

## Supplement Article

# A Diagnostic Marker to Discriminate Childhood Apraxia of Speech From Speech Delay: Introduction

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**Purpose:** The goal of this article is to introduce the pause marker (PM), a single-sign diagnostic marker proposed to

discriminate early or persistent childhood apraxia of speech (CAS) from speech delay.

It has been 60 years since Muriel Morley's influential observations of children whose speech and prosodic errors resembled a pediatric form of adult-onset apraxia of speech (Morley, 1957). The research reported in this *Journal of Speech, Language, and Hearing Research* supplement was motivated by the need for a behavioral marker to enable development of a biomarker and an explanatory account of the disorder that Morley described. We suggest that the lack of a conclusive diagnostic marker to identify what is currently termed *childhood apraxia of speech* (CAS) has been the critical constraint on research to understand, treat, and prevent this disorder and a primary factor underlying its notable overdiagnosis worldwide. The goal of the four articles in this series to follow (for efficiency: PM I, PM II, PM III, and PM IV) was to develop and validate a diagnostic marker that discriminates early and persistent CAS from speech delay (SD), a prevalent and typically severe subtype of childhood speech sound disorders defined in PM I.

PM I provides rationale, concepts, and methods for the PM, the proposed diagnostic marker of CAS. Discussions

include an examination of criteria for diagnostic markers, an update on the conceptual and procedural framework for the PM termed the *Speech Disorders Classification System*, and description of the PM.

PM II describes findings from validity studies interpreted as support for the use of the PM in research and clinical contexts.

PM III reports findings from studies of the theoretical coherence of the PM with representational and transcoding processes proposed to be the core speech-processing deficits in CAS.

PM IV describes an ordinal CAS severity scale termed the *Pause Marker Index* and reports validity and temporal stability findings.

## Reference

Morley, M. (1957). *The development and disorders of speech in childhood*. London: Churchill Livingstone.

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## List of Acronyms and Abbreviations

The following acronyms and abbreviations are used for terms that occur in PM I–PM IV.

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22q11.2	22q11.2 deletion syndrome
AAS	Adult-onset apraxia of speech
AOS	Apraxia of speech
CASI	Childhood apraxia of speech–idiopathic
CASN	Childhood apraxia of speech–neurogenetic
CWT	Challenging Words Task
CAS	Childhood apraxia of speech
CPSA	Competence, precision, and stability analytics
CND	Complex neurodevelopmental disorders
CSS	Conversational speech sample
DMI	Diacritic Modification Index
DDK	Diadochokinesis Task
DS	Down syndrome
DI	Dysarthria Index
DSI	Dysarthria subtype indices
EST	Emphatic Stress Task
EE	Excessive-equal stress
FXS	Fragile X syndrome
GALT	Galactosemia
GFTA-2	Goldman–Fristoe Test of Articulation–2
KBIT-2	Kaufmann Brief Intelligence Test, Second Edition
LST	Lexical Stress Task
MSAP	Madison Speech Assessment Protocol
MCS	Mayo Clinic System
MP	Misplaced stress
MSD	Motor speech disorder
MSD-CAS	Motor speech disorder–childhood apraxia of speech
MSD-DYS	Motor speech disorder–dysarthria
MSD-DYS&CAS	Motor speech disorder–dysarthria and childhood apraxia of speech
MSD-NOS	Motor speech disorder–not otherwise specified
MWT1	Multisyllabic Words Task 1
MWT2	Multisyllabic Words Task 2
NRT	Nonword Repetition Task
NSA	Normal(ized) speech acquisition
OWLS	Oral and written language scales
PM	Pause marker
PMI	Pause Marker Index
PCC	Percentage of consonants correct
PVC	Percentage of vowels correct
PSD	Persistent speech delay
PSE	Persistent speech errors
PPLM	Phonology Project Laboratory Manual
PSI	Precision–Stability Index
PPAOS	Primary progressive apraxia of speech
PEPPER	Programs to Examine Phonetic and Phonologic Evaluation Records
PVSP	Prosody-Voice Screening Profile
RST	Rhotics and Sibilants Task
SAR	Slow articulatory rate
SCI	Speech Competence Index
SD	Speech delay
SDCS	Speech Disorders Classification System
SE	Speech errors
SPT	Speech Phrases Task
SSD	Speech sound disorders
SPMS	Supplementary pause marker signs
SPMSI	Supplemental pause marker signs–indeterminate
CAS-S	Suspected childhood apraxia of speech
SCT	Sustained Consonant Task
SVT	Sustained Vowel Task
SRT	Syllable Repetition Task
TLDA	Ten linguistic domains analytics
TBI	Traumatic brain injury
VT1	Vowel Task 1
VT2	Vowel Task 2
VT3	Vowel Task 3

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