Communication in Toddlers with Autism Spectrum Disorder

Philip Lai, MA, Ph.D.
Assistant Professor
Department of Communication Disorders

University of Nebraska-Kearney

History: 1943

- The term Autism is derived from the Greek *autos*, meaning ‘self’.
  - American psychiatrist Leo Kanner (by way of Austria-Hungary, present day Ukraine).
    - Kanner described 11 cases of autism, observing deficits in speech and cognitive function that emerged over time in young children (Kanner, 1943; 1968).

Leo Kanner's 1943 paper on autism

BY **GERALD D. FISCHBACH** / 7 DECEMBER 2007

Leo Kanner was the first scientist to clearly define autism.

Donald T. was not like other 5-year-old boys.

Leo Kanner knew that the moment he read the 33-page letter from Donald's father that described the boy in obsessive detail as "happiest when he was alone... drawing into a shell and living within himself... oblivious to everything around him." Donald had a mania for spinning toys, liked to shake his head from side to side and spin himself around in circles, and he had temper tantrums when his routine was disrupted.

When Kanner met Donald, his suspicions were confirmed. In addition to the symptoms the letter described, Kanner noted Donald's explosive, seemingly irrelevant use of words. Donald referred to himself in the third person, repeated words and phrases spoken to him, and communicated his own desires by attributing them to others.

Donald Gray Triplett

- Born September 1933
- In October 1938 Triplett was examined by Austrian child psychiatrist Leo Kanner at Johns Hopkins Hospital
- In 1958 he received a bachelor's degree in French from Millsaps College in Jackson, Mississippi.

https://www.theatlantic.com/magazine/archive/2010/10/autisms-first-child/308227/

What is Autism Spectrum Disorder?

- Diagnostic and Statistical Manual (DSM-5):

  A) Impairment in social interaction and social communication across multiple contexts

  B) Restricted interests and repetitive behaviors

  C) Symptoms must be present: early developmental period

  D) Symptoms cause clinically significant impairment in social, occupational, or current functioning

  E) These disturbances are not better explained by intellectual disability or global developmental delay

DSM-5 Criteria

What are the DSM-5 diagnostic criteria for autism?

In 2013, the American Psychiatric Association released the fifth edition of its Diagnostic and Statistical Manual of Mental Disorders (DSM-5).

The DSM-5 is now the standard reference that healthcare providers use to diagnose mental and behavioral conditions, including autism.

By special permission of the American Psychiatric Association, you can read the full-text of the new diagnostic criteria for **autism spectrum disorder** and the related diagnosis of **social communication disorder** below.

Also see: Answers to frequently asked questions about DSM-5 criteria for autism

Autism Spectrum Disorder

Diagnostic Criteria

A. Persistent deficits in social communication and social interaction across multiple contexts, as manifested by the following, currently or by history (examples are illustrative, not exhaustive, see text):

1. Deficits in social-emotional reciprocity, ranging, for example, from abnormal social approach and failure of normal back-and-forth conversation; to reduced sharing of interests, emotions, or affect; to failure to initiate or respond to social interactions.

2. Deficits in nonverbal communicative behaviors used for social interaction, ranging, for example, from poorly integrated verbal and nonverbal communication; to abnormalities in eye contact and body language or deficits in understanding and use of gestures; to a total lack of facial expressions and nonverbal communication.

3. Deficits in developing, maintaining, and understanding relationships, ranging, for example, from difficulties adjusting behavior to suit various social contexts; to difficulties in sharing imaginative play or in making friends; to absence of interest in peers.

Specify current severity

Severity is based on social communication impairments and restricted repetitive patterns of behavior. (**See Table below.**)

B. Restricted, repetitive patterns of behavior, interests, or activities, as manifested by at least two of the following, currently or by history (examples are illustrative, not exhaustive; see text):

1. Stereotyped or repetitive motor movements, use of objects, or speech (e.g., simple motor stereotypies, lining up toys or flipping objects, echolalia, idiosyncratic phrases).

2. Insistence on sameness, inflexible adherence to routines, or ritualized patterns or verbal nonverbal behavior (e.g., extreme distress at small changes, difficulties with transitions, rigid thinking patterns, greeting rituals, need to take same route or eat food every day).

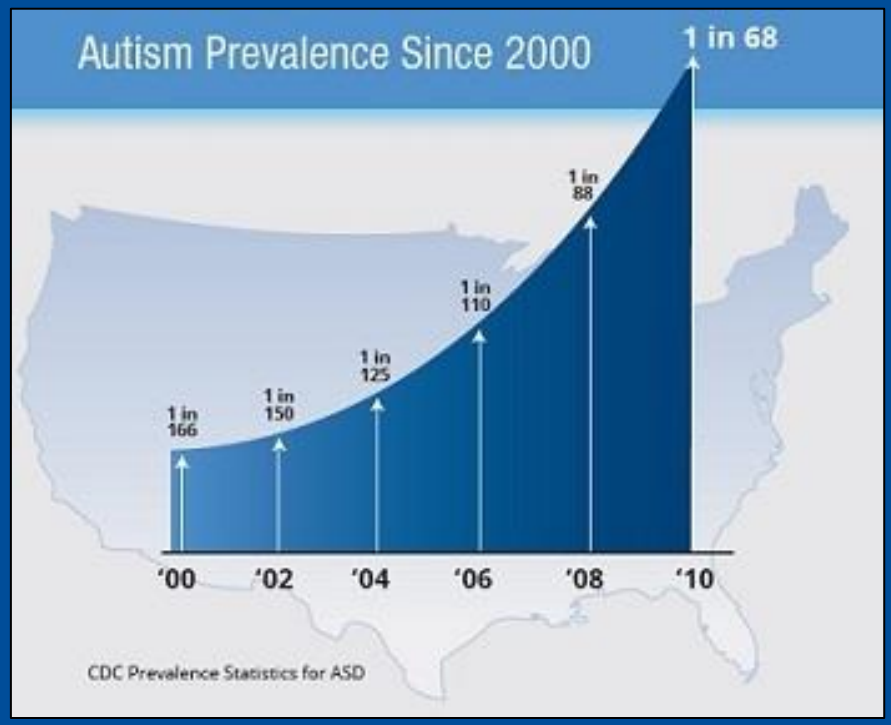
3. Highly restricted, fixated interests that are abnormal in intensity or focus (e.g, strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interest).

4. Hyper- or hyporeactivity to sensory input or unusual interests in sensory aspects of the environment (e.g., apparent indifference to pain/temperature, adverse response to specific sounds or textures, excessive smelling or touching of objects, visual fascination with lights or movement).

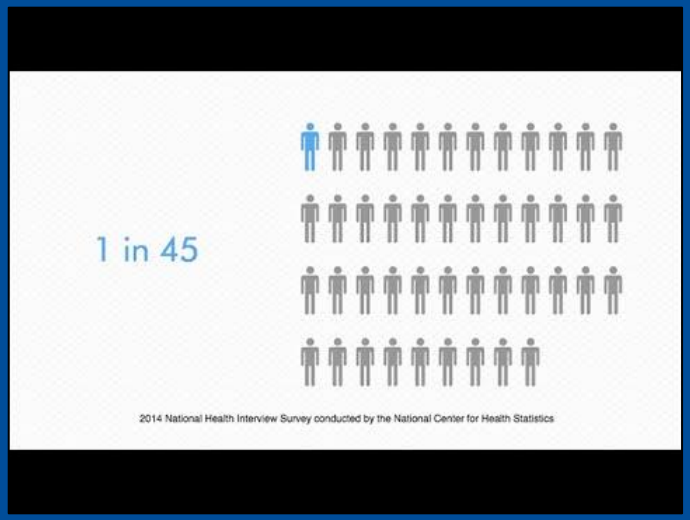
- Individuals with a well-established DSM-IV diagnosis of autistic disorder, Asperger's disorder, or pervasive developmental disorder not otherwise specified should be given the diagnosis of autism spectrum disorder.

- Individuals who have marked deficits in social communication, but whose symptoms do not otherwise meet criteria for autism spectrum disorder, should be evaluated for social (pragmatic) communication disorder.

Growing Public Health Concern



Autism Speaks calls for immediate national action plan. March 27, 2014



Based on parental questionnaire data collected in 2014 from the National Health Statistics Reports, CDC estimated the prevalence rate of ASD to be 1 in 45

(Zablotsky et al., 2015)

CDC (2022)

- Autism Spectrum Disorder (ASD) affects an estimated 1 in 44 children in the U.S.

- These estimates are based on data collected from health and special education records of children living in 11 communities across the United States during 2018.

CDC (2022)

- Boys were 4 times as likely to be identified with ASD as girls.
- The percentage of children identified with ASD varied widely among the 11 communities in this report, from 1.7% or 1 in 60 children in Missouri to 3.9% or 1 in 26 children in California.

CDC (2022)

- Among children identified with ASD who had IQ scores available, about one-third (35.2%) also had intellectual disability.

Autism and Developmental Disabilities Monitoring (ADDM) Network
https://www.cdc.gov/ncbddd/autism/addm.html

Great Variability

- ASD is a heterogeneous disorder
  - Symptoms ranging from individuals with intellectually disability who are nonverbal to individuals with high IQ/overly expressive.
  - One subgroup within the ASD population is individuals with high functioning autism (HFA).

Emergent Disorder

- Vary in the: rate of severity, timing of symptoms onset, and rate of lost skills.

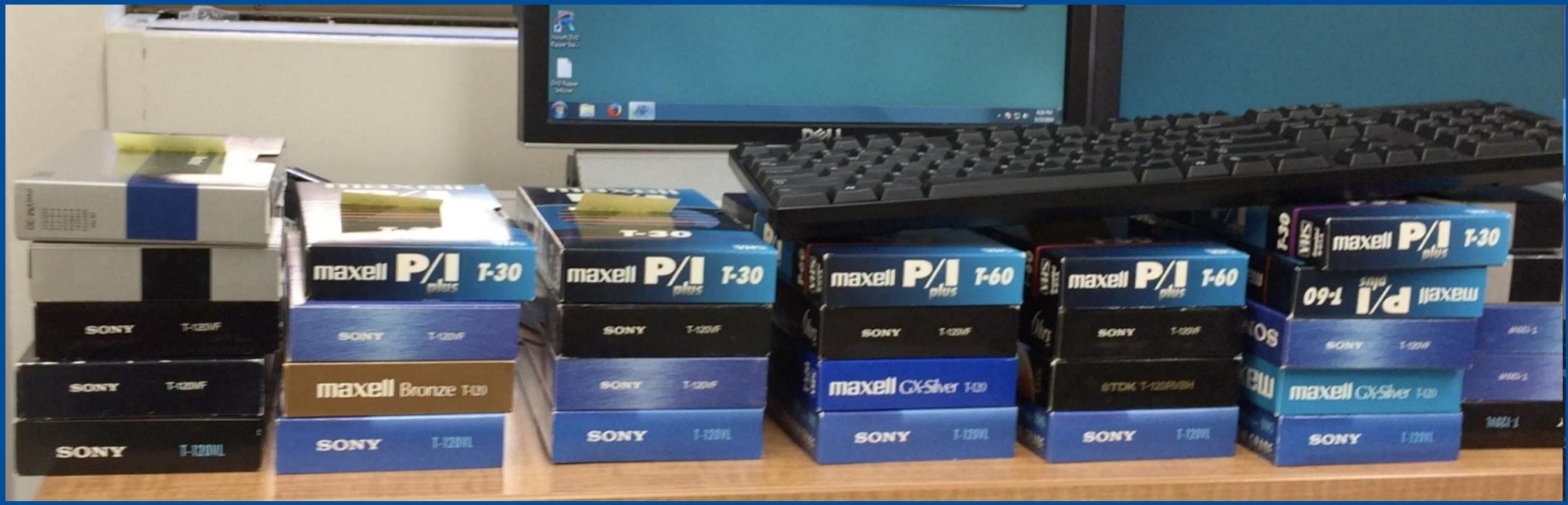
(Stefanatos, 2008)

- Loss of social communication skills usually around 9 to 24 months.

(Tager-Flusberg, 2010)

The Current Study

VHS Tapes


maxell P/I plus T-30
maxell P/I plus T-30
maxell P/I plus T-60
maxell P/I plus T-60
maxell P/I plus T-30
maxell Bronze T-120
maxell GX-Silver T-120
maxell GX-Silver T-120
SONY

Questions of Interests

- How do children with ASD use verbal and non-verbal channels to communicate?
  - Do we observe differences in how these two groups of children with ASD communicate when interacting with their mothers during a free-play task?
- How do Mothers with children with ASD use verbal and non-verbal channels to communicate?

Verbal and Preverbal Children

- Two sets of children with ASD:
- Verbal and Preverbal
  - Preverbal < 10 words on the CDI Words and Sentences: Number of Words Produced
  - Video check confirmation on verbal abilities

Mother-Child Communication

- Two Groups of children around 2.5 years old
  - Verbal (V) child with ASD (n=15)
  - Preverbal (PV) child with ASD (n=15)
- No differences in:
  - Age (*p*=0.81)
  - Autistic Severity on the ADOS (*M*=7; *p*=0.91)
  - Nonverbal cognition on the Bayley (*p*=0.16)
  - Comprehension scores on the PLS-4 (*p*=0.11)

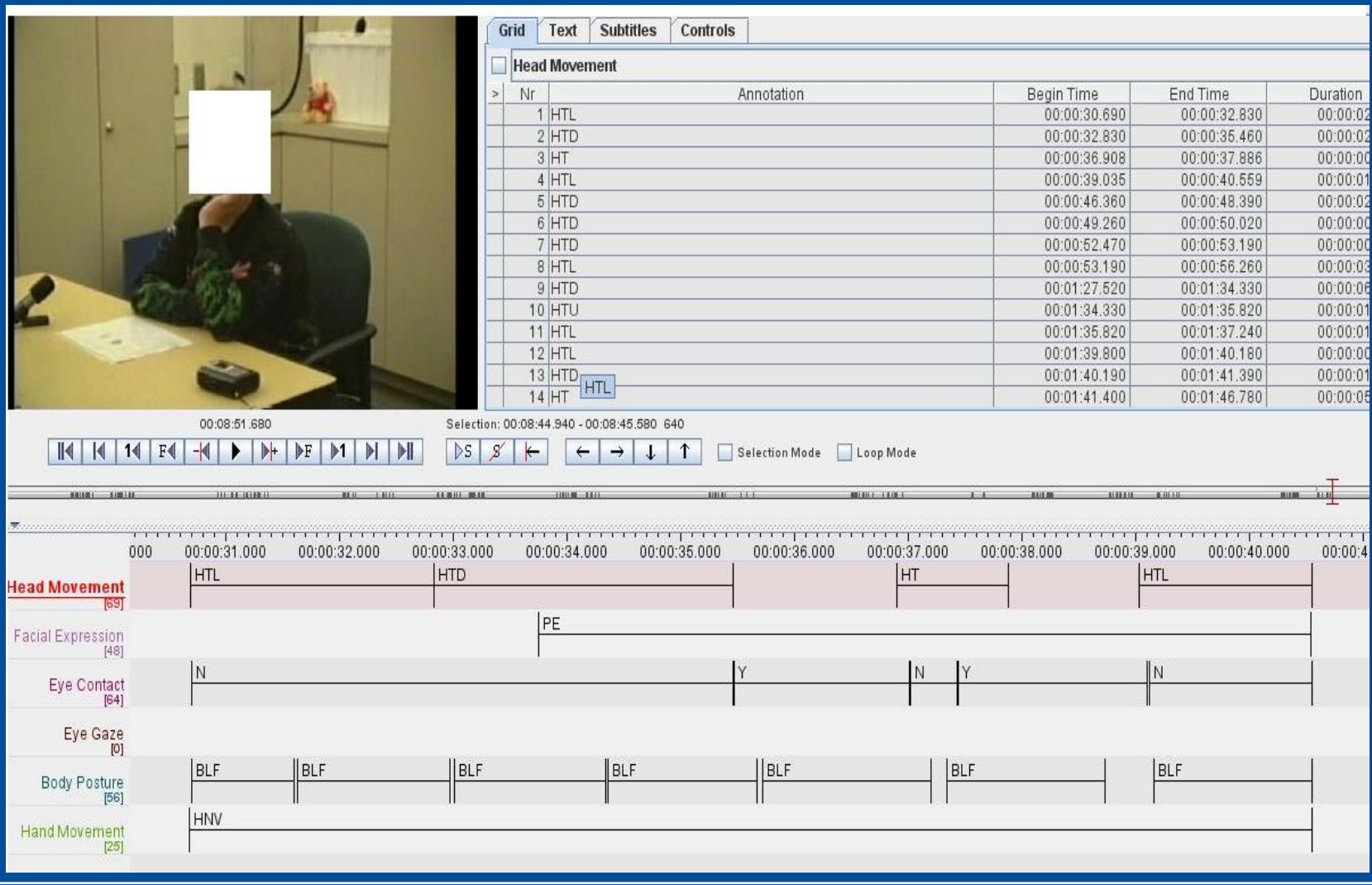
Mother-Child Play Session

- Task: 15-minute naturalistic play session
  - Instructions: “Play with your child as you normally would at home”

Behavioral Coding

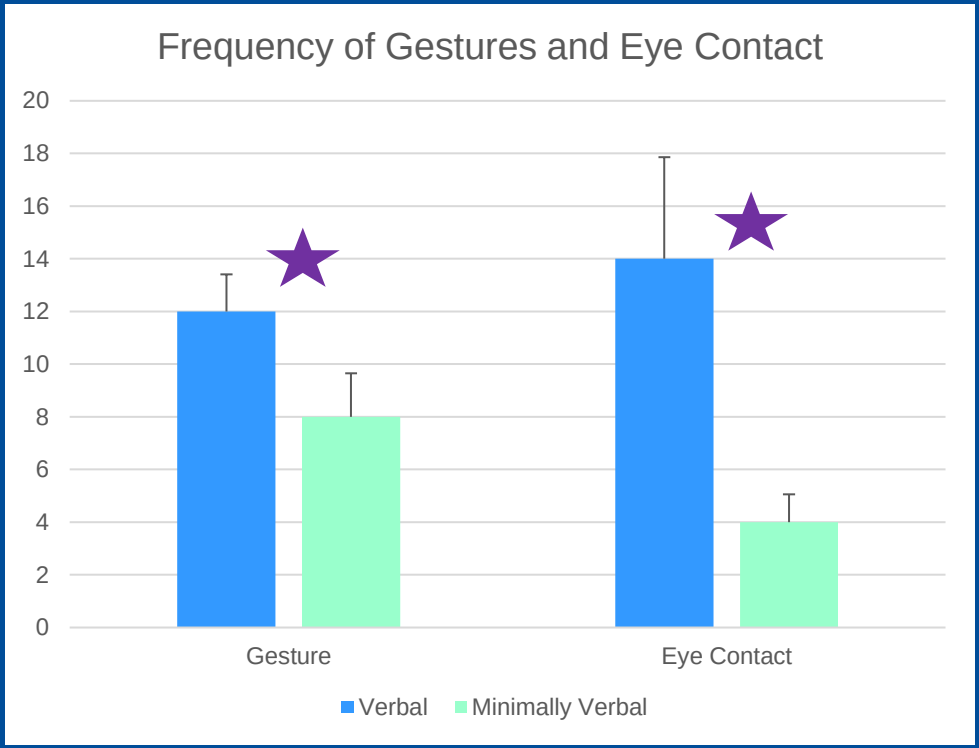
- Sessions were videotaped for later ELAN coding
- Nonverbal behaviors for the children included:
  - Gestures, eye gaze, positive and negative affect through auditory vocalizations
- Parents' behavioral coding included:
  - Total time speaking
  - Nonverbal behaviors included: gestures, eye gaze, and physical contact

ELAN


Grid
Text
Subtitles
Controls
Head Movement
Nr
Annotation
Begin Time
End Time
Duration
1 HTL 00:00:30.690 00:00:32.830
2 HTD 00:00:32.830 00:00:35.460
3 HT 00:00:36.908 00:00:37.886
4 HTL 00:00:39.035 00:00:40.559
5 HTD 00:00:46.360 00:00:48.390
6 HTD 00:00:49.260 00:00:50.020
7 HTD 00:00:52.470 00:00:53.190
8 HTL 00:00:53.190 00:00:56.260
9 HTD 00:01:27.520 00:01:34.330
10 HTU 00:01:34.330 00:01:35.820
11 HTL 00:01:35.820 00:01:37.240
12 HTL 00:01:39.800 00:01:40.180
13 HTD 00:01:40.190 00:01:41.390
14 HT 00:01:41.400 00:01:46.780
HTL
00:08:51.680
Selection: 00:08:44.940 - 00:08:45.580 640
Selection Mode
Loop Mode
00:00:31.000
00:00:32.000
00:00:33.000
00:00:34.000
00:00:35.000
00:00:36.000
00:00:37.000
00:00:38.000
00:00:39.000
00:00:40.000
Head Movement [59]
HTL HTD HT HTL
Facial Expression [48]
PE
Eye Contact [64]
N Y N Y N
Eye Gaze [0]
Body Posture [56]
BLF BLF BLF BLF BLF BLF BLF
Hand Movement [25]
HNV

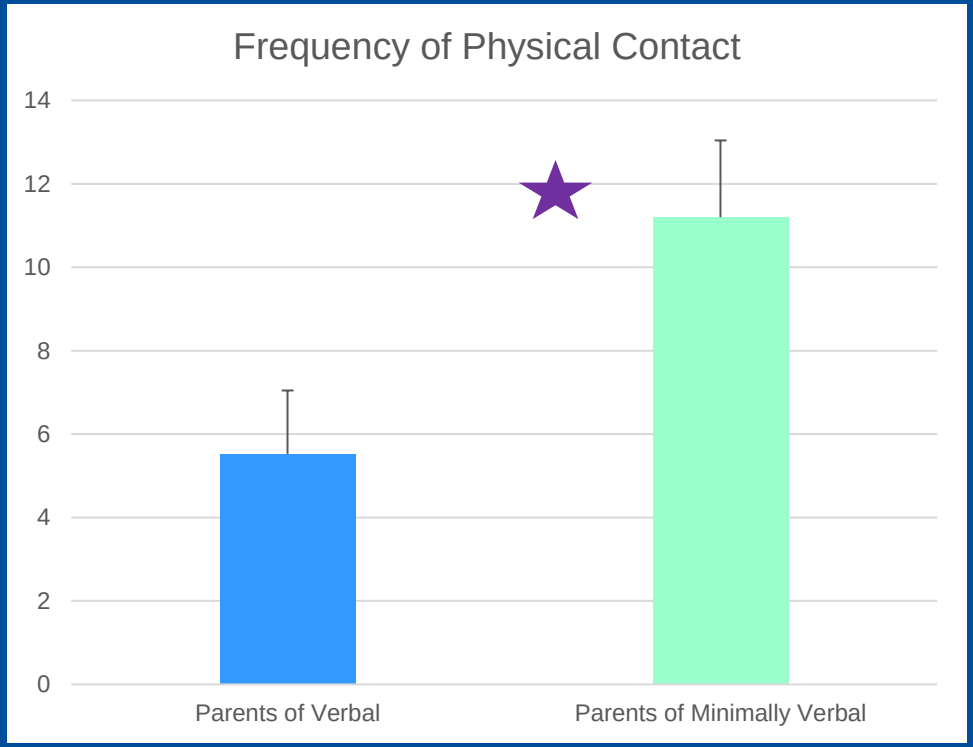
Results: Children's Behaviors

- Gestures & Eye Gaze were significant
  - V children > PV children
- No difference was observed for Positive Affect
- A trend was observed for Negative Affect
  - PV children > V children



Results: Parents' Behaviors

- Gesture and Eye Gaze were not significant
- Physical contact was significant
  - Parents with PV > Parents with V
- A trend for frequency of talk
  - Parents of V > Parents of PV



Average Frequency of Behaviors

- At this age, will we see a stronger reliance on a certain channel of communication?
  - Verbal Group: EC>Gestures>Positive Affect>Negative Affect
  - Non-Verbal Group: Negative Affect>Gestures>EC> Positive Affect

Co-Occurrences

- Verbal Children:
  - Talk+Gesture > Talk+EyeContact > Gesture+EC
- Non-Verbal Children
  - Gesture+EC was 3X less then Verbal Children

Communication Profiles

- V children are producing more eye contact with their mothers and gestured more than PV children
  - Deficits in nonverbal communication are part of diagnostic criteria for ASD
- Parents of PV children required more physical contact than V children
  - Parents on multiple occasions had to comfort their PV child as they were expressing negative affect

Next Steps

- Is the communication style of PV children qualitatively different across development or merely delayed compared to V children with ASD?
  - At 5.5 years old
- Father's communicative behaviors

Acknowledgements

- Thank you to all the participants and their families
- Members of the Communication Disorders Department at UNK
- Members of the Language Processes Laboratory (UW-Madison)
- National Institute on Deafness and Other Communication Disorders Grant R01 DC007223 (Ellis Weismer, PI)
- Postdoctoral Training Program in Intellectual and Developmental Disabilities Research NICHD Grant T32 HD07489 (Mailick, PI)
- Waisman Center P30 HD03352 (Mailick, PI)
- UNK RSC Seed Grant

Thank You…


감사합니다
Natick
Grazie
Danke
Ευχαριστίες
Dalu
obrigado
Thank You
Köszönöm
Tack
Спасибо
Dank
Gracias
谢谢
Merci
Seé
ありがとう