omission; the time required to complete the survey; and the general presentation of the survey (structure, image, clarity). At the end, a space was reserved for additional relevant comments. Final improvements were made after reviewing all the information provided and a final version was achieved. The questionnaire took approximately ten minutes to complete and was anonymous.

### *Data analysis*

The data collected were subsequently inserted into a database and analysed using Statistical Package for Social Sciences (SPSS) version 26, considering descriptive statistics (including means, standard deviation, and frequencies). Qualitative comments to open-ended questions were also analysed. No data were discarded.

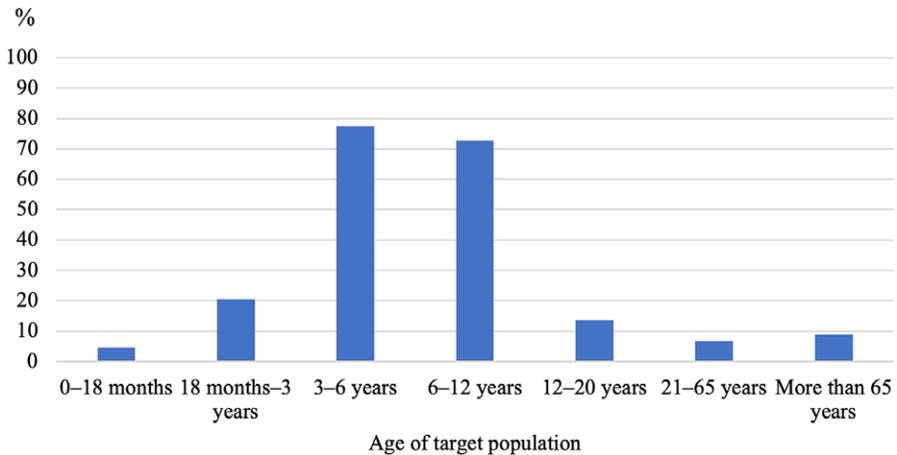
## **Results**

### *Participants*

There were 351 respondents, which represents 10.5 per cent of the SLPs working in Portugal at the time of data collection. The mean age of participants was  $33.17 \pm 7.08$  and the majority (97.4%,  $n=342$ ) were females. Over 60 per cent of the respondents held a Master's degree.

### *Professional experience*

Among the participants who were currently working as SLPs (97.2%,  $n=341$ ), the largest proportion of respondents (64.2%,  $n=219$ ) worked in clinics, and 40.5 per cent ( $n=138$ )



**Figure 1.** Age of the population treated by Portuguese speech-language pathologists.

Alt Text: Graph showing the age of the population treated by Portuguese speech-language pathologists who participated in the survey and the respective percentages. The highest percentage is almost 80 per cent, corresponding to the age group between three and six years old. This is followed, in descending order, by the age group seven to 12 years (close to 70), the age group 18 months to three years (20%), and the age group 12 to 20 years (between 10 and 20%). For the remaining three age groups (over 65 years, between 21 and 65 years, and between zero and 18 months) the percentage is between 0 and 10 per cent.

had worked for ten years or more. Children aged between three and 12 years old were the target population of the most SLPs, as can be seen in [Figure 1](#).

#### *Additional education in the field of pragmatics*

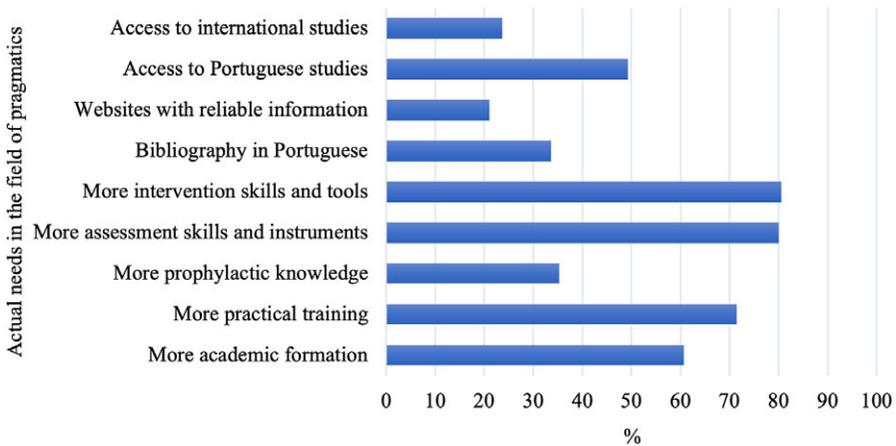
According to our research, only 25.4 per cent ( $n=89$ ) of the SLPs reported having attended additional education in the field of pragmatics. Among these, 16.9 per cent ( $n=15$ ) mentioned that pragmatic language skills at preschool age were not addressed.

#### *Actual needs in the field of pragmatics*

Considering actual need(s) in the field of pragmatics, more than 50 per cent of the respondents reported that they needed more academic education and practical training as well as more skills, instruments, and tools for the assessment of and intervention with children with pragmatic impairment ([Figure 2](#)).

#### *Professional practice in the field of pragmatics*

Considering the total number of participants ( $n=351$ ), 81.5 per cent ( $n=286$ ) of SLPs reported working or had worked with preschool-age children with pragmatic impairment arising from ASD (32.2%,  $n=92$ ), DLD (10.8%,  $n=31$ ) or both (57%,  $n=163$ ). The data from the respondents who currently work or had worked with preschool-age children with pragmatic impairment arising from ASD (32.2%,  $n=92$ ) or DLD (10.8%,  $n=31$ ) will be described and compared in the following sections and subsections of this paper.



**Figure 2.** Needs in the field of pragmatics reported by Portuguese speech-language pathologists.

Alt Text: Graph showing needs in the field of pragmatics reported by Portuguese speech-language pathologists. The highest percentage (80%) corresponds to the needs for more intervention skills and tools and more assessment skills and instruments. This is followed by the need for more practical training (almost 70%), more academic formation (60%), and access to Portuguese studies (almost 50%). The needs for a bibliography in Portuguese and more prophylactic knowledge are reported by between 30 and 40 per cent of speech-language pathologists. The other two needs – access to international studies and websites with reliable information – are reported by 20–30 per cent.

### *Autism Spectrum Disorder*

Considering the length of professional practice of the SLPs that were working or had worked with preschool-age children with pragmatic needs arising from ASD, 43.5 per cent ( $n=40$ ) reported a caseload of one to six children with ASD; 33.7 per cent ( $n=31$ ) stated that they were working or had worked with six to 20 children with ASD; and only 22.8 per cent ( $n=21$ ) worked with more than 20. According to this survey (it is important to emphasise that, when asked about the referral process, each participant could select more than one option), most children with ASD were referred to SLPs by paediatricians (87%,  $n=80$ ), preschool teachers (44.6%,  $n=41$ ) or paedopsychiatrists (44.6%,  $n=41$ ), mostly when they were between two and three years of age (50%,  $n=46$ ). Only 6.5 per cent ( $n=6$ ) of the SLPs mentioned early referral (under two years old) and 43.5 per cent ( $n=40$ ) reported that referral occurs between three and six years old. Most of the roles performed by SLPs in this population are related to assessment (85.9%,  $n=79$ ) and intervention (97.8%,  $n=89$ ), prevention being the area with the lowest percentage (13%,  $n=12$ ).

Most of the SLPs reported conducting an informal assessment (90.2%,  $n=83$ ) and did not use any specific programme, approach or method during the intervention (91.3%,  $n=84$ ). Of the 8.7 per cent ( $n=8$ ) who reported the use of a specific programme, method or approach, the following were listed: DIR/Floortime (Greenspan, 1979), Picture Exchange Communication System (Bondy & Frost, 1994), Affect-Based Language Curriculum (Greenspan & Lewis, 2005), and Pragmatic Intervention Programme (PICP) (Pereira et al., 2019, 2021). The two most mentioned intervention contexts were the clinic (71.7%,  $n=66$ ) and school (66.3%,  $n=61$ ), followed by home (20.7%,  $n=19$ ) and, finally, hospital (8.7%,  $n=8$ ). Regarding the type of intervention, the majority reported a complement between direct with indirect intervention (76.1%,  $n=70$ ). The frequency of the intervention reported was mostly weekly (76.1%,  $n=70$ ) and the duration of each session was

mostly between 30 and 45 minutes (52.2%, n=48) or between 45 minutes and one hour (43.5%, n=40). Regarding communicative partners who participate or had participated in the intervention, most SLPs reported parents or other caregivers (93.5%, n=86) and preschool teachers (70.7%, n=65); only 25 per cent (n=23) included peers (children of similar age). Considering the degree of confidence in the intervention with preschool-age children with ASD, 2.2 per cent (n=2) responded that their confidence was very high; 14.1 per cent (n=13) considered it to be high; 62 per cent (n=57) considered it to be reasonable; 20.7 per cent (n=19) reported low confidence; and 1.1 per cent (n=1) reported very low confidence in the intervention process.

### *Developmental Language Disorder*

Considering the length of professional practice of the SLPs that were working or had worked with preschool-age children with pragmatic needs arising from DLD, 41.9 per cent (n=13) reported working with one to six children with DLD; 35.5 per cent (n=11) stated they were working or had worked with six to 20 children with DLD; and only 22.6 per cent (n=7) had worked with more than 20. According to our study, most children with DLD were referred to SLPs by preschool teachers (64.5%, n=20), paediatricians (51.6%, n=16), or other SLPs (35.5%, n=11), mostly between three and six years of age (90.3%, n=28). Only one (3.1%) of the SLPs mentioned early referral (under two years old) and 6.5 per cent (n=2) reported that referral occurs between two and three years old. Most of the actions performed by SLPs in this population were related to the intervention (96.8%, n=30) and assessment (87.1%, n=27), prevention being the area with the lowest percentage (19.4%, n=6).

Most of the SLPs reported conducting an informal assessment (93.5%, n=29) and did not use any specific programme, approach or method during the intervention (90.3%, n=28). Of the 9.7 per cent (n=3) who reported using some programme, method or approach, they mentioned the PICP (Pereira et al., 2019, 2021). The two most mentioned intervention contexts were school (71%, n=22) and the clinic (58.1%, n=18), followed by home (6.5%, n=2) and, finally, hospital (3.2%, n=1). Regarding the type of intervention, the majority reported complementing direct with indirect intervention (77.4%, n=24). The frequency of the intervention reported was mostly weekly (67.7%, n=21) and the duration was mostly between 30 and 45 minutes (67.7%, n=21) or 45 minutes to one hour (32.3%, n=10). Regarding communicative partners who participated in the intervention, most SLPs reported preschool teachers (77.4%, n=24), parents, or other caregivers (74.2%, n=23) and only 25.8 per cent (n=8) included peers. Regarding the degree of confidence in the intervention with preschool-age children with DLD and pragmatic impairment, 3.2 per cent (n=1) mentioned a very high degree of confidence; 9.7 per cent (n=3) reported a high level of confidence; 48.4 per cent (n=15) considered their level of confidence to be reasonable; 32.3 per cent (n=10) reported having low confidence and 6.5 per cent (n=2) very low confidence in the intervention process.

Table 1 summarises the quantitative information regarding professional practice in the field of pragmatics.

### **Discussion**

This study aimed to explore the current practices of Portuguese SLPs working with preschool-age children with pragmatic impairment and to identify the Portuguese SLPs'

**Table 1.** Summary of Portuguese speech-language pathologists' professional practice in the field of pragmatics

	ASD (32.2%, n=92)	DLD (10.8%, n=31)
Caseload	1–6 (43.5%, n=40) 7–20 (33.7%, n=31) >20 (22.8%, n=21)	1–6 (41.9%, n=13) 7–20 (35.5%, n=31) >20 (22.6%, n=7)
Roles of the SLPs*	Intervention (97.8%, n=89) Assessment (85.9%, n=79) Prevention (13%, n=12)	Intervention (96.8%, n=30) Assessment (87.1%, n=27) Prevention (19.4%, n=6)
Referral process	<u>Professionals*</u> Paediatricians (87%, n=80) Preschool Teachers (44.6%, n=41) Paedopsychiatrists (44.6%, n=41) <u>Age</u> 2–3 (50%, n=46) 4–6 (43.5%, n=40) <2 (6.5%, n=6)	<u>Professionals*</u> Preschool Teachers (64.5%, n=20) Paediatricians (51.6%, n=16) Other SLPs (35.5%, n=11) <u>Age</u> 4–6 (90.3%, n=28) 2–3 (6.5%, n=2) <2 (3.1%, n=1)
Assessment	Informal (90.2%, n=83)	Informal (93.5%, n=29)
Intervention	Use of methods, programmes or approaches	None (91.3%, n=84)
	Contexts*	None (90.3%, n=28)
	Clinic (71.7%, n=66) School (66.3%, n=61) Home (20.7%, n=19) Hospital (8.7%, n=8)	School (71%, n=22) Clinic (58.1%, n=18) Home (6.5%, n=2) Hospital (3.2%, n=1)
	Type of intervention	Mixed (76.1%, n=70)
	Frequency of the sessions	Mixed (77.4%, n=24)
	Weekly (76.1%, n=70)	Weekly (67.7%, n=21)
	Length of each session	30–45 min (52.2%, n=48) 45 min–1h (43.5%, n=40)
	30–45 min (67.7%, n=21) 45 min–1h (32.3%, n=40)	
	Communicative partners involved*	Parents/Caregivers (93.5%, n=86) Preschool Teachers (70.7%, n=65) Peers (25%, n=23)
	Parents/Caregivers (77.4%, n=24) Preschool Teachers (74.2%, n=23) Peers (25.8%, n=8)	
	Level of confidence	Reasonable (62%, n=57) Low (20.7%, n=19) High (14.1%, n=13) Very high (2.2%, n=2) Very low (1.1%, n=1)
	Reasonable (48.4%, n=15) Low (32.3%, n=10) High (9.7%, n=3) Very high (3.2%, n=1) Very low (6.5%, n=2)	

\*The respondents could choose more than one option.

needs in the field of pragmatics. Both similarities and differences are found when comparing the patterns of practice of Portuguese SLPs with children with ASD and DLD and those described in other studies. The results of this survey will also be compared with Portuguese data collected during the COST Action IS1406.

The main findings suggest that many SLPs are working or have worked with preschool-age children with pragmatic impairment arising from both ASD and DLD, which appears to be in accordance with the study conducted by the American Speech-Language-Hearing Association in 2020, where at least 85 per cent of SLPs served students with ASD and language disorders (pragmatics/social communication) (American Speech-Language-Hearing Association, 2020). However, Portuguese survey results point to fewer cases per SLP.

The study revealed that only a minority of Portuguese SLPs had attended additional education (e.g., post-graduate) in the field of pragmatics, and not all have addressed early ages. Considering the needs felt in this area, most of the respondents would like to have more knowledge and skills about assessment and intervention, probably because these are the major areas of practice identified with preschool-age children with pragmatic impairment. This indicates a strong desire amongst Portuguese SLPs to obtain additional education and practical training in pragmatic language.

The survey results also report that the majority of Portuguese SLPs perform an informal assessment to evaluate pragmatic language skills, which may be related to the fact that, at the time of data collection, there was only one pragmatic assessment instrument validated and standardised for European Portuguese children from 18 up to 47 months, this being the Language Use Inventory (Guimarães et al., 2013; O'Neill, 2009), which is a parent report. Additionally, the complex nature of pragmatics may lead SLPs to prefer informal to standardised assessment.

Concerning intervention, it was found that the majority of the respondents did not follow any specific method, programme or approach regardless of the child's condition, and that only one programme – PICP, the only intervention programme developed and content validated for preschool-age European Portuguese children with pragmatic impairment (Pereira et al., 2019, 2021) – was mentioned by Portuguese SLPs who worked with children with DLD. As mentioned earlier, some research has been conducted to determine the effects of pragmatic interventions on children with neurodevelopmental disorders, especially with ASD and DLD. However, for DLD, there are significantly fewer intervention studies targeting pragmatics when compared to other language domains (Jensen de López et al., 2022; Murphy et al., 2016), which certainly conditions clinical practice. Considering that there is only one pragmatic intervention programme available in Portugal, this result was to be expected. This survey also reports that the PICP (Pereira et al., 2019, 2021) is not only used by Portuguese SLPs who work with preschool-age children with DLD but also with those with ASD. A non-randomised controlled trial about the effects of the PICP is ongoing and includes children with pragmatic impairment arising from both ASD and DLD. The first research findings suggest that the PICP improves language in preschool-age children with ASD and DLD with pragmatic difficulties, but additional research is needed to analyse the effects of the PICP for each neurodevelopmental disorder individually (Pereira et al., 2022). The length and frequency of the intervention sessions also follow an identical pattern for ASD and DLD (most report 30 to 45 minutes for session length and weekly for frequency), as well as the type of intervention, which is mostly a complement of direct and indirect management. These results are in accordance with Parsons et al. (2017), who stated in their systematic review of pragmatic language interventions for children with ASD that the most common frequency session was weekly. Regarding DLD, the length and frequency of intervention sessions also meet those described in Castro et al. (2019), who report the Portuguese data collected in the scope of the COST Action IS1406, and Gerber et al. (2012). Concerning the type of intervention, the results reflect what was mentioned by Jensen de López et al.

(2022) in their systematic review, and intervention is mostly a mix of direct and indirect management.

Considering the intervention setting, Portuguese SLPs developed their work with pragmatic impairment more in clinical and school settings and less in hospitals and homes. In the case of ASD, the most frequent intervention context was the clinic, and in the case of DLD, preschool. These results reflect what was mentioned by Parsons et al. (2017) for ASD and by Jensen de López et al. (2022) for DLD. However, despite the school being one of the privileged settings of action for Portuguese SLPs, peers are not the most present communicative partners in the intervention process, giving way to parents or other caregivers (when managing children with ASD) and preschool teachers (when managing children with DLD). The literature suggests that the use of typically developing peers in group interventions increases the social interactions of children and adolescents with ASD, and promotes skill maintenance and generalisation (Watkins et al., 2015), so future intervention studies may benefit from including typically developing peers.

Regarding the referral process, the results reveal that the professionals who refer most ASD cases are paediatricians, whereas children with DLD with pragmatic impairment are mostly referred by preschool teachers. Castro et al. (2019) mentioned that children with DLD may be referred to SLPs by a range of different health and educational professionals. Taking into account the previously mentioned results of the intervention context, there seems to be a relationship between the intervention context and the professional who refers the children (clinic – paediatrician; preschool – preschool teacher). In addition, the results of the survey revealed that children with ASD are mostly referred to SLPs when they are between two and three years old (50%,  $n=46$ ) and children with DLD are mostly referred between the ages of three and six (90.3%,  $n=28$ ). The fact that many children with ASD may be referred earlier could be related to the potential for early diagnosis of ASD with the advancement of ASD screening and diagnostic tools (Leader et al., 2022), whereas a timely diagnosis of DLD, according to Fisher (2017), can be performed between four and five years old. In line with the American Academy of Pediatrics, Zwaigenbaum et al. (2015) recommended initiating interventions as soon as a diagnosis of ASD is seriously considered or determined. It has also been suggested that interventions initiated before three years of age may have a greater positive impact. In Portugal, an ongoing study intends to characterise the pathway of children with ASD from early symptoms to diagnosis and will provide valuable information about the Portuguese reality.

Most respondents felt a reasonable degree of confidence when working with preschool-age children with pragmatic impairment, regardless of whether they were associated with ASD or DLD, while only a small percentage reported a high or very high degree of confidence. These results can be explained by the caseload of SLPs (the majority reporting having worked with one to six cases during their practice), and by the reported insufficient education in the field of pragmatics and insufficient access to validated assessment and intervention tools. Therefore, it will be essential to include further content related to pragmatic language in SLPs' undergraduate and post-graduate curricula.

Some limitations need to be acknowledged. Firstly, considering the data collection method, although it involves little cost and allows the collection of a large amount of data, it presents other limitations such as the inability to clarify any doubts the respondents might have while completing the questionnaire, and the fact that these results might have generated non-representative results from the target population. Beyond the type of intervention (direct, indirect, mixed), it would also be useful to know the preferred mode of delivery (individual/group) of Portuguese SLPs for each condition and how respondents perceived or defined pragmatics. This study provides an insight into the current

practices of Portuguese SLPs with preschool-age children with pragmatic impairment. The choice of effective service delivery is a major concern for practitioners, service commissioners, and policymakers. Thus, the results of this survey will be helpful for clinical service providers and can guide future clinically relevant research.

Although pragmatic language difficulties are a core feature of ASD, children with DLD may also manifest difficulties in this language domain throughout childhood, and so the inclusion of pragmatics in intervention programmes for children with DLD is mandatory (Jensen de López et al., 2022). There seems to be a clear need for further research on the effectiveness of pragmatic interventions, especially for children with DLD (Jensen de López et al., 2022), and across languages other than English. It is important to establish guidelines about what type of content, context and level of intensity is most effective for treating pragmatic impairment in ASD and DLD.

Furthermore, the generalisation of pragmatic language skills to the everyday activities of the child and the longitudinal effects of pragmatic language interventions for children with ASD and DLD are largely unknown, so future intervention studies should also include outcome measures that explore if the intervention has been generalised into other contexts and provide evidence for the sustainability of the results (follow-up) to guide clinical decision-making. Additionally, this research highlights the needs perceived by Portuguese SLPs to improve their services (e.g., more academic training in graduate and post-graduate programmes), which may provide future directions for the development of academic curricula and professional courses.

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