

Prosodic Abilities

in Children and Young Adults with Typical & Non-Typical Development



Summary

➤ Introduction:

- Prosodic abilities
- Prosody and Autism

- Portuguese translation and adaptation of the Profiling Elements of Prosody in Speech-Communication (PEPS-C);

- Developmental profile of prosodic abilities for Portuguese speakers

➤ Prosodic Impairments: Asperger Syndrome & High-Functioning Autism

Introduction

- ▶ The acquisition of prosodic skills begins in the first month of life and reaches the adult level by puberty.
 - ▶ Atypical prosodic patterns act as serious barriers to communication and may affect the process of language acquisition.
- It is essential to study prosodic acquisition and prosodic impairments in normative and clinical populations, in order to understand how prosodic delays or disorders affect the child's growth.

Prosodic Impairments in Autism

- ▶ Within the large body of literature on language impairments in individuals with ASD, a substantial number of studies agrees for the existence of prosodic problems as a central feature (e.g. Shriberg et al., 2001; McCann & Peppé, 2003; Paul et al., 2005, 2009; Diehl et al., 2009; Green and Tobin, 2009; Sharda et al., 2010; Bonneh et al., 2011; Nadig & Shaw, 2011).
- ▶ In fact, it appeared amongst the clinical features in the original description of Kanner (1943) and Asperger (1944); and currently diagnostic tools of autism still include atypical expressive prosody as a feature of the disorder (the Autism Diagnostic Interview-Revised, ADI-R; Lord, Rutter, & Le Couteur, 1994; and the Autism Diagnostic Observation Schedule, ADOS; Lord et al., 1989).
- ▶ These speech characteristics are contributors to others' impressions, and even small perceptually noticeable prosodic characteristics can lead to negative impressions (Paul et al. 2005; Shriberg et al., 2001; Van Bourgondien & Woods, 1992).

Autism

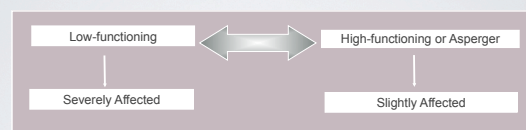
Autism spectrum disorder (ASD) is a neurodevelopmental disorder that involves impairments in:



It is a disorder that begins before the 36 months of age (APA, 2013) and social deficits are frequently seen as the primary factor:

Autism

A wide range of variability characterizes the autistic spectrum:



Aims

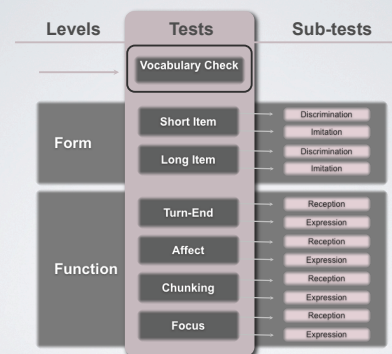
- Portuguese translation and adaptation of the Profiling Elements of Prosody in Speech-Communication (PEPS-C);
- Contribute with a developmental profile of prosodic abilities for European Portuguese speakers;
- Analyse prosodic impairments in autism.

Portuguese translation and adaptation of the Profiling Elements of Prosody in Speech-Communication (PEPS-C)

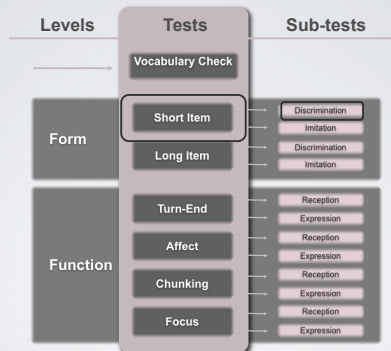
Portuguese translation and adaptation of the Profiling Elements of Prosody in Speech-Communication (PEPS-C)

- **Validation of the auditory stimuli:** After the recording process, 114 native adolescents and adult speakers categorized the prosodic patterns in forced-choice tasks.
- **Validation of the visual stimuli:** 68 children aged between 5 and 15 years participated in a naming task. Agreement percentage above 75% was required for the visual stimuli to be included in the final EP version.

PEPS-C



PEPS-C



Ex. I

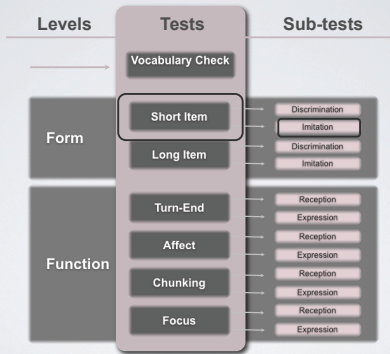


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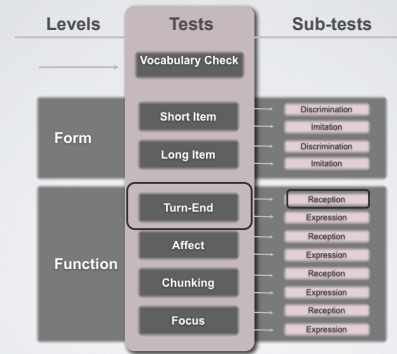


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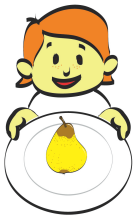
PEPS-C



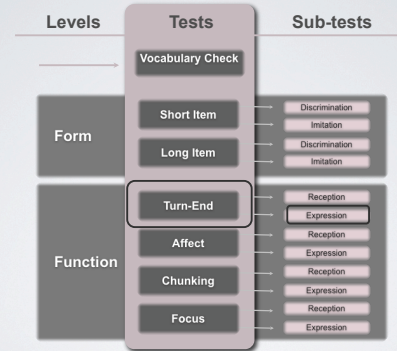
PEPS-C



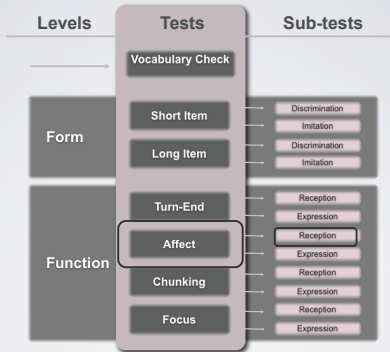
Ex.1



PEPS-C



PEPS-C

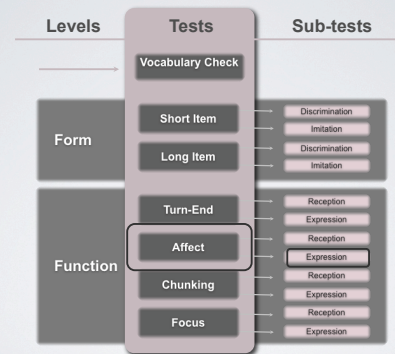


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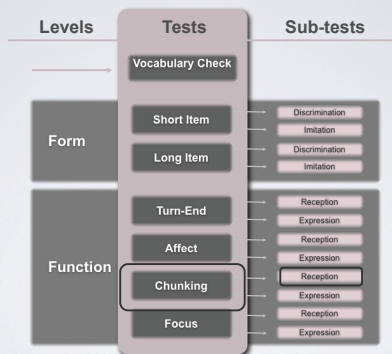




PEPS-C



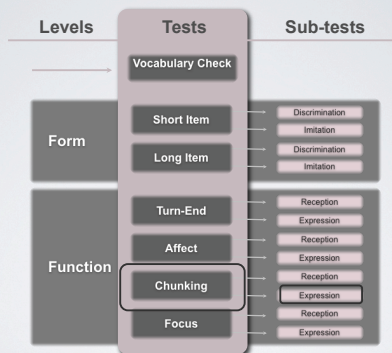
PEPS-C



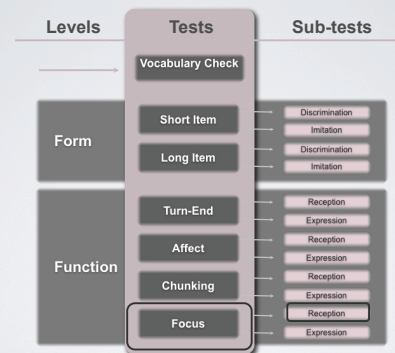
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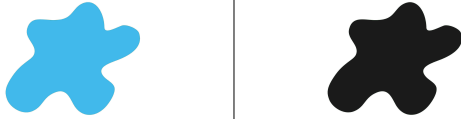
PEPS-C



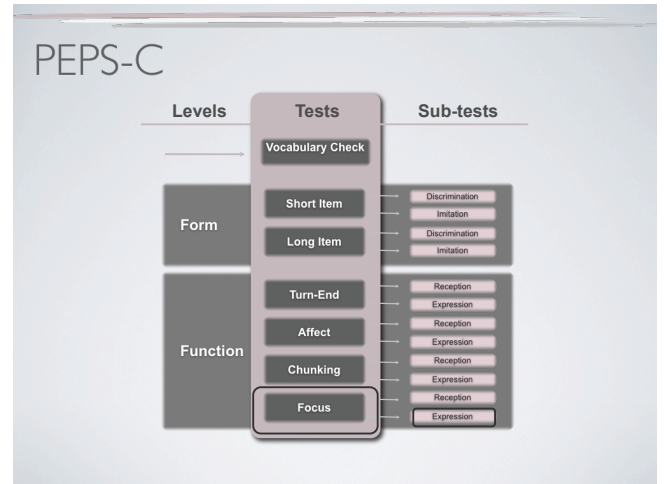
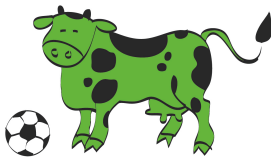
PEPS-C



Ex.1



Ex.1



Developmental profile of prosodic abilities for Portuguese speakers

Developmental profile of prosodic abilities for Portuguese speakers

- Participants
 - 109 children:
 - 5 / 6 years-olds ($n = 14$; $M = 5.14$; $SD = 0.36$);
 - 7 years-olds ($n = 19$; $M = 7.54$; $SD = 0.26$);
 - 8 years-olds ($n = 18$; $M = 8.14$; $SD = 0.38$);
 - 9 - 10 years-olds ($n = 20$; $M = 9.40$; $SD = 0.50$);
 - 11 - 14 years-olds ($n = 22$; $M = 12.91$; $SD = 1.06$);
 - 15 - 18 years-olds ($n = 16$; $M = 16.25$; $SD = 1.29$).
 - All were native speakers of European Portuguese, born and raised in monolingual homes in the North of Portugal, with no visual or hearing problems.
- Material
 - PEPS-C for European Portuguese speakers (Peppé & McCann, 2003; Filipe & Vicente, 2011; Filipe, Vicente, & Frota, in preparation)
- Procedure
 - The administration of PEPS-C was conducted in one session during 45 minutes. Half of the participants started with the receptive tasks and the other half with the expressive tasks.

Developmental profile of prosodic abilities for Portuguese speakers



- The results support the idea that prosody continues to develop throughout the school years, and that the period between 5 to 7 years is an important stage for the maturation of prosodic skills in European Portuguese.
- These findings are broadly in line with what is known about prosodic development in Western European Romance languages.
- These results from typically developing European Portuguese children should be useful for educators, teachers, therapists, and other professionals, providing information guidelines about the development and mastery of prosodic skills between 5 and 18 years of age.

Prosodic Impairments: Asperger Syndrome & High-Functioning Autism

Prosodic Impairments: Asperger Syndrome

• Participants

- Clinical group: 12 (2 girls) aged between 8 to 9 years ($M = 8.58$, $SD = 0.51$); they all met the ICD-10 (World Health Organization, 1992) and DSM-IV-TR (American Psychiatric Association, 2000) criteria for AS.
- TD group: 10 boys & 7 girls matched to the AS children on average age and non-verbal intellectual level assessed with the Raven's Coloured Progressive Matrices (Raven's CPM; Raven, 1995).
- 35 Portuguese undergraduate students participated in the study.

• Material & Procedure

- To capture the children's ability to distinguish statements from questions, we used the Turn-End subtest of the Profiling Elements of Prosody in Speech-Communication (PEPS-C; Peppé & McCann, 2003) adapted to European Portuguese. The children were assessed in a quiet room of their school in one individual session lasting for approximately 30 minutes.
- Atypicality judgments: All the 32 utterances from one child were sequentially arranged with a 4-second inter-stimulus interval; 29 tapes were produced, one per child. Adult participants used a 5-point scale from common to uncommon to rate how natural or odd the utterances sounded.

Prosodic Impairments: Asperger Syndrome

- The results support the idea that the prosodic contours associated to statements and questions expressed by intonation in children with AS were categorically accurate for both receptive and expressive skills.
- However, acoustic measurements of AS children speech showed alterations in duration and pitch, and children with AS had greater variability in fundamental frequency contours compared to typically developing peers.
- Additionally, perceptual ratings of other people's perception of AS children speech revealed atypical expressive prosodic features when compared to TD children. Judges perceived AS children's productions as sounding significantly more atypical or uncommon ($F(1, 27) = 10.98$; $p = 0.003$).
- These findings indicate that although the perception of statement and question intonation is not impaired in AS children, the acoustic form of the utterances they produced is.

Prosodic Impairments: High-Functioning Autism (HFA)

• Participants

- Clinical group: 15 (3 girls) aged between 6 to 9 years ($M = 7.40$, $SD = 1.12$); they all met the DSM-V (American Psychiatric Association, 2013) criteria for HFA.
- TD group: 15 peers matched on age ($M = 7.53$, $SD = 0.99$) and gender.

• Material

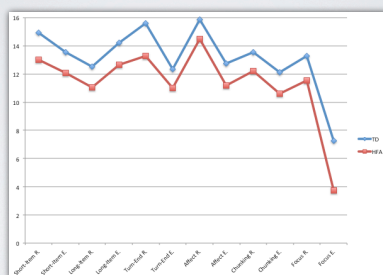
- Prosodic Abilities: PEPS-C - European Portuguese Version (Peppé & McCann, 2003)
- Non-verbal Intelligence: Raven's Coloured Progressive Matrices (RCPM)
- Language: Sub-scale Language - Griffiths Mental Development Scales
- Vocabulary: Peabody Picture Vocabulary Test
- Pragmatics: Pragmatic Protocol
- Attention: Children's Color Trails Test (CCTT)
- Executive Functions: Behavior Rating Inventory of Executive Function (BRIEF)

• Procedure

- 3 to 5 sessions completed within a month and lasting approximately 45 minutes each.

Prosodic Impairments: High-Functioning Autism (HFA)

PEPS-C Results



Prosodic Impairments: High-Functioning Autism

- The results showed significant correlations in the HFA for prosody, nonverbal intelligence, attention, language and vocabulary.

	Prosody	Nonverbal Intelligence	Language	Vocabulary	Pragmatics	Attention
TD						
Nonverbal Intelligence	.65*					
Language	.24	.31				
Vocabulary	.21	.33	.67***			
Pragmatics	.28*	.26*	.09	-.03		
Attention	-.05	-.16	-.38	-.36*	.04	
Executive Function	.23	.092	.04	.09	.40	-.19
HFA						
Nonverbal Intelligence	.85**					
Language	.76*	.60**				
Vocabulary	.50*	.54*	.82***			
Pragmatics	.33	.45	.25	.18		
Attention	.52*	.26*	.45	.30	.19	
Executive Function	-.08	-.18	.08	-.03	-.58	-.27

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

Prosodic Impairments: High-Functioning Autism

We control the correlated variables and examined if the performance in a prosodic test was different between groups.

- When we control for nonverbal intelligence, results showed differences in the Short-Item Discrimination and Turn-end Reception ($F(1, 28) = 4.265, p = 0.049; \eta^2 = .136; F(1, 28) = 5.362, p < .028; \eta^2 = .166$, respectively).
- Once we control for attention, the differences in the Short-Item Discrimination disappear.
- After language and vocabulary were included in the model this difference disappear.

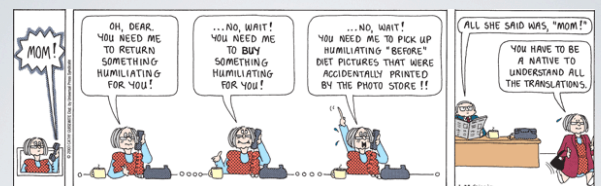
We also analysed if there was "form/function dissociation" in autism. The analysis showed that both groups of children revealed better performance in the function level, as compared to form level, however, there was no significant prosody level by diagnosis interaction.

Conclusion

- The inconsistent picture of prosody in autism draw by research can be a result of the methodological problems related with the assessment of prosody, poor diagnostic data, small samples sizes, and lack of appropriate comparison groups. However other basic deficits in prosodic impairments that are heterogeneous in this population might contribute for this variability.
- Prosody in autism should be explored in the context of linguistics, cognitive science, and neuropsychological perspectives.

Referências

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Thank You!!