Publication of the DELV tests and beyond | NIH Working Groups on African American English (AAE)

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Morphosyntactic markers and abstract linguistic structure in language evaluation

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The Relationship between

Morphosyntactic Markers and Abstract Linguistic Structure

in Language Evaluation

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Potential Conflict of Interest
The data and examples for this talk come from the DELV-ST and
DELV-NR (Seymour, Roeper, & de Villiers, 2003, 2005 & 2018)
Non-financial: We were both members of the UMass NIH Working
Groups on AAE (which was active from 1993 to 2005) that produced
the DELV tests. Janice's doctoral research contributed to the
conceptual framework of the project, and Barbara was the Project
Manager, and now a co-author.
Financial: Janice has no financial conflict of interest. Barbara could
receive a royalty from sales of the DELV.

Plan of the session

- Overview (and Terms)
- Introduction of the issue we want to raise
- Brainstorming—How to proceed?!
- Presentation of one strategy and findings
- Implications for practice

- **Responsibility of participants**—PARTICIPATE actively
    - 5 minutes   Introduction and overview
    - 15 minutes   Presentation of the problem to be addressed, and sources of data to address it
    - **10 minutes   Small breakout group discussion of alternative research designs and considerations**
    - **5 minutes   Present proposals from the break-out groups**
    - 10 minutes   Presentation of the authors' design and results
    - 10 minutes   Discussion of implications for practice
    - 5 minutes   Conclusions and wrap up

Overview and terms

In this talk, we (and we hope you as participants) will investigate the ability of children speaking different varieties of English with different levels and means of morphosyntactic marking, to demonstrate understanding of more implicit (abstract) relationships within sentences, discourse, and in communicative situations.

IMPLICIT Linguistic Relationships
- Are essential to language competence
- But, often times overlooked (clinical practices)

*We will discuss what we mean by **implicit linguistic relationships** between words and sentence parts, and how they contribute to utterance meaning.*
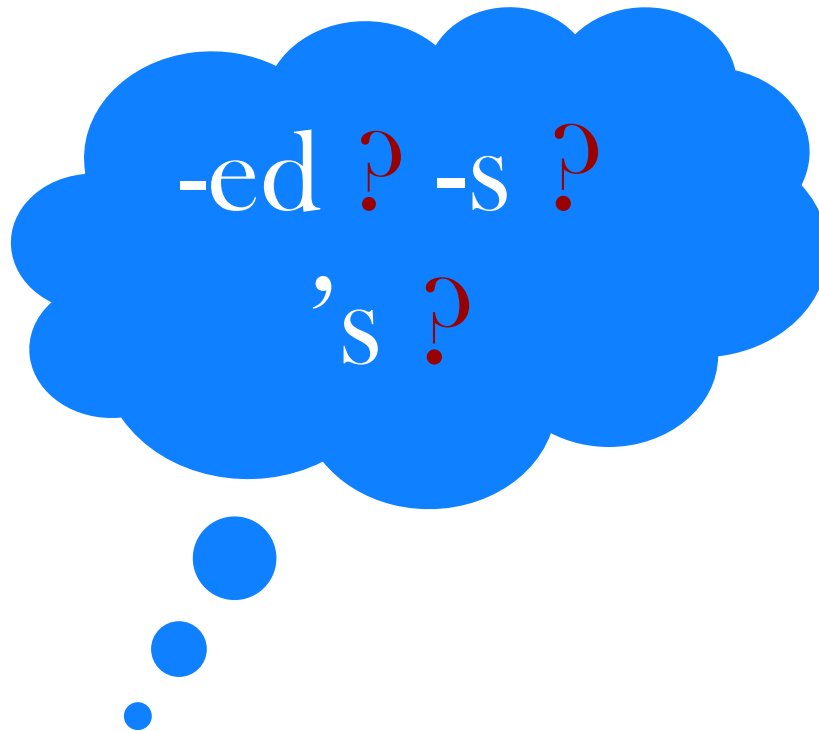
We will explore if there is a relationship between speakers with different types of morphosyntactic expressions and competence with some specifically examined implicit linguistic relationship forms.

LANGUAGE : TYPICAL & IMPAIRED

Language Impaired- Morphosyntax

-ed ? -s ?
's ?

Typical Language Morphosyntax Expressions Across English Varieties

AAE

- Yesterday my mom bake cookies

- We need two more book

- We go to my auntie house

MAE

- Yesterday my mom bak**ed** cookies

- We need two more book**s**

- We go to my auntie**'s** house

Explicitness in Morphosyntactic Marking

Explicit Morphosyntactic Marking

Amigo	Amiga

- **o** = Morpheme Marks Masculine
- **a** = Morpheme Marks Feminine

Professor

- **El** Professor **ø**
- Triggers a masculine article

Phonologically Unexpressed Morphemes (PUE)

PUE

- Yesterday my mom bake a cake∅
- We need two more book∅
- We go to my auntie∅ house

Phonologically Unexpressed/Expressed Morphemes

PUE

- Yesterday my mom bake∅ a cake
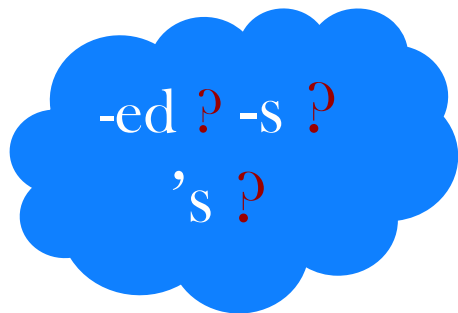- We need two more book ∅
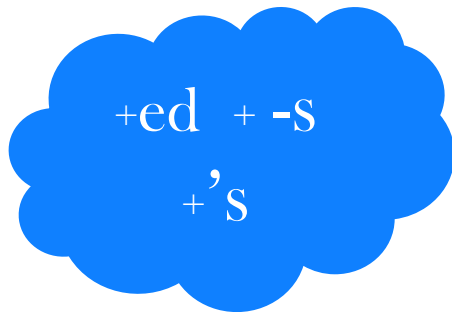- We go to my auntie∅ house

PE

- Yesterday my mom bak**ed** a cake
- We need two more book**s**
- We go to my auntie**'s** house

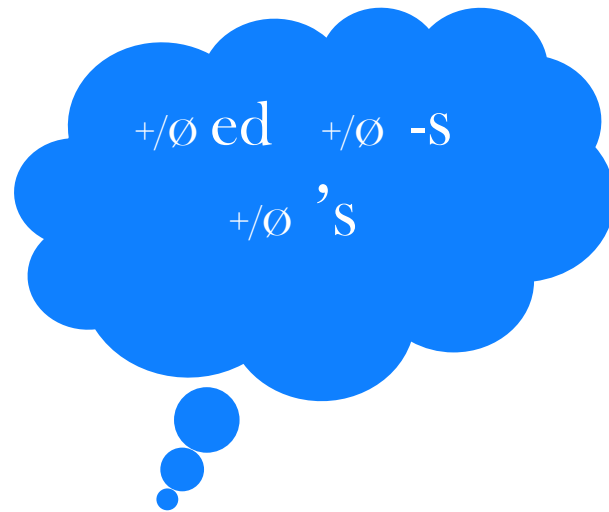# Meaning Does Not Require Explicitness

- **Yesterday** my mom bake cookies   **Yesterday**=past tense

- We need **two** more book   **Two** = plurality (more than one)

- We go to **my** auntie house   **My** = possession

3/17/2019

Implicit Structural (Linguistic) Relationships

- **Higher-order (a level within a level)**
  - Where do you sit?, Who bought that?
  - **Who sits where?**

- **Meaning is not on the surface/obvious in (Implicit) grammatical relationships**

- What did he eat? vs. **Who ate what?**

Wh Questions – Item 7
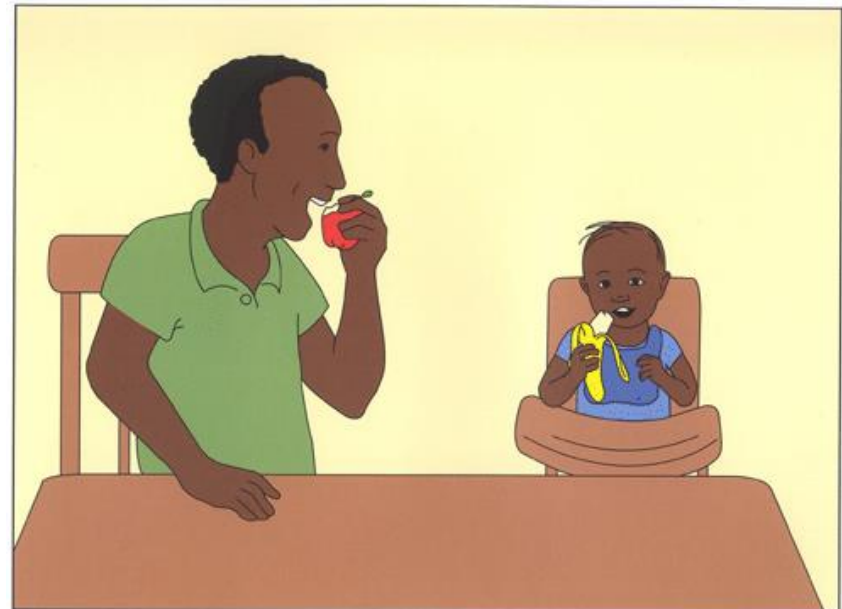
Implicit Structural (Linguistic) Relationships

- There are a variety of these types of structural relationships that are needed to have language competence.

- Not Traditionally Focused Upon

- Include:
  - **Article/determiners**
    - requires subtle interpretation of knowledge about the specificity or general nature of something '**a apple**' vs. '**the apple**'
  - **Higher-order wh-questions**
    - require interpretation of deep structure traces not found in surface structure
  - **Passive structures**
    - require that you can not rely on word order to determine meaning.
  - **Quantification** –
    - Is every dog eating a bone

Implicit –
inferred or understood w/o being overtly stated

Sometimes Ambiguous:

The boy touched the monkey with a banana.

(Who has the banana?)

How can you tell?

Complex (non ambig) Example

- This mother went out one night to buy a surprise birthday cake. The next day, the girl saw the bag and asked: "what did you b Mom said, "just some paper towels."

    – **What did she say she bought**?
    – Is it asking "what did she buy?" or what she say?

Wh Questions – Item 10

# DELV-Norm Referenced and Implicit Knowledge

Examples are from the DELV-NR. We have a window into how children understand "implicit" "underlying" "deep" structural relationships in the sentences they hear (and produce)

<How many are familiar with the DELV-NR?>

Its particular focus is subtle relationships that are not obvious—but we learn them anyway. And so do children.

More on Implicit Relationships

- Subtle relationships between elements across sentences "THE"

- Articles: well-known rule from stories-- 1st mention versus 2nd mention. Awkward to use "the" for first mention.
  - I saw the boy??! (what boy??)
  - Vs. I saw a boy. The boy stood on his head.

- EXCEPT what about:
  - My car stalled on the highway today. The radiator ran dry. What radiator? Did anyone mention a radiator? Could I say "a radiator"? (Only if your car has more than one of them.) How does the child know?!
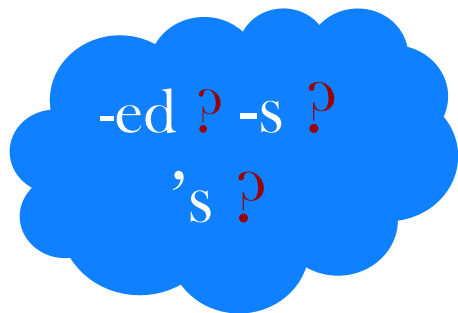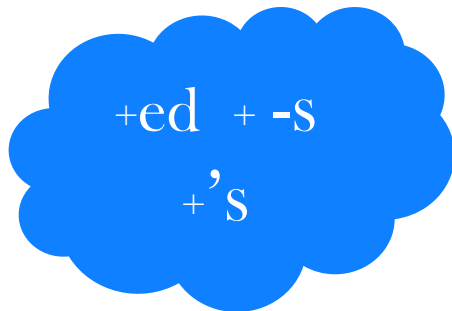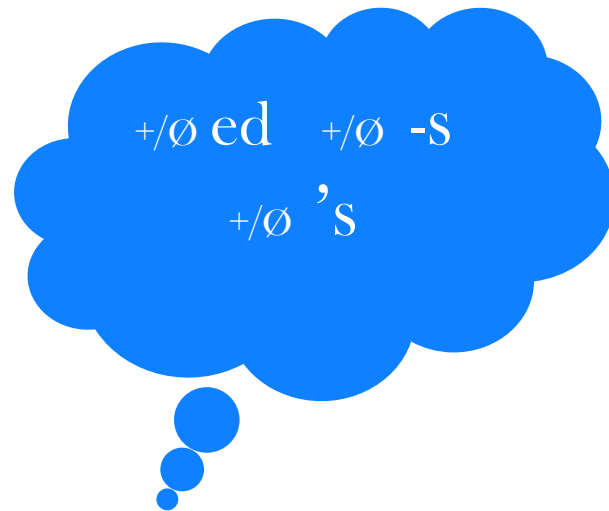
Implicit Linguistic Relationship Competence

Morphosyntax Expression Type

"When do you use a flashlight?"
"To see it's dark."

"Where do you go to learn?"
"At the morning."

What do you use to tell time?"
"To tell the time is."
"To know what is the time is."

Introduction of Issues

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All varieties have implicit relationships. We are recovering them all the time!

- *All languages have both explicit and implicit in different proportions. High-explicit will have lots of case marking; I think Icelandic is the language with the most, but I learned about cases and declensions (lots of explicit markers!) when I studied Latin. English as you know has relatively few explicit MS bound morphemes; AAE even fewer. Thus more relationships have to be inferred (implicitly).*

We ask, If a language has both Explicit and Implicit relationships grammaticized (and they all do),

how do they relate to each other from the point of view of the learner?

Mainstream American English **High Explicit Marking (HEM)**
v.
Different from Mainstream **Low Explicit Marking (LEM)**

What does HEM or LEM mean for the learner?

- Nothing? All the same?

- Or if one is bad at HEM, also bad at implicit abstract relationships, too?

Could HEM be a disadvantage for learners of the language?

Could LEM be an advantage for learners looking for implicit relationships?

Does one have any effect on the other?

Yes?

No?

Maybe?

Both yes and no?

Possible Hypotheses

- Hypothesis 1: It is easier for children who are used to LEM in morphosyntax in their everyday, very common expressions to handle more complex LEM?

- Hypothesis 2: It is harder for children who are used to LEM in their everyday, very common expressions to handle more complex LEM?

OR

(alternately, H1a: It is harder for children who are used to HEM in their everyday, very common expressions to handle complex LEM

H2a: It is harder for children who are used to HEM in their everyday, very common expressions to handle complex LEM?

How will we test them??

10 minutes in small groups:
5 minutes reporting out.

Start by addressing the learning objectives:
Learning goals are for participants to demonstrate that they can—

1. Define what is meant by "explicitly marked" and "implicit" when applied to grammatical structures and be able to give an example of each type
2. Discuss at least 3 possibilities for how explicit marking and implicit grammatical relationships can be tested
3. Explain how knowledge of explicit marking and implicit grammatical relationships can be related

Share with each other/ trade examples and suggestions:
What are they? (structures with explicit and implicit relationships)
How can you know what a kid does when she meets one?
How can we know if they're related?
    Who thinks they are related?
    Who thinks they're not related?

One strategy--What we did

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To test the relationship between any two measures, can use….

1. Correlation

2. Two by two (cross) tables

3. Analysis of Variance (ANOVA—to confirm whether any differences observed are significant (or not)

Need two measures (at least)

- **Measure of Explicit Marking**
- **Measure of Implicit Marking**

    language measure that depends on abilities with unstated relationships (underlying sentence structures)

More on measures….

Need two **types** of measures

- Continuous measures (for correlation, for dependent variable in Anova)
  - *e.g., lots of values, as in all the possible values between 0 and 1.*
- Categorical measure (for cross-tables and independent variables in Anova.)
  - *e.g. labels, such as "Hi" versus "Lo"; "green" versus "blue"; male v. female*

Measures available

- Have DELV Scores (from standardization samples)

- For Explicit marking:

  - **DELV-Screening Test Part 1 Language Variation Status (LVS)**—shows us tendency of Explicit Marking (EM), regardless of ethnicity

  Can be:

  - **Categorical**-- ("no difference from MAE"/ "some or strong difference from MAE")

  - **Continuous**-- DELV dialect density ratio derived from answers to the 15 items on Part 1 (AAE responses/ (AAE+MAE))

  You might ask: How did we derive "MAE" versus "Some or strong difference from MAE"? --Empirically. (See next slides.)

MORPHOSYNTAX

Variable Zero Marking

Zero present tense copula
      is copula   *He ∅ tall.*
                        He ∅ a doctor.

Zero present tense auxiliary
      is auxiliary   *He ∅ running.*
      are auxiliary   *They ∅ sleeping.*

Zero plural /–s/   *two glass∅*

Zero possessive /–s/   *John'∅ mother left.*

Zero regular past tense /–ed/   *He play∅ yesterday.*

Variable Agreement & Negation

Subject verb 3rd –s with *do*   *He don't like to swim.*

Subject verb 3rd –s with *have*   *She have no shoes.*

Subject verb 3rd –s with lexical verb   *He sleep∅ on a bed.*

Subject verb past copula/ auxiliary   *They was cold.*
                            They was sleeping.

Multiple negation   *He don't have no shoes.*

- Start with 89 items (from the literature—as in list on left)

- DELV pilot version (DSLT) included 89 MS and Phonological items, tested with 1500 children in a nationwide sample (including 2/3 AA children and 1/3 EurA children).

- Note that the DELV "Language Variation Status" Screening test part 1, **ended up with the 15 most persistent AAE items**, but the basis for the LVS labels was from the 89 items. LVS (from 15 items) was confirmed to be equivalent to scores on 89 items (see next slide) ▪

Table and figure from Jackson & Pearson (submitted)

Empirically derived level for "no difference" and "strong difference" from MAE

Established with reference to 500 MAE children from 4 to 12 yrs In national representative sample

Percent of Variable AAE Usage of Contrastive Morphosyntax and Phonology Features (of 89)

by Age and Dialect Group (Sample 1)
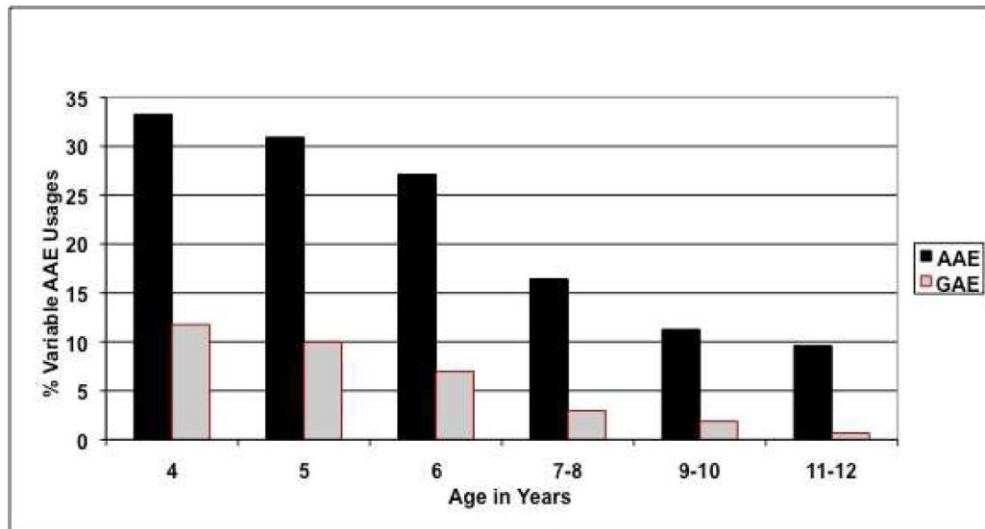
AAE = African American English
GAE = General American English

Shows mean levels for EurA TD (gray bars)
Age 4 -- 10% contrastive items
Age 7-8 yrs -- 3% for EurA-TD
Ages 11-12yrs -- <1% for EurA-TD

AAE, MAE-2nd dialect speakers (black bars)
All Ages -- 10% or more
Small number of "no diff from MAE"

Both decline over time, but AAE (average) levels were never lower than EurA levels at age 4

Measures available -2

- Have DELV Scores

- For Implicit Marking:

  DELV-Norm Referenced items – show ability with implicit relationships (like double-wh, long-distance movement with wh, article scenarios)

  - Total standard score
  - Also subscores: examples; double-wh (paired exhaustive answers)

Participants and variables

Data from the DELV pilots: Here--

- 1000 children---70% AA, 30% EurA

- (AA--AAE speakers mostly, but not all, LEM

- EurA--MAE speakers mostly, but not all, HEM

- Independent variables: Each child coded and groups matched on age, ethnicity, gender, region, parent-education level

- DELV-ST LVS—no difference or some-strong difference from MAE

  also density ratio of DELV ST responses

- DELV-NR items – shows ability with implicit relationships
  - Standard score   Double-wh

Results

- Analyzed whole group first. Then re-do split by AA and EurA

- Also split by TD and LI---why?!

• 1. Correlations

- – dialect density ratio (higher = more AAE-like)
- – w/ Delv composite score

Whole group N=1000	r = -0.4*	p < .05
AA only, N = 720	r = - 0.36*	
EurA only N= 280	r = - 0.44*	

- – (Among LI only, less variability: AA-LI r = 0.05 n.s; EurA-LI r = .15 n.s.)

- Take home: <u>negative correlation</u>: the higher the EM, the lower the DELV composite and vice versa. (They're related! But wait, they're also not related, or weakly related….)

- Why might it be different for EurA and AA?

2. Cross-tables

N=1000	Explicit marking level	
Clinical status	HEM N=354	LEM N=646
TD n=928	HEM-TD 342	LEM-TD 586
LI n=72	HEM-LI 12	LEM-LI 60

- If you're HEM, chances are 97% that you're TD) 342/354.

- If you're LEM, chances are 91% that you're TD   586/646

Does it work the same way for AA and EurA children?

- Redone for AA and EurA

EurA N = 280	HEM	LEM
TD n= 260	HEM-TD 216	LEM-TD 44
LI n= 20	HEM-LI 8	LEM-LI 12

AA N = 720	HEM	LEM
TD n= 668	HEM-TD 126	LEM-TD 542
LI n= 52	HEM-LI 4	LEM-LI 48

80% of EurA were HEM/   only 18% of AA were HEM

Both ethnicities, **if you're HEM**, 96 or 97% of the time you were TD

If you're LEM and AA, there was a 92% chance, you were TD

If you're LEM and EurA, only 79% chance that you were TD.

LEM prediction 21% LI (EurA) vs 8% LI (AA)

3. ANOVA

These next three show results of analysis of variance showing the figures of the means to be compared.

- Analysis shows that (for total standardized score) :
- HEM is significantly higher than LEM (very small effect size)
  - $(F (1,992) = 8.5, p=.004, \eta^2 = .006)$
- TD and LI are significantly different from each other (large effect size) $(F (1,992) = 173, p < .0001, \eta^2 = .20)$
- AA and EurA don't see any significant differences, except perhaps a little in the group with LI.
  - $(F (1,992) = .031, p = .859, \eta^2 < .0001)$

- The message is the same as from the cross tables: HEM is a slight advantage for all children. (Those with HEM, get higher DELV-NR scores.) LEM not a disadvantage for AA, (observed number of LI the same as predicted number) but is for EurA-LEM, % of LI is higher than AA-LEM and higher than would be predicted (based on empirically derived levels of occurrence of SLI in general population.

DELV-NR Standard Score by Explicit Marking Level, Ethnicity, and Clinical Status (mean =100, SD = 15)
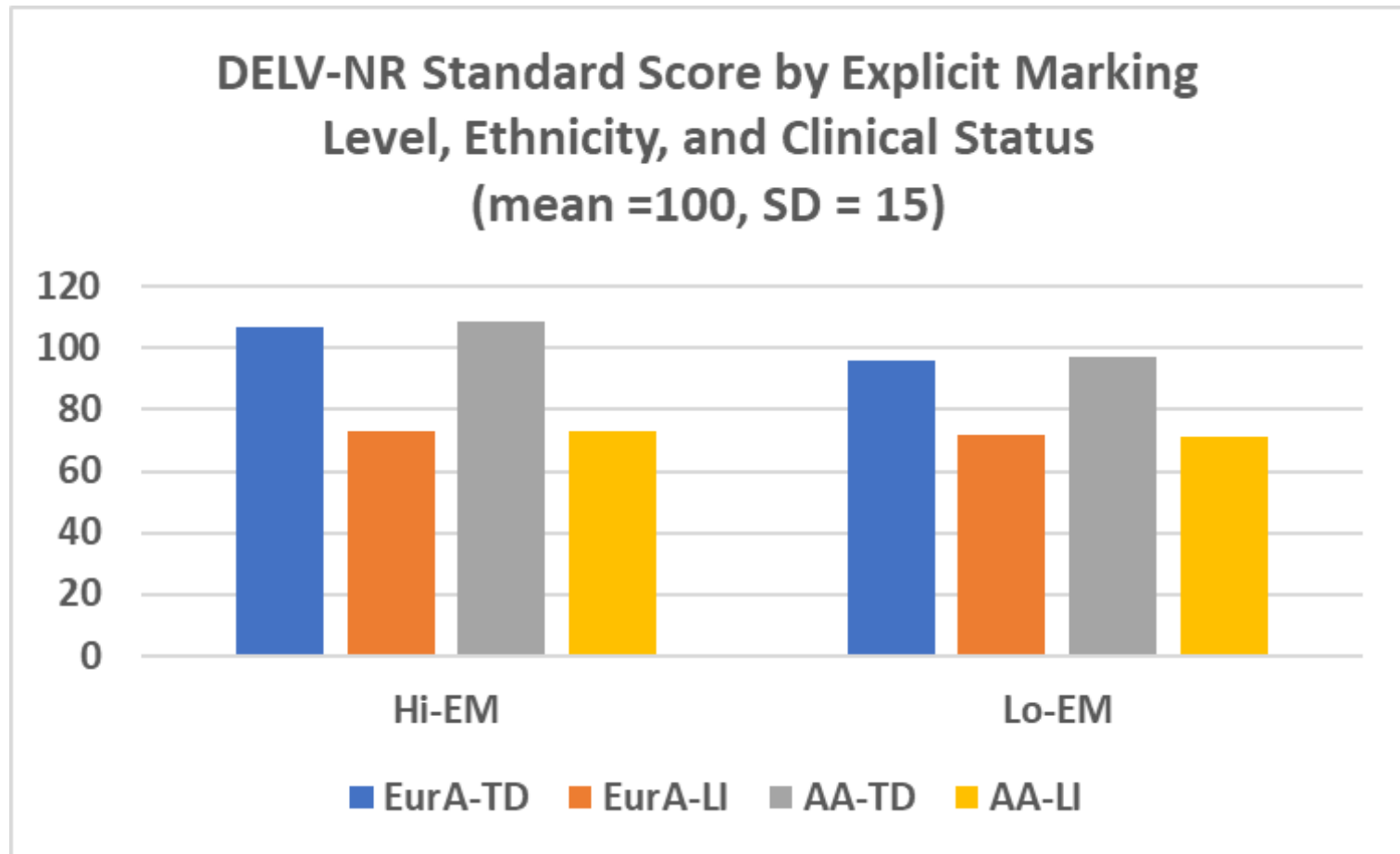
Take home: HEM average a little higher than LEM; (a little above the average (107), versus a little below the average (97); AA and EurA similar, at both TD and LI levels; TD = "average"; LI > 1.5 SD below mean

Ethnicity, and Clinical Status

Correct Paired Exhaustive (double-wh) by Explicit Marking Level, Ethnicity, and Clinical Status (of 3)
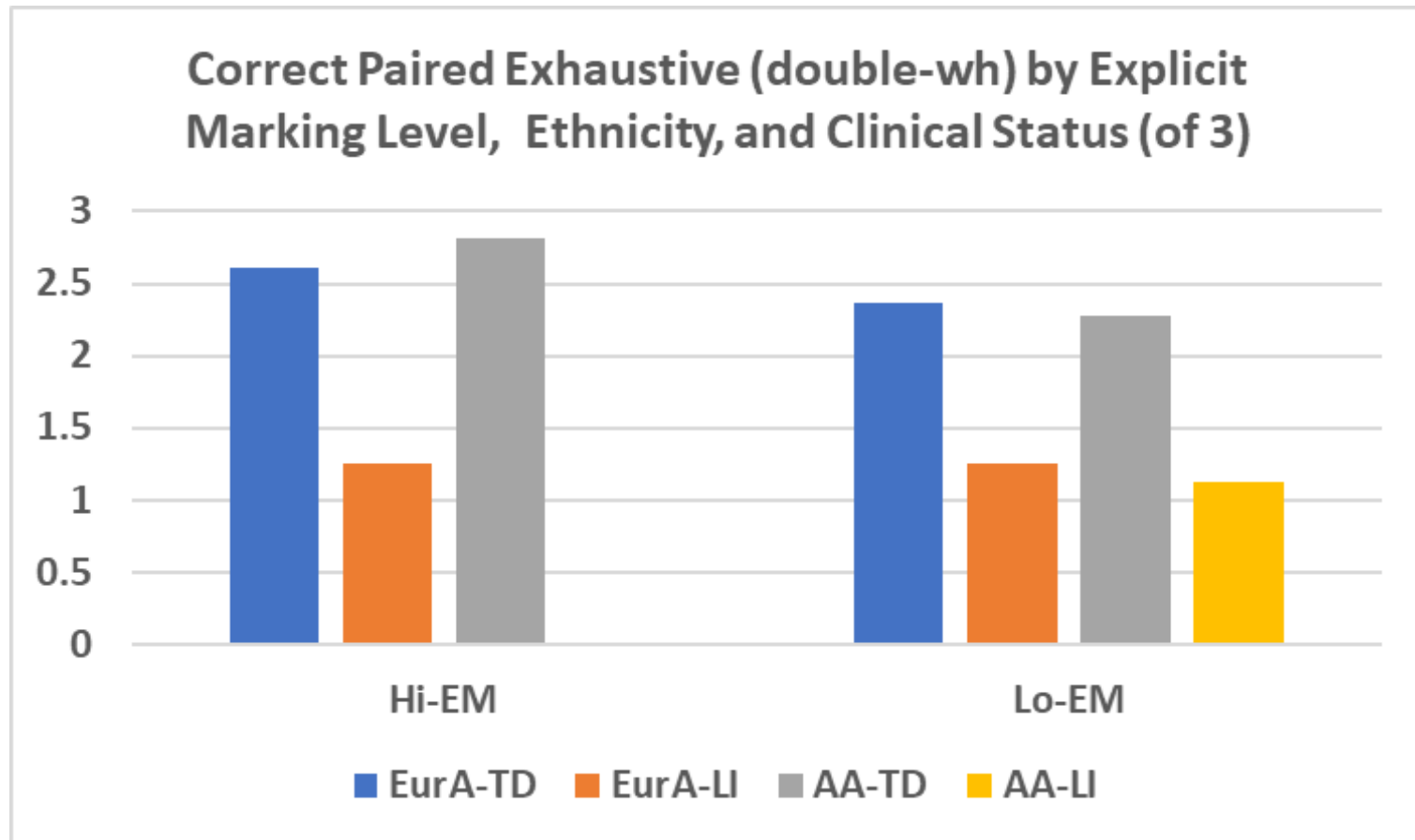
The missing column is "zero right on average; very few HEM AA-LI children;
These are not standardized scores, but same lessons, AA and EurA about the same story; HEM higher than LEM "statistically, but not substantively important differences (EurA-LI Lo-EM slightly lower than AA-LI-Lo-EM). TD and LI are significantly different, as would be expected.)

Summary

- Yes, there's a **correlation** – a significant negative correlation

- However, cross-tables show that in the real world of diagnosing children, the **consequence of the association is small**. True, HEM is overwhelmingly TD, for both ethnicities, but among AAE LEM, proportion of LI the same as in any population: we don't see an influence of "lack of explicit marking."

- Among EurA children, there is a significantly greater than predicted probability that a LEM child has LI. (Note, though, that even among EurA, almost 80% of LEM demonstrate typical development with implicit relationships.)

- **ANOVA**: EurA and AA similar pattern overall in average DELV-NR standard score (and also subscores). HEM and LEM means around average (of 100). HEM about 6 points above, LEM about 3 points below, nowhere near 1.5 standard deviations which would indicate impairment.

Implications for practice

Clinical implications

- Goal to help children have language competence

- May need more than morphosyntax –THEN WHAT?!

- Equally important that we help language learners that are struggling with these more subtle things.

Goals (of more reliance on implicit language features)

- More nuanced and more explanatory characterization of impairment

- Better able to identify how difficulty with subtle implicit relationships impact larger educational areas
  - Listening comprehension
  - Reading comprehension
  - Text analysis, etc.

- Improved development of appropriate intervention goals and objectives.

Questions??? Suggestions??

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(We lean so heavily on materials from the DELV project, because, to our knowledge, there is no better source of information about both implicit and explicit grammatical relationships. Let us know if you know one.)

- Seymour, H. N., Roeper, T. & de Villiers, J. G. (2003). *DELV-ST (Diagnostic Evaluation of Language Variation) Screening Test* . San Antonio TX: Harcourt Assessments. (Now Ventris Learning, Sun Prairie WI)

- Seymour, H. N., Roeper, T. & de Villiers, J. G. (2005). *DELV-NR (Diagnostic Evaluation of Language Variation) Norm-Referenced Test* .   San Antonio TX: Harcourt Assessments. (Now Ventris Learning, Sun Prairie WI)

- Seymour, H. N., Roeper, T. & de Villiers, J. G. (2000, unpublished). *Dialect Sensitive Language Test (DSLT)*.   San Antonio TX: The Psychological Corporation.

- Seymour, H. N. & Pearson, B. Z. (Eds.) (February 2004). Evaluating language variation: Distinguishing development and dialect from disorder. Special issue of *Seminars in Speech and Language, 25 (1)* , NY: Thieme Medical Publishers.

- Roeper, T. (2004). Diagnosing language variations: Underlying principles for syntactic assessment.   *Seminars in Speech and Language, 25 (1*), 41-56.

- Pearson, B. Z. (2004). Theoretical and empirical bases for dialect-neutral language assessment: Contributions from theoretical and applied linguistics to communication disorders. *Seminars in Speech and Language, 25 (1*), 13-26

- Jackson, J. E. & Pearson, B. Z. (2010). Variable use of features associated with African American English by typically developing children ages 4 to 12. *Topics in Language Disorders, 30 (2),* 135-144

- *Jackson & Pearson (submitted). Developmental Trends for Features Contrastive between African American English and General American English*

- Pearson, B. Z., Conner, T. & Jackson, J. E. (2013). Removing obstacles for African American English speaking children through greater understanding of language difference. In special issue, "Deficit or difference: Interpreting diverse developmental paths." N. Akhtar & V. Jaswal (Guest Eds.), *Developmental Psychology*, *49* (1), 31-44.