

DISORDERS 1

COMD570: Language Development

Language disorders & atypical development

- **Late Talkers**
- **Deafness and hearing loss**
 - **Cochlear implants (CI) and effects of sign language on oral speech development in deaf kids with CI**
- **Autism Spectrum Disorder (ASD)**
- **Dyslexia**
- **Specific Language Impairment (SLI) / Developmental Language Disorder (DLD)**
- **Relationship between dyslexia & SLI**

LATE TALKERS

Late Talkers

- **Late Talker:** a child under the age of 3 with unusually small vocabularies and no concomitant developmental disability or hearing impairments
- Overall, prognosis is good, with majority of late talkers transitioning to average range in language abilities by preschool

Late Talkers

- Late talkers continue to perform more poorly on language measures than typically developing peers throughout elementary school
- At elevated risk (6-44%) for functionally-impairing language or learning disorders (e.g., specific language impairment/development language disorder, SLI/DLD)
 - Risk is compounded by low SES, receptive language delay, and magnitude of expressive vocabulary delay

Delay v. Disorder?

- **Language delay:** language develops roughly normally but more slowly than typical
- **Language disorder:** speech and/or language develops in a way that is *qualitatively* different, or deviant, from typical development
- Many preschoolers with early language delay will outgrow it, others may develop into language disorders

Moyle et al. (2007)

NDW = number of different words (roughly, vocabulary)

MLU = Mean Length of Utterance

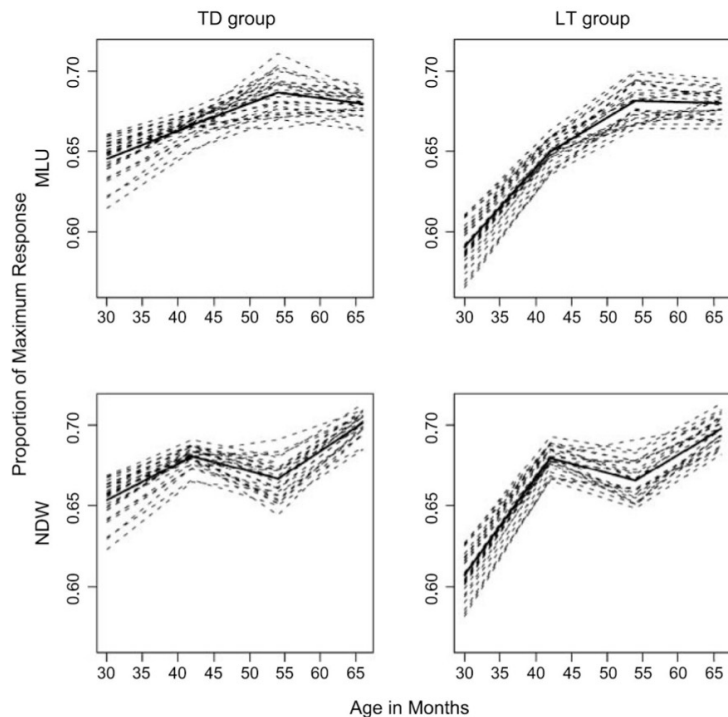


Figure 8. Individual developmental trajectories (dashed lines) and population means of MLU and NDW for TD and LT groups.

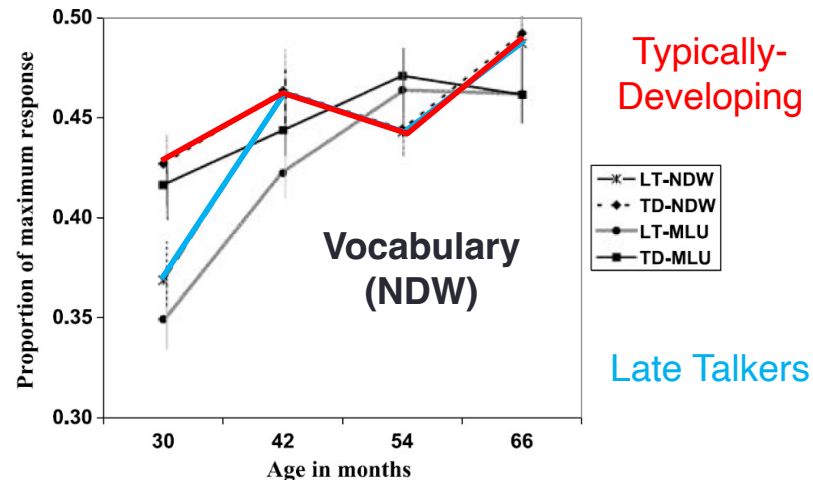


Figure 7. Population means by measure (number of different words, mean length of utterance) and group (typically developing, late talking). Vertical lines indicate confidence intervals. LT-NDW = Late Talkers–Number of Different Words; TD-NDW = Typically Developing–Number of Different Words; LT-MLU = Late Talkers–Mean Length of Utterance; TD-MLU = Typically Developing–Mean Length of Utterance.

Your language samples came from this dataset!

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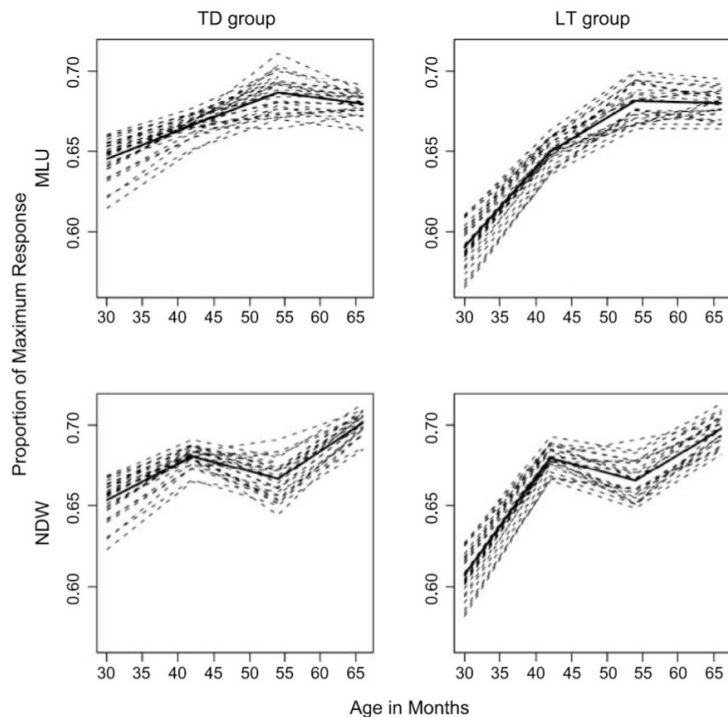


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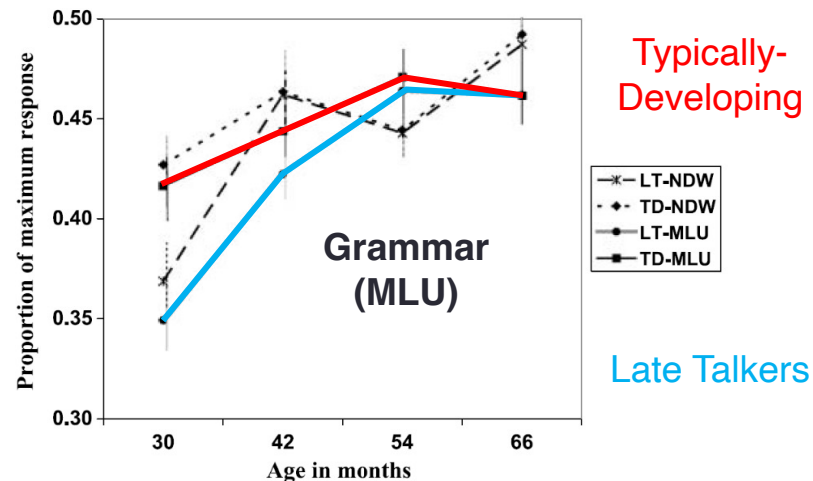


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DEAFNESS

COCHLEAR IMPLANTS

INFLUENCE OF SIGN LANGUAGE ON ORAL SPEECH DEVELOPMENT IN DEAF CHILDREN

Prelingual deafness/hearing loss

- **Congenital hearing loss:** present at birth
 - Hereditary: genetic condition affecting e.g. the cochlea or auditory nerve
 - Birth trauma
 - Prenatal exposure to infections, teratogens, etc.
 - 1.33 per 1,000 live births (00.13% of newborns)
- **Acquired hearing loss:** developed later in childhood
 - E.g. from Otitis media, an inflammatory disease of middle ear
- **Prelingual hearing loss:** onset before the age of 2

Hearing loss: language development

- Varying etiologies, onsets, and degrees of hearing loss
 - Some common comorbidities: vision problems, intellectual disability, learning disability
- Delays in phonological development
 - May be able to produce speech sounds in isolation, but connected speech typically has reduced intelligibility
 - Substitutions, distortions, and omissions common
 - Failure/difficulty differentiating voiced and voiceless consonants
 - Excessive use of neutral vowel /ə/ in place of other vowels

Hearing loss: language development

- Smaller vocabularies with immature word meanings are common
- Simpler sentences, fewer morphological inflections
- Fewer function words

Cochlear implants (CI)

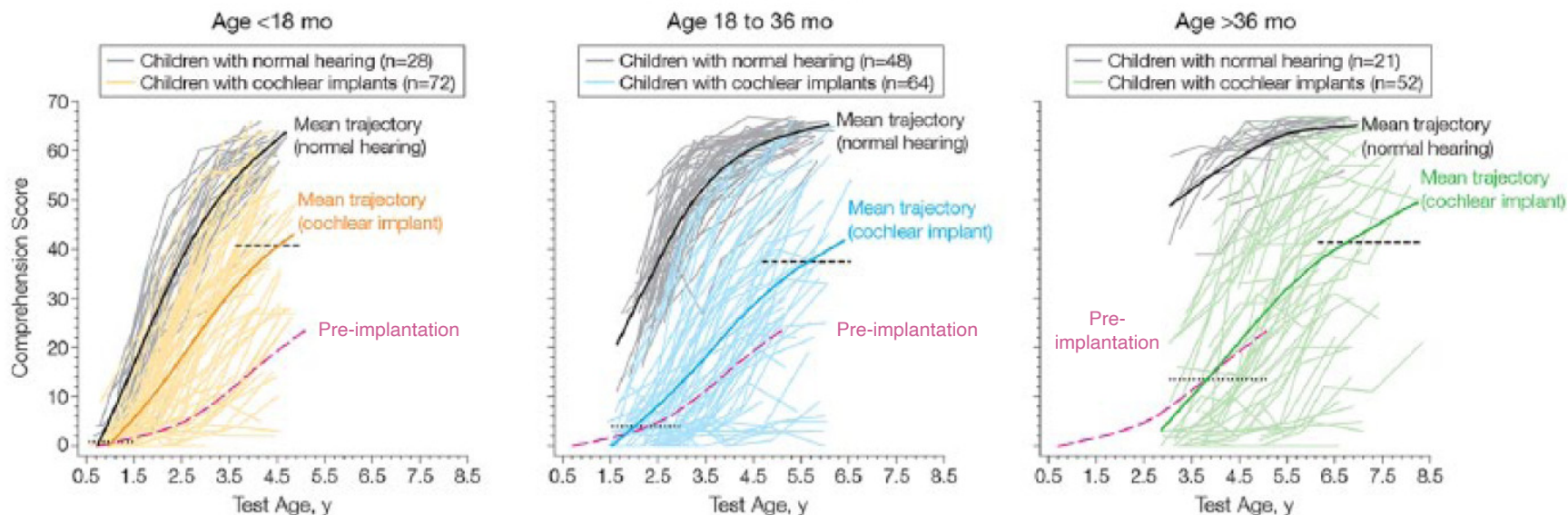
- **Cochlear Implant (CI)**
 - Artificial cochlea, bypasses the normal external hearing organs and cochlea
- Controversial within the deaf signing community
 - Treats deafness as a disease which can be “cured”
- Much degraded spectral resolution from normal hearing
 - Large range of frequencies collapsed into a much smaller number of channels
 - With training, allows the perception of speech and thereby acquisition and use of spoken language



CI: speech comprehension

- Cochlear implantation improves spoken language abilities
- Lots of variability; average scores are well below typically-developing children

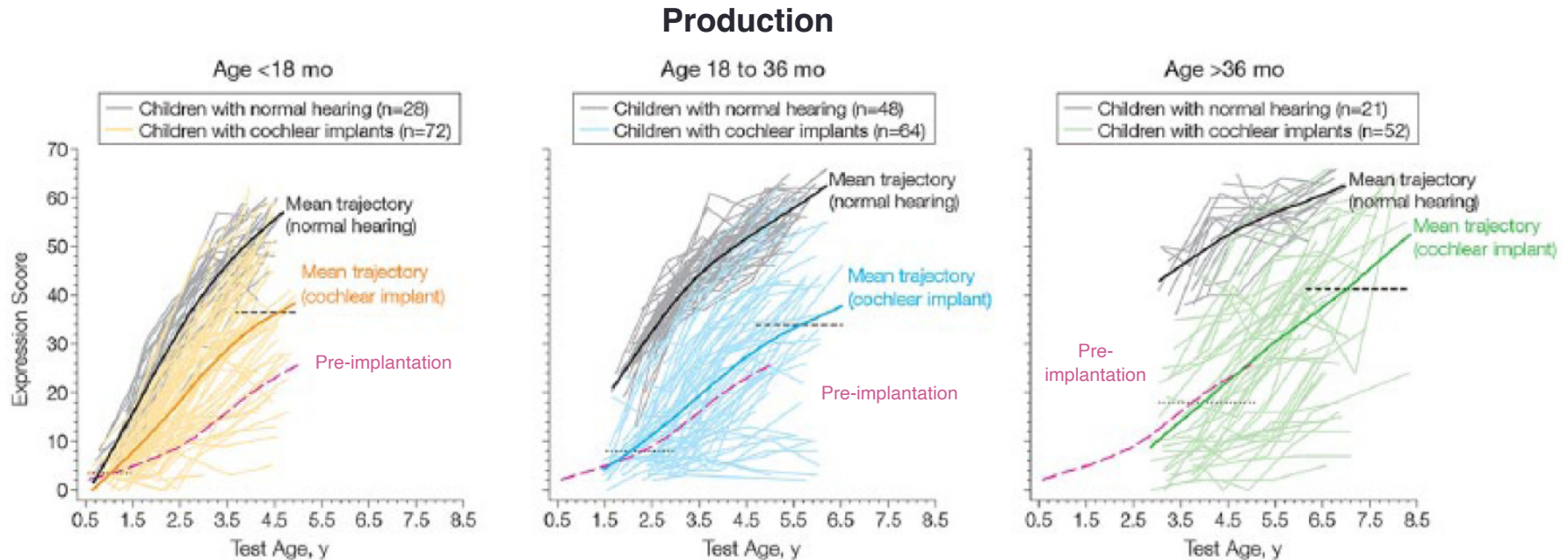
Comprehension



Hall et al., 2019 (reproduced from Niparko et al., 2010)

CI: speech production

- Cochlear implantation improves spoken language abilities
- Lots of variability; average scores are well below typically-developing children



Cochlear Implants

- After cochlear implants, children show rates of spoken language development that are better than would be expected given their preimplantation “baseline” abilities
 - Lots of variability and heterogeneity in outcomes
 - Overall abilities are worse than typically developing hearing children
- Younger age at implantation: steeper rates of growth in both comprehension and production
- Cochlear implants appear to be most advantageous when implanted before 18 months of age

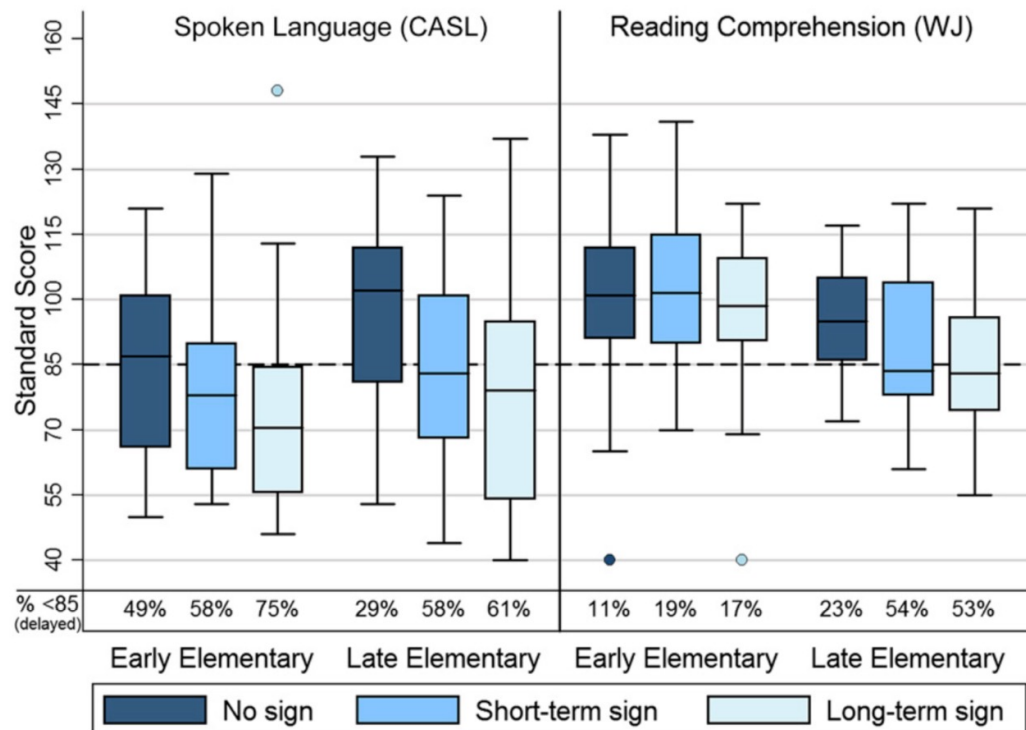
Does sign language inhibit spoken language development in kids with CI?

Oral speech development with CI and sign language

- An old notion is that sign language is a “crutch” that will inhibit the ability of a deaf child to learn sign language

Oral speech development with CI and sign language

- This study indicates that “sign language” may show a slightly negative effect on speech production abilities in deaf kids with CI



Oral speech development with CI and sign language

- Geers et al. (2017): “A child was classified as positive for **sign language exposure** ... if one of the following systems was reported by a parent as used at least **10% of the time** at home and/or in the child’s intervention program: **ASL, Total/Simultaneous Communication, baby sign, Signing Exact English, Signed English, sign language, sign support, or Pidgin sign**”
- Only ASL is clearly an actual language!
 - ASL proficiency not satisfactorily measured and assessed in these children
- Also, bilingualism is known to introduce temporary apparent delays that are overcome in time
 - Need to compare deaf kids with CI learning both speech & sign language with other bilinguals

Comparing deaf kids with CI to CODAs

- Better test: compare performance of two groups:
 - Deaf kids with CI, learning ASL & English from birth
 - Hearing kids without CI, learning ASL& English from birth (children of deaf adults, CODAs) (KODA)

Table 1 Individual age, implantation, and socioeconomic status information for participants

Participant	Age of first English testing	Age at first implantation	Years since CI	Mother's education (years)
Children with CIs				
PAM	4 years 0 months	2 years 11 months	1 year 1 month	16
NIK	5 years 5 months	1 year 4 months	4 years 1 month	16
GIA	5 years 7 months	1 year 6 months	4 years 1 month	18
FIN	5 years 8 months	1 year 7 months	4 years 1 month	21
MAX	6 years 4 months	1 year 8 months	4 years 8 months	16
Koda children ($n = 20$)				
Mean	6 years 0 months	N/A	N/A	14
Range	4 years 9 months– 8 years 2 months	N/A	N/A	12–21

Comparing deaf kids with CI to CODAs

- Conclusion: when appropriately controlled comparisons are made, sign language does not seem to be a problem
- Deaf kids with CI & early ASL exposure seem to perform equivalently to hearing multimodal bilinguals
 - No reason to be afraid of early sign language exposure (i.e., ASL)
 - Additional protective effect of early sign language exposure?

AUTISM

Learn more about Autism

- COMD

COMD 738

The Speech Pathologist's Role in Working with Children with Autism Spectrum Disorders (2 credits)

Fall 2022

Instructor: Jessica Klusek, Ph.D., CCC-SLP
Email: Klusek@sc.edu
Office: Close-Hipp, Room 269

Office Hours: by appointment

Class Time and Location: Wednesday 7:20-9:00 PM, Close-Hipp COMD Conference Room (Room 206)

Purpose & Description: Autism spectrum disorder (ASD) is a lifelong neurodevelopmental condition that affects 1 in 44 children in the United States. Speech-language pathologists are key team members in the assessment and treatment of autistic individuals. This graduate level elective course is an introduction to ASD for the speech-language-pathologist, and is intended to prepare speech-language pathologists to understand and serve this unique population. Content areas will include: diagnostic criteria and assessment, etiology, language and communication strengths and weaknesses, speech and language assessment, and interventions targeting language and communication.

Autism: Examples

- <http://www.youtube.com/watch?v=TSfeYedNUNM>
- <https://youtu.be/yjrleFa4-ts?t=60>

Autism: abnormal social reciprocity

- Abnormal social approach
- Lack of reciprocity
- Diminished sharing of interests
- Reduced sharing of emotions/affect
- Lack of initiating social interaction
- Poor social imitation

Autism: nonverbal social communication

- Impaired social use of eye contact
- Impaired understanding/use body postures
- Impaired understanding/use of gestures
- Vocal quality: abnormal volume, pitch, and intonation
- Abnormal use/understanding of affect: facial expressions, interpretation of nonverbal expressions
- Lack of coordinated verbal and nonverbal communication
- Lack of coordinated non-verbal communication

Autism: social relationships

- Developing & maintaining developmentally appropriate relationships
- Difficulties adjusting behavior to suit social contexts
- Difficulties sharing in imaginative play
- Difficulty making friends
- Absence of interest in others

Autism: stereotyped/repetitive behaviors

- Stereotyped speech:
 - Formal language, echolalia, rote language, idiosyncratic language, perseverative
- Repetitive speech
- Stereotyped/repetitive motor movements:
 - Rocking, flapping, repetitive play actions
- Stereotyped use of objects:
 - Lining things up, turning something off/on, opening/closing

Autism: rigidity

- Adherence to routines: insistence on sameness, unusual multi-step sequences of behavior
- Ritualized patterns: repetitive questioning, compulsions
- Resistance to change/transitions
- Rigid thinking: humor, literal speech vs. implied meaning, rule-bound in behavior or thought

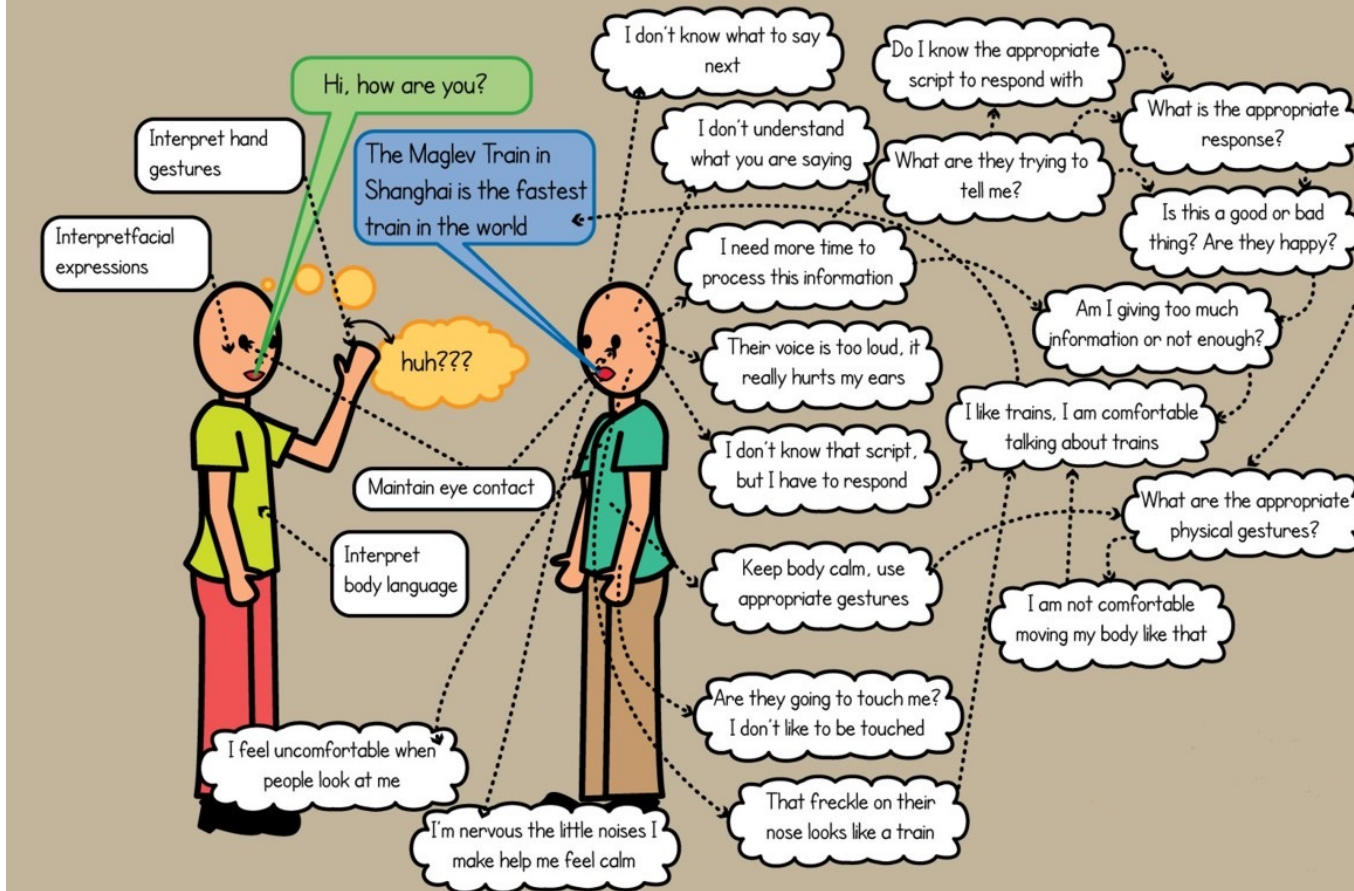
Autism: restricted interests

- Preoccupations, obsession
- Abnormal intensity
- Narrow range

Autism: atypical Sensory

- High pain tolerance
- Preoccupation with texture
- Unusual visual exploration
- Odd/atypical response or focus to sensory input
- Unusual sensory input

communication and autism



Autism: linguistic/structural impairments

- Varying Outcomes:
 - No expressive language at all
 - Various degrees of impairment/deviance
 - Clinically normal
- Developmental trajectories are diverse, but some common patterns have been identified:
 - Structured language is *usually* delayed early in life
 - Prototypical ASD language profile *usually* emerges by school age:
 - Least affected: articulation, syntax
 - Most affected: comprehension, semantics, idiosyncratic use of words

Autism: paralinguistic/pragmatic impairments

- Impairments in this domain are ubiquitous to ASD:
 - Conversations (Initiating, managing, switching topics, turn-taking, dominating)
 - Sequencing and story-telling
 - Signaling non-comprehension
 - Repairing miscommunication
 - Understanding other person's perspective, prior knowledge, assumptions
 - Inappropriate comments/questions
 - Modulating volume, intonation, personal space

Poor social cognition plays a role in pragmatic language deficits in ASD

Recap

- Late talkers
- Deafness
 - Cochlear implants (CI)
 - Sign language (non-)effects on oral speech development in deaf kids with CI
- Autism