Variation in Deaf and Hard-of-Hearing College Students' Knowledge of General-Purpose and Academic English Verbs

Gerald P. Berent	Dept. of Liberal Studies & REACH Center
Susan P. Rizzo	REACH Center, Staff Research Assistant
Kathryn L. Schmitz	NTID Academic Affairs
Kimberly Persky	ASL-English Interpretation (NTID graduate)
Ronald R. Kelly	MSSE & REACH Center
Hannah Ginther	MSSE Student, REACH Research Assistant

2017 NTID Scholarship Symposium, January 12, 2017
National Technical Institute for the Deaf, RIT, Rochester, NY

Background

This material is based upon work supported by the National Science Foundation under Grant Number BCS-1251342:

Deaf Learners' Lexical Acquisition of English Verbs and Their Component Properties

- **GRANT:** Deaf college students' knowledge of fundamental and subtle properties of <u>English verbs</u> and associated sentence types

- **WHY VERBS?** A verb's <u>meaning and properties</u> determine the structure and function of the entire sentence

- **PURPOSE:** New insights into <u>English language and literacy development</u>; more effective English teaching methods, materials, assessments

---

Rationale for Current Research Study

General and academic English vocabulary knowledge critical for:

- Accurate reading comprehension
- Effective written expression
- Using Academic English discourse

Little research on general and academic English vocabulary

- Not enough understanding of college-level deaf/hard of hearing (HH) students' vocabulary knowledge

Contextualize deaf/HH students' vocabulary knowledge

- Comparison with college-level hearing peers
  - Native English-speaking students
  - Learners of English as a second language (L2)

Consistent with NSF grant goals

- Assessment of participants' knowledge of general-purpose and academic English *verbs*

Participant Groups

Experimental Group

DF Group:

Deaf/hard-of-hearing students at NTID/RIT pursuing associate's and bachelor's degrees (n=120)

Comparison Groups

L2 Group:

Hearing students of L2 English (n=115)

NS Group:

Hearing native-English RIT students (n=41)

English Proficiency Levels

Learner groups (DF & L2): Each at <u>three overall English levels</u> based on the Michigan Test of English Language Proficiency

Target n = 40 per level per group

LOW Michigan (< 60)	MID Michigan (60-75)	HIGH Michigan (> 75)
• DF $n = 43$ • L2 $n = 30$	• DF $n = 44$ • L2 $n = 37$	• DF $n = 33$ • L2 $n = 44$

Research Questions

1. Knowledge of English verbs: **DF Group vs. L2 and NS Groups**

   A. Overall performance on a 300-item vocabulary test

   B. Relative knowledge of (i) general-purpose and (ii) academic English verbs?

2. How does each participant group's knowledge of English verbs vary on the basis of frequency of occurrence (*high, mid, low*) in each verb category?

LEARNER GROUPS (DF, L2) – PROFICIENCY LEVELS

3. English proficiency levels (Low/Mid/High) of learner groups

   A. Overall performance on the 300-item vocabulary test?

   B. Knowledge of (i) general-purpose and (ii) academic English verbs?

   C. Knowledge of (i) general purpose verbs by frequency of occurrence?

   D. Knowledge of (ii) academic verbs by frequency of occurrence?

Design of Vocabulary Assessment Measure

Academic English discourse employs:

- <u>General purpose</u> verbs: most important learning goal (1,500-2,000 high frequency words)
- <u>Academic</u> verbs: require focused instruction

Corpus of Contemporary American English (COCA; Davies 2012)

- 425-million-word corpus; 120-million-word academic sub-corpus
- Core academic corpus (high academic prevalence, dispersion)
- From top 3,000 lemmas, distilled to 500+ verbs
- Separated verbs into bands based on frequency
- Targeted three frequency bands separated by buffer zones

Constructed 300-item multiple-choice (4 choices) vocabulary test

- Random selection of verbs within each frequency band
- Random selection of distractor items of similar frequencies
- Three randomized versions of online test

Sample Targeted Verbs: Types and Frequency Bands

GENERAL PURPOSE (150)			ACADEMIC (150)		
High (GH)	Mid (GM)	Low (GL)	High (AH)	Mid (AM)	Low (AL)
eat	welcome	encounter	incorporate	permeate	expound
know	promise	negotiate	present	synthesize	reactivate
reach	mark	install	state	emanate	adjudicate
start	prefer	spot	facilitate	compound	equalize
face	fire	overcome	indicate	equate	reintegrate
stay	slip	occupy	retain	contradict	proscribe
join	link	assist	require	disregard	impel
pay	cry	switch	enhance	enrich	opine
run	paint	bind	imply	disperse	propound
pick	invite	toss	include	moderate	reformulate
cover	dress	practice	promote	reiterate	decentralize
catch	stick	guide	affect	conserve	globalize

"English Vocabulary Test: General Purpose and Academic Verbs"

Sample Items

5. The Navy _____ the missing ship.

- ○ insisted
- ○ bothered
- ○ located ← GEN mid freq.
- ○ lasted

6. The judge _____ her decision on the new evidence.

- ○ based ← ACAD high freq.
- ○ cut
- ○ walked
- ○ flew

7. The weak economy _____ firing half of the factory's employees.

- ○ postulated
- ○ assimilated
- ○ eschewed
- ○ necessitated ← ACAD mid freq.

Participant Groups' Total Test Scores (300 items)*

Participant Group main effect, $p < .0001$

Group	Total Score	Standard Deviation
DF	200	48
L2	209	61
NS	286	11

- The Native Speaker group outperformed the two Learner Groups, Scheffé, $p < .05$.

- The DF group and the L2 group did not differ significantly.

*Results are preliminary pending further data collection to achieve $n = 40$ per proficiency level per learner group.
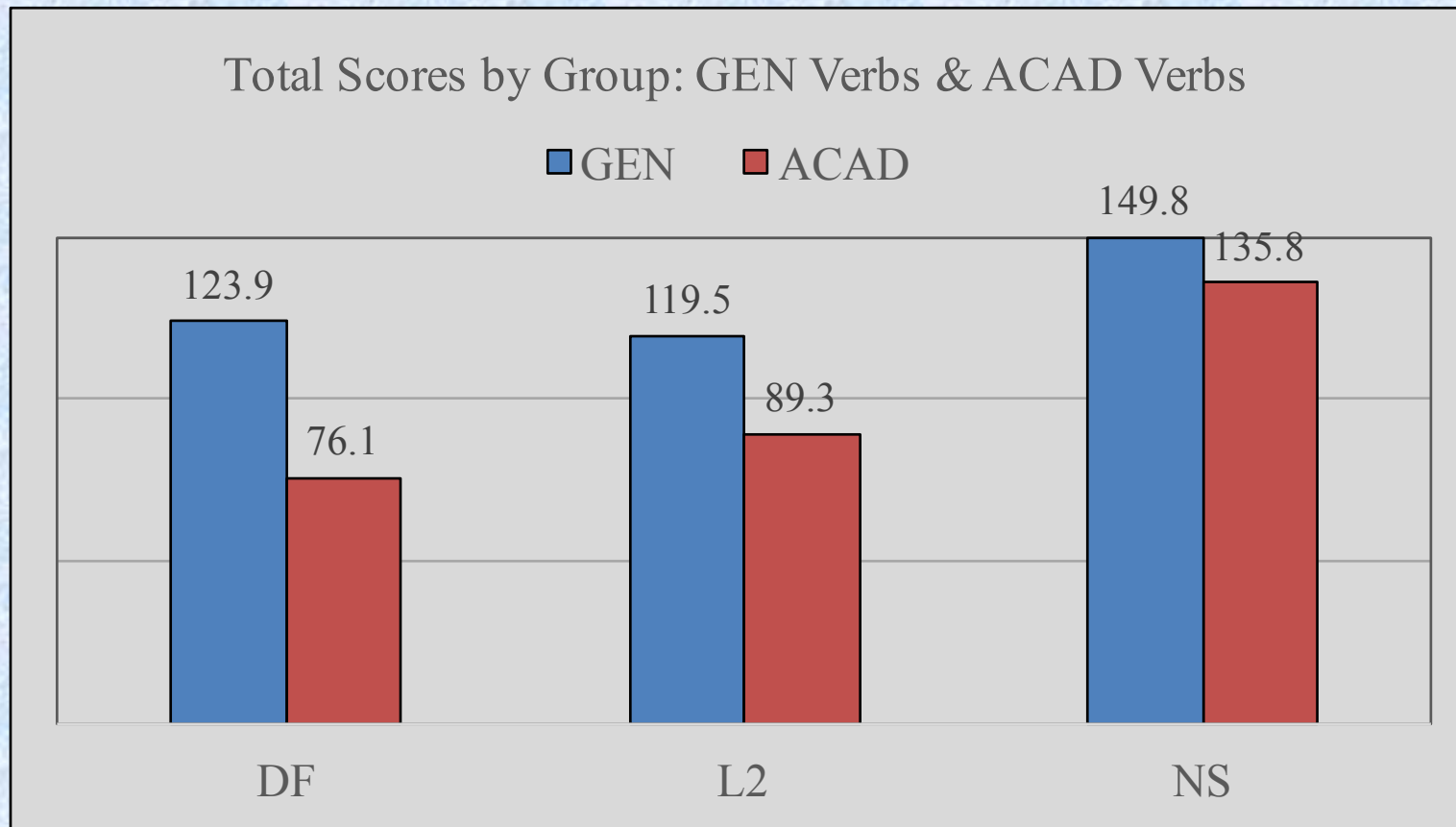
Participant Groups' Performance by Verb Type
General Purpose (GEN = 150) and Academic (ACAD = 150)

GEN Verbs x Group, $p < .0001$ NS > [DF = L2] $p < .05$
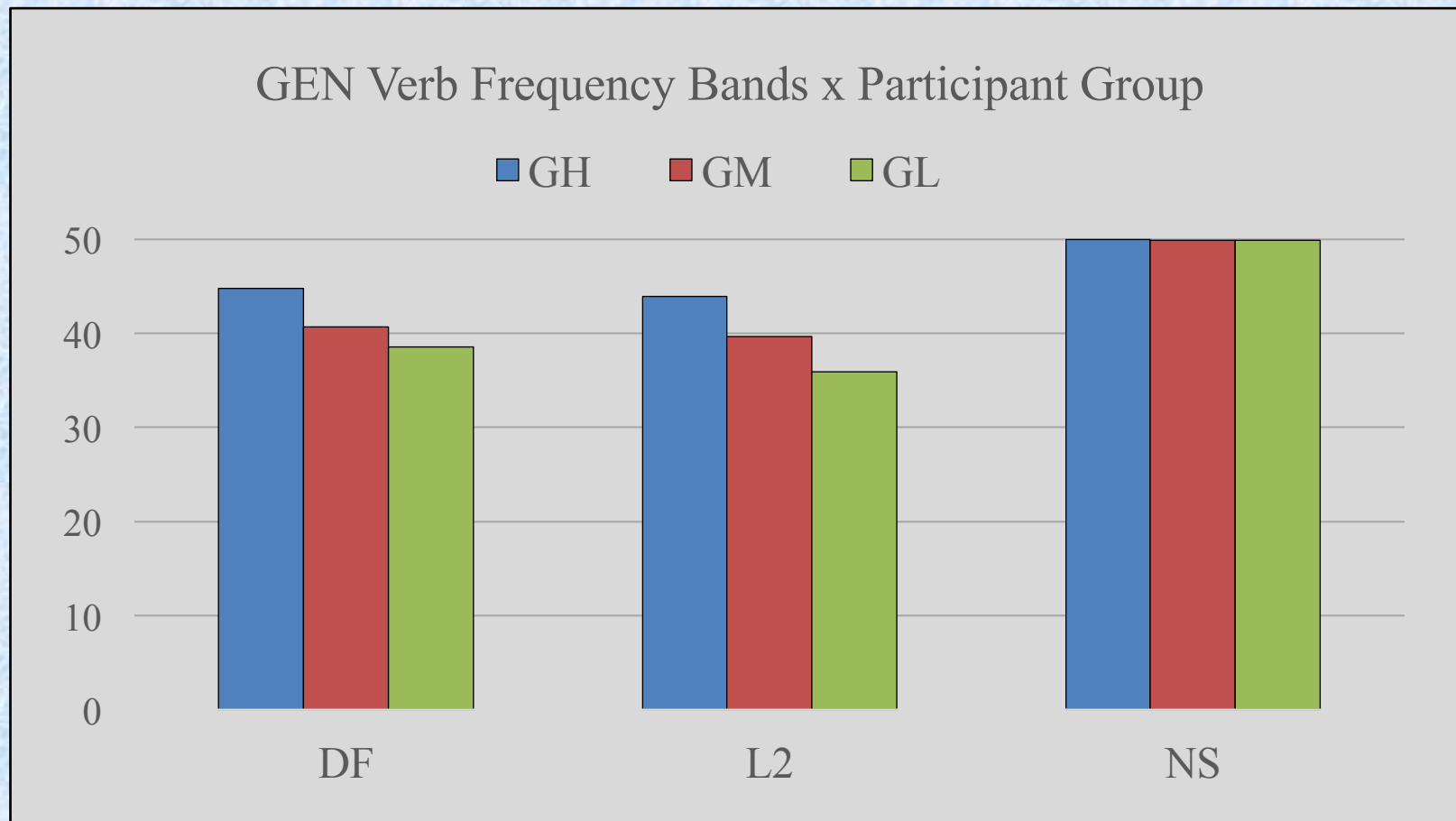
ACAD Verbs x Group, $p < .0001$ NS > L2 > DF $p < .05$

Total Scores by Group: GEN Verbs & ACAD Verbs

■ GEN   ■ ACAD

	GEN	ACAD
DF	123.9	76.1
L2	119.5	89.3
NS	149.8	135.8

Participant Groups' Performance on *General-Purpose* English Verbs by Frequency Band: 50 items each

GEN Frequency x Group, $p < .0001$ NS > [DF = L2] $p < .05$

GEN Verb Frequency Bands x Participant Group

Legend: GH, GM, GL

Participant Groups' Performance on *Academic* English Verbs by Frequency Band: 50 items each

ACAD Frequency x Group, $p < .0001$ NS > L2 > DF $p < .05$

ACAD Verb Frequency Bands x Participant Group
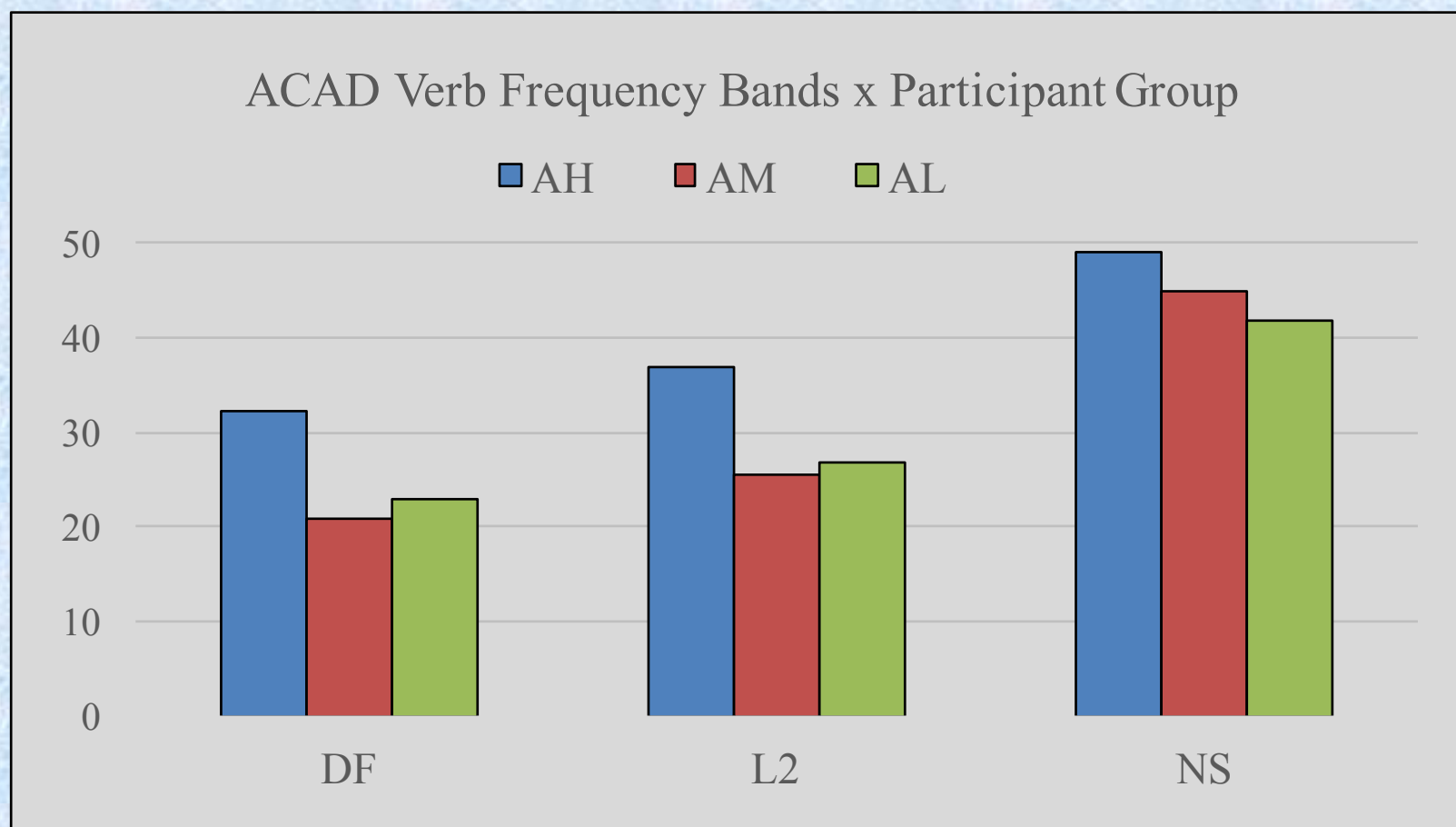
Learner Groups' Performance by Proficiency Level

Total Score x Learner Group x Proficiency Level
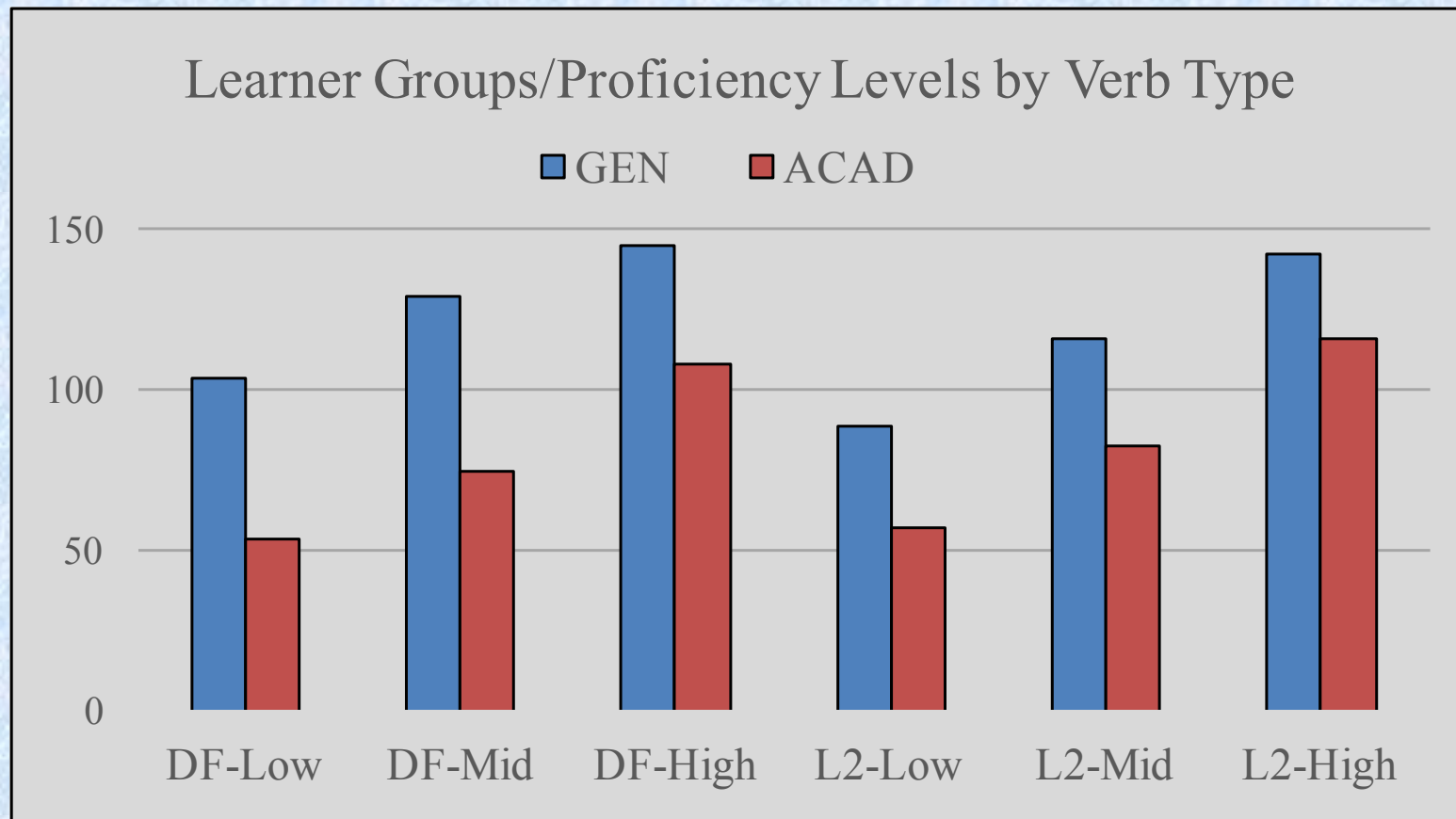
Proficiency Level Main Effect $p < .0001$
High > Mid > Low $p < .05$

No significant difference by Learner Group (DF = L2)

| Proficiency Level	Total Score	Standard Deviation
Low	152	37
Mid	200	42
High	255	28

14

Learner Groups/Proficiency Levels' Performance by Verb Type (GEN, ACAD)

Verb Type x Learner Group x Proficiency Level, $p = .022$


Learner Groups/Proficiency Levels by Verb Type

Learner Groups/Proficiency Levels' Performance by GEN Verb Frequency Bands

GEN Frequency x Learner Group x Proficiency Level, $p = .003$

Learner Groups/Levels by GEN Verb Frequency Bands
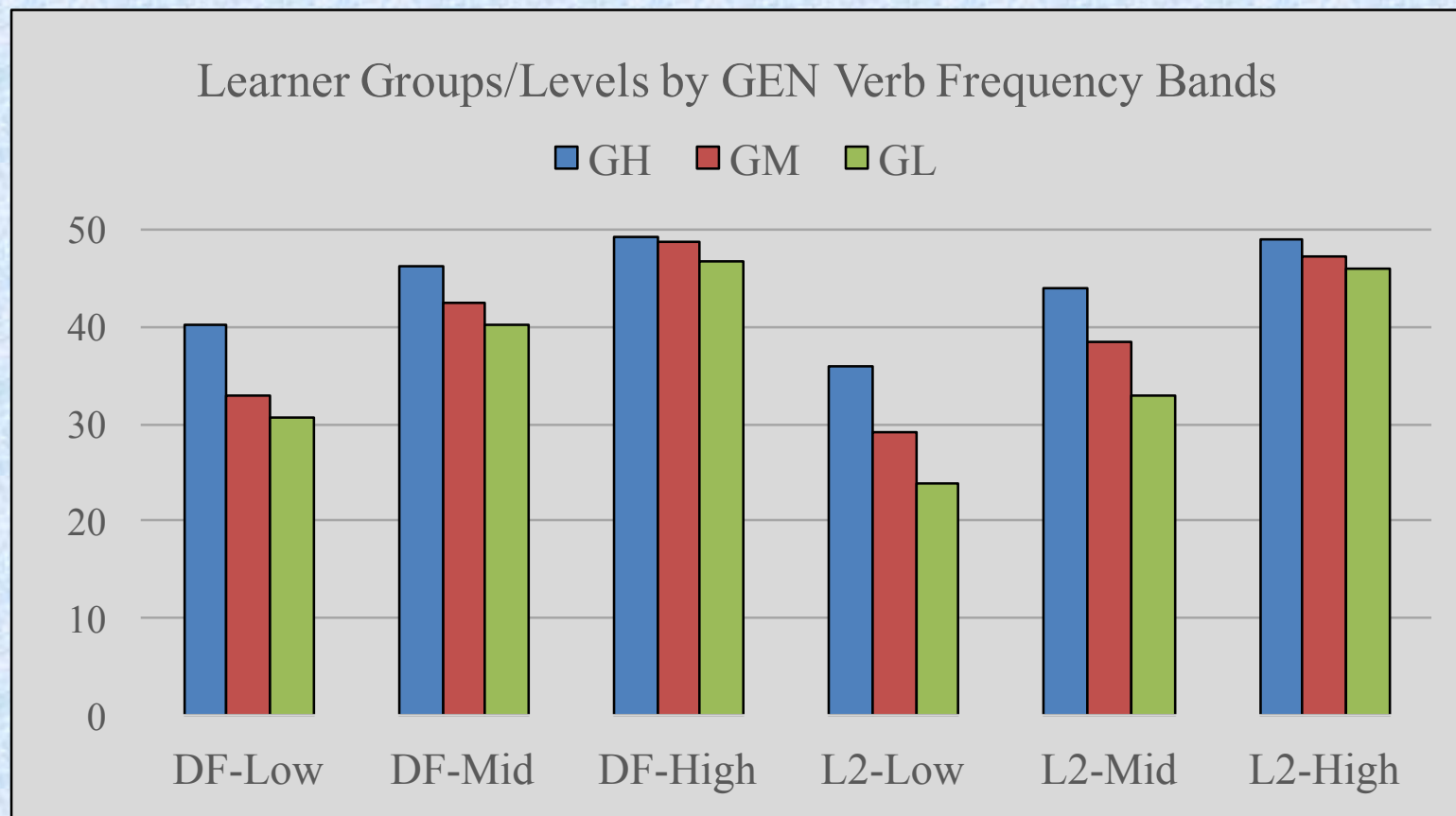
Learner Proficiency Levels' Performance by ACAD Verb Frequency Bands

ACAD Frequency x Proficiency Level, p < .0001

No significant difference by Learner Group (DF = L2)

Proficiency Levels by ACAD Verb Frequency Bands

17
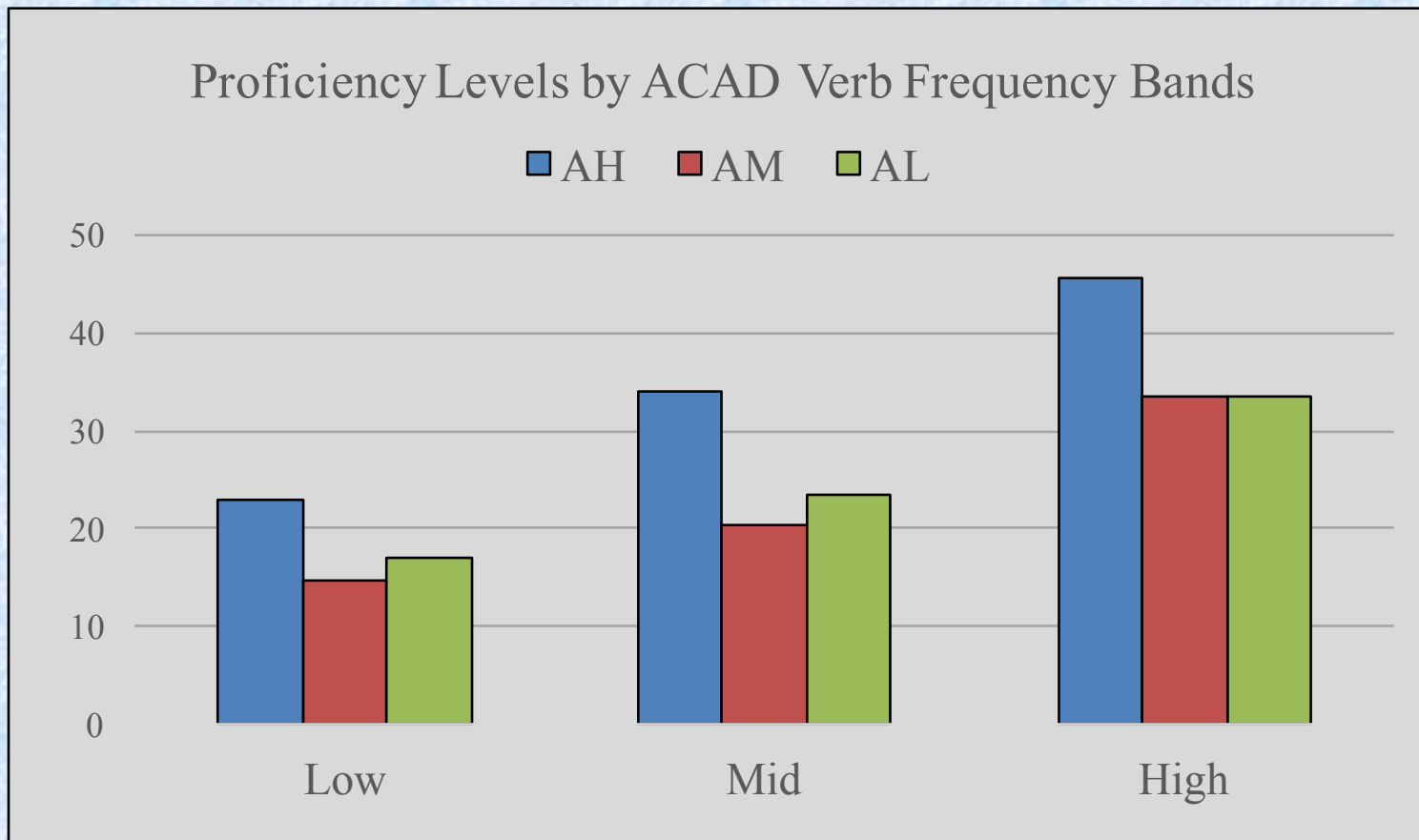
Summary of (Preliminary) Results

PARTICIPANT GROUPS (DF, L2, NS)

- NS group consistently outperformed DF and L2 groups
  - ❑ Total test score: NS > [DF = L2]
  - ❑ GEN verbs overall and by frequency: NS > [DF = L2]
  - ❑ ACAD verbs overall and by frequency: NS > L2 > DF

LEARNER GROUPS—PROFICIENCY LEVEL EFFECTS

- Performance increased by proficiency level with some differences between DF and L2
  - ❑ Total test score: High > Mid > Low
  - ❑ GEN & ACAD: High > Mid > Low
  - ❑ GEN > ACAD: Greater discrepancy for DF than for L2

Summary of (Preliminary) Results (*cont.*)

LEARNER GROUPS – VERB FREQUENCY EFFECTS

Performance increased across proficiency levels with some variation between separate DF and L2 proficiency levels

GEN Frequency Bands

- DF High and L2 High:
    Near-ceiling at all frequencies
- Both DF and L2:
    High > Mid > Low
- DF Low and Mid levels:
    GH > [GM ≈ GL]
- L2 Low and Mid levels:
    GH > GM > GL

ACAD Frequency Bands

- DF = L2:
    High > Mid > Low
- High:
    AH > [AM = AL]
- Low/Mid:
    AH > [AM ≈ AL]

Conclusions
For College-Level Deaf & Hard-of-Hearing Students

- <u>Overall</u> assessed English verb knowledge

  - ❑ Deaf/HH students < hearing, native English-speaking peers.
  - ❑ Discrepancy greater for academic than for general-purpose verbs.

- <u>Proficiency level</u> effects: Both general-purpose & academic verbs
  - ❑ Knowledge increased as overall English proficiency level increased.
  - ❑ Quite low performance on academic verbs, esp. by Low & Mid levels.

- <u>Verb-frequency</u> effects
  - ❑ **General-purpose**: Performance increased as verb frequency increased.
  - ❑ **Academic**:
    - ◆ Performance higher only on <u>academic high-frequency</u> verbs
    - ◆ Lower and equivalent performance on <u>academic mid- and low-frequency</u> verbs → *frequency threshold*

Implications

- Incorporate direct, focused (*academic* English) vocabulary teaching

  → Improved reading comprehension and written expression
  → Increased access to course content
  → Greater educational/career success

- Academic verbs as springboard to academic vocabulary teaching (verb meaning classes → usage in sentences → discourse functions)

- Creative use of Academic English corpora and existing vocabulary lists

- Investigate literature on vocabulary teaching; incorporate effective methodologies used in other English teaching settings (ESL, ESP, EAP)

- "English Vocabulary Test: General Purpose and Academic Verbs"

  ❑ Validity of grant-team-constructed test: Discriminated participants' English verb knowledge tied to independent factors
  ❑ Diagnostic assessment of general/academic vocabulary knowledge