An Idiosyncratic History of Dominance in L2A and Bilingualism Research

Second Annual SLATE Graduate Research Symposium
University of Illinois
May 6, 2010

David Birdsong
University of Texas
CONTEXT
Context:
the ‘deficit model’ tradition

**Bley-Vroman (1989: 44):** Insignificant incidence of nativelikeness in late L2A; “ineluctable failure”; fossilized non-nativeness

<= No access to UG; cognitively, L1 learners & L2 learners are fundamentally different
Context:
the ‘deficit model’ tradition


<= maturationally-based CPH/L2A
Context:
the ‘deficit model’ tradition

Long (1989: 280): “The ability to attain native-like phonological abilities [in an L2] is beyond anyone beginning later than age 12, no matter how motivated they might be or how much opportunity they might have. Native-like morphology and syntax only seem to be possible for those beginning before age 15.”

<= Maturational constraints
Context:
the ‘deficit model’ tradition

\textit{Gregg (1996: 52): “Truly native-like competence in an L2 is never attained.”}

$\leq$ Impaired access to UG; fundamental differences
Context: the ‘deficit model’ tradition

Hyltenstam & Abrahamsson (2003: 575): If we look at “overall L2 proficiency” we will find that “perfect proficiency” and “absolute nativelike command of an L2 may in fact never be possible for any [late L2] learner”

<= Deficient language-learning mechanisms

NB: B-V, J&N, Long, Gregg, H&A criterion = monolingual native

NB: All approach deficit from End State (= ultimate attainment) perspective
Context:
the ‘deficit model’ tradition

**Cutler (2003, inter alia):** In (supra-)segmental perception, L2ers “listen through L1 ears”; see also Peperkamp, Sebastian-Galles, Dupoux, etc.

NB: criterion = monolingual native; S’s not always at end state
Context: 
the ‘deficit model’ tradition

Tsimpli & Dimitrakopoulou (2007: 217): Uninterpretable features (e.g. +/- case) “difficult to identify and analyse in the input”

<= “persistent, maturationally-based L1 effects on adult L2 grammars”

=> role of detection in unlearnability of uF; cf. Lardiere (2009)

NB: criterion = monolingual native; S’s not always at end state
Context:
the ‘differences model’

Clahsen & Felser (2006: 564): L2 processing is nativelike in some areas of grammar; however even in high-proficient L2ers “differences persist in the domain of complex syntax” i.e., in “real-time computation of complex hierarchical representations”

<= possible sources: deficient L2 grammar; L1 transfer; cognitive resource limitations; maturational constraints

NB: C&F criterion = monolingual native; not all 8’s at end state
Context:
‘deficits and differences model’


= knowledge is deficient

Meisel (2009: 13) Fundamental Difference Hypothesis “does not entail that L2 acquisition becomes totally or partially impossible. Rather, the claim is that L2 knowledge is of a different kind”

= knowledge is different
Research under ‘deficit model’ or ‘differences model’

Current research in either ‘dm’, programmatically:

Data:
- varied behavioral & brain-based studies
- varied methods & tasks

Domains:
- range of processing and knowledge domains

Focus:
- non-nativelike processing at group level

Orientation:
- deterministic differences

Goal:
- theory of qualitative L1-L2 differences/deficiencies in knowledge & processing
NATURE, Causes, *domains*, and [models] of non-nativelike ultimate attainment (Hopp, 2007)

**NATURE:** REPRESENTATIONAL  COMPUTATIONAL

```
/    \   /        |        \   \\
      \    \        |        \\
```

**Cause:** Impairment   L1   Impairment   Inefficiency   L1

-[FT/FA]-

```
/    \   /        |        \\
      \    \        |        \\
```

**domain:** module   interface   parsing   info-   interference

```
routes   integration
```

-[FFF]-     [ufF]     [DP]     [limited capacity]     [CM]

-[SS]-     [MSI]

*Key to [models]* Full Transfer/Full Access; Failed Functional Features; Shallow Structures; Uninterpretable Features; Declarative/Procedural; Missing Surface Inflection; Competition Model
Research under ‘deficit model’ or ‘differences model’

**Current research in either ‘dm’, methodologically:**

- Usually studied:
  - L2 high-proficients

- Less studied:
  - L2 dominants

**Not always considered:**

- facilitating / inhibiting external factors
- individual pre-existent info processing differences, e.g. Working Memory
- reciprocal L2 <-> L1 influence
- Age of Acquisition (AoA) as comparison condition or control variable
- assurance of L2A asymptote
- incidence and correlates of nativelike performance

=> *Incomplete picture of nature + extent of deficits/differences*
*Descriptive gaps w/r/t upper limits of (late) L2A*
Complementing deficits and differences: the ‘capacities model’

Orientation: Characterize (late) L2 learning under facilitating conditions
- maximize L2 input and interaction
- minimize L1 input and interaction
- motivation components
- psycho-social identification components
- processing components stronger in L2 than L1
- aptitude components (≠ ‘freakish’ aptitude)
Complementing deficits and differences: the ‘capacities model’

**Rationale: To understand**

- what learners do
- what learners don’t do
- what learners can do
- what learners can’t do
Context: the ‘capacities model’

Methodologically:
Most relevant populations
- L2 dominants
- L1 attriters
- (L2 high-proficients)
- incentivized L2ers: functional need for L2 nativelikeness
- L2ers desiring socio-cultural integration, L2 identity

= People for whom known inhibiting factors have been removed
Context:
the ‘capacities model’

**Programmatically:**
Integrate:
- Individual differences w/r/t internal factors e.g. working memory, executive control, attentional and inhibitory processes

**Rationale:**
- *internal factors predict level of ultimate attainment in some tasks*
- *address claims that only exceptional aptitude => nativelikeness*
Context:
the ‘capacities model’

Programmatically:

Integrate:
- Individual differences w/r/t internal factors e.g. working memory, executive control, attentional and inhibitory processes

  Rationale:
  - *internal factors predict level of ultimate attainment in some tasks*
  - *address claims that only exceptional aptitude => nativelikeness*

Integrate:
- Facilitating / inhibiting external conditions

  Rationale:
  - *in comparing L1A and L2A end state, level the playing field in terms of facilitating conditions*
  - ‘normal’ L2A conditions = abnormal for language acquisition generally
Context: the ‘capacities model’

Programmatically:
Integrate:
- Individual differences w/r/t internal factors e.g. working memory, executive control, attentional and inhibitory processes
  Rationale:
  - *internal factors predict level of ultimate attainment in some tasks*
  - *address claims that only exceptional aptitude => nativelikeness*
Integrate:
- Facilitating / inhibiting external conditions
  Rationale:
  - *in comparing L1A and L2A end state, level the playing field in terms of facilitating conditions*
  - ‘normal’ L2A conditions = abnormal for language acquisition generally
Integrate:
- AoA / AoT as control, predictor variables
  Rationale:
  - *we know the effects of age and their sources*
  - *what can L2ers do in spite of age influences?* [handout, 3 supplements]
Context:
the ‘capacities model’

Programmatically:
Goals:

Establish end state processing & knowledge profiles of L2 dominants:
- dominance operationalized by L2 vs L1 relative use
- dominance operationalized psycholinguistically (with language processing metrics)
- late and early dominants
- unstable dominants
- heritage, attrition, and adoptee contexts
Context:
the ‘capacities model’

Programmatically:

Goals:

Establish end state processing & knowledge profiles of L2 dominants:
- dominance operationalized by L2 vs L1 relative use
- dominance operationalized psycholinguistically (with language processing metrics)
- late and early dominants
  - unstable dominants
  - heritage, attrition, and adoptee contexts

Comparisons of L2 dominants (late and early L2ers) with:
- adult monolinguals [more later]
- balanced bilinguals (late and early)
- non-dominant L2ers (late and early)
Context: the ‘capacities model’

Programmatically:

Goals:

Establish end state processing & knowledge profiles of L2 dominants:
- dominance operationalized by L2 vs L1 relative use
- dominance operationalized psycholinguistically (with language processing metrics)
- late and early dominants
- unstable dominants
- heritage, attrition, and adoptee contexts

Comparisons of L2 dominants (late and early L2ers) with:
- adult monolinguals [more later]
- balanced bilinguals (late and early)
- non-dominant L2ers (late and early)

Distinguish:
- dominants at varying degrees of dominance [more later]
- dominants at varying degrees of proficiency [more later]
- heritage speakers and L1 relearners
Context: the ‘capacities model’

Programmatically:

Goals:

Establish end state processing & knowledge profiles of L2 dominants:
- dominance operationalized by L2 vs L1 relative use
- dominance operationalized psycholinguistically (with language processing metrics)
- late and early dominants
- unstable dominants
- heritage, attrition, and adoptee contexts

Comparisons of L2 dominants (late and early L2ers) with:
- adult monolinguals [more later]
- balanced bilinguals (late and early)
- non-dominant L2ers (late and early)

Distinguish:
- dominants at varying degrees of dominance [more later]
- dominants at varying degrees of proficiency [more later]
- heritage speakers and L1 relearners

Analyses:
- group and individual
  - between group
  - correlational (degree of dominance as predictor of level of performance)
- case studies, profiles of individuals
Context: the ‘capacities model’

Programmatically:

Goals:

Establish end state processing & knowledge profiles of L2 dominants:
- dominance operationalized by L2 vs L1 relative use
- dominance operationalized psycholinguistically (with language processing metrics)
- late and early dominants
- unstable dominants
- heritage, attrition, and adoptee contexts

Comparisons of L2 dominants (late and early L2ers) with:
- adult monolinguals [more later]
- balanced bilinguals (late and early)
- non-dominant L2ers (late and early)

Distinguish:
- dominants at varying degrees of dominance [more later]
- dominants at varying degrees of proficiency [more later]
- heritage speakers and L1 relearners

Analyses:
- group and individual
  - between group
  - correlational (degree of dominance as predictor of level of performance)
  - case studies, profiles of individuals

Integrate the above into theories of L2 attainment at the limit
Context:
the ‘capacities model’

Programmatically:
Keep in mind:

- Profiles are of value in their own right (v. comparative fallacy)

- L2 <-> L1 influence (L1 of a monolingual ≠ L1 of a bilingual)

- Dominance is a scalar construct
DOMINANCE IN THE LITERATURE
Dominance in the literature

Nativelike capacities of L2 attainment in L2-dominants

Flege, MacKay & Piske (2002)
Accent study, Italian L1/English L2 late and early bilinguals:
  (1) late bilinguals; low and high proficiency
  (2) early bilinguals; low and high proficiency
  (3) L2-dominants, all early bilinguals

Detectable accents among (1) & (2)
  \textit{BUT}: (3) = like native controls

\Rightarrow For dominants \textit{“interlingual interference effects may not be inevitable”}
Dominance in the literature

Asymmetrical capacities of attainment among dominants

Golato (2002): English L1, late L2 French, in phoneme monitoring task:

*English dominants (L1 dominants) SWITCH parsing strategies*
- parse French words (e.g. *bal-con*; *ba-lance*) like French monolingual natives
- parse English words (e.g. *bal-cony*; *ba [l] ance*) like English monolingual natives

*French dominants (L2 dominants) DO NOT SWITCH*
- parse both English and French words like French monolinguals
Dominance in the literature

Asymmetrical capacities of attainment among dominants

Golato (2002): English L1, late L2 French, in phoneme monitoring task:

*English dominants (L1 dominants) SWITCH parsing strategies*
  - parse French words (e.g. bal-con; ba-lance) like French monolingual natives
  - parse English words (e.g. bal-cony; ba [l] ance) like English monolingual natives

*French dominants (L2 dominants) DO NOT SWITCH*
  - parse both English and French words like French monolinguals

=> cf. Cutler et al. (1989) who found opposite asymmetry among *early* bilinguals (French-dominants switched, but not English-dominants) “there is, at present, no model of late versus early bilingualism that would account for this asymmetry” (v. Tremblay, in press; v. Bullock et al. 2006 on asymmetries in VOT values in Spanish-English L1-L2 code-switching)
Dominance in the literature

Differential capacities of attainment among dominants

Kim, Montrul & Yoon (2010): Native Korean and 3 English-dominant groups:
(1) Korean attrition (late bilinguals)
(2) Incomplete Korean L1 (early bilinguals)
(3) Incomplete Korean L2 (late bilinguals)

Truth-value judgment task for binding interpretation of Korean anaphor *caki*

(3) Performed like native Korean controls

Dominance in the literature

**Differential capacities of attainment among dominants**

*Kim, Montrul & Yoon (2010):* Native Korean and 3 English-dominant groups:

1. Korean attrition (late bilinguals)
2. Incomplete Korean L1 (early bilinguals)
3. Incomplete Korean L2 (late bilinguals)

Truth-value judgment task for binding interpretation of Korean anaphor *caki*

(3) *Performed like native Korean controls*

=> **In this domain, no attrition effects observed in late bilinguals.**

“The magnitude of language loss as estimated from transfer from English is more severe in early bilinguals (incomplete L1 learners) than in late bilinguals (L1 attriters). This discrepancy in extent (and possibly in nature as well) between child and adult L1 loss may be indicative of different mechanisms responsible for attrition according to age of onset of bilingualism.”
Dominance in the literature

Mixed picture of attainment among dominants

Mack (1989): 10 English-French early bilinguals, half w/ L1 English, all English dominant; 10 English monolinguals, perception and production tasks:

*English L1- and L2-dominant bilinguals*
- perceive and produce /t/-/d/ like English monolinguals
- perceive and produce /i/-/l/ like English monolinguals
- on almost all acoustic parameters at group level
- on almost all individual analyses
Dominance in the literature

Mixed picture of attainment among dominants

Mack (1989): 10 English-French early bilinguals, half w/ L1 English, all English dominant; 10 English monolinguals, perception and production tasks:

*English L1- and L2-dominant bilinguals*
- perceive and produce /t/-/d/ like English monolinguals
- perceive and produce /i/-/I/ like English monolinguals
- on almost all acoustic parameters at group level
- in almost all individual analyses

⇒ “With respect to certain types of tasks and acoustic/phonetic parameters, a bilingual’s dominant language can remain impervious to the influence of the nondominant language”
Dominance in the literature

Mixed picture of attainment among dominants

Mack (1989): 10 English-French early bilinguals, half w/ L1 English, all English dominant*; 10 English monolinguals, perception and production tasks:

*English L1- and L2-dominant bilinguals
- perceive and produce /t/-/d/ like English monolinguals
- perceive and produce /i/-/l/ like English monolinguals
- on almost all acoustic parameters at group level
- in almost all individual analyses

⇒ “With respect to certain types of tasks and acoustic/phonetic parameters, a bilingual’s dominant language can remain impervious to the influence of the nondominant language”

⇒ BUT: the differences that were observed “revealed that bilingual phonetic transfer and/or systematic restructuring of the phonetic component can occur, at least in the perceptual domain, even in a dominant language used regularly and productively since early childhood”
Dominance in the literature

Mixed picture of attainment among dominants

Mack (1989): 10 English-French early bilinguals, half w/ L1 English, all English dominant*; 10 English monolinguals, perception and production tasks:

*English L1- and L2-dominant bilinguals
- perceive and produce /t/-/d/ like English monolinguals
- perceive and produce /i/-/ı/ like English monolinguals
- on almost all acoustic parameters at group level
- in almost all individual analyses

⇒ “With respect to certain types of tasks and acoustic/phonetic parameters, a bilingual’s dominant language can remain impervious to the influence of the nondominant language”

⇒ BUT: the differences that were observed “revealed that bilingual phonetic transfer and/or systematic restructuring of the phonetic component can occur, at least in the perceptual domain, even in a dominant language used regularly and productively since early childhood”

Mack (1989): In work with dominance, need to look at individual differences; bring granularity, hedging, subtlety to the research
Dominance in the literature

Dominants who fail

Hyltenstam et al. (2009): 4 native Spanish early adoptees, (AoA 1, 2, 9 &4); 27 immigrants (AoA range 1-9), mean AoT of both groups = 31 years. All moved into Swedish context. Fifteen age/education/sex-matched Swedish native controls. “All of the adoptees claimed to have ‘forgotten’ their L1 completely”
Dominance in the literature

Dominants who fail

Hyltenstam et al. (2009): 4 native Spanish early adoptees, (AoA 1, 2, 9 &4); 27 immigrants (AoA range 1-9), mean AoT of both groups = 31 years. All moved into Swedish context. Fifteen age/education/sex-matched Swedish native controls. “All of the adoptees claimed to have ‘forgotten’ their L1 completely”

Ten measures of Swedish:
- VOT production
- VOT perception
- recognize and repeat words in babble noise
- repeat sentences heard in white noise
- grammaticality judgment (audio modality)
- grammaticality judgment (written modality)
- response times in GJT’s
- cloze test
- knowledge of idioms
- knowledge of proverbs
Dominance in the literature

**Dominants who fail**

Hyltenstam et al. (2009): 4 native Spanish early adoptees, (AoA 1, 2, 9 & 4); 27 immigrants (AoA range 1-9), mean AoT of both groups = 31 years. into Swedish context. Fifteen age/education/sex-matched Swedish native controls. “All of the adoptees claimed to have ‘forgotten’ their L1 completely”

Ten measures of Swedish:
- VOT production
- VOT perception
- recognize and repeat words in babble noise
- repeat sentences heard in white noise
- grammaticality judgment (audio modality)
- grammaticality judgment (written modality)
- response times in GJT’s
- cloze test
- knowledge of idioms
- knowledge of proverbs

SEE HANDOUT: *Adoptees did not outperform immigrants*  
*Only earliest-arriving adoptee performed in NS range*
Dominance in the literature

**Dominants who fail**

Hyltenstam et al. (2009): 4 native Spanish early adoptees, (AoA 1, 2, 9 & 4); 27 immigrants (AoA range 1-9), mean AoT of both groups = 31 years. All moved into Swedish context. Fifteen age/education/sex-matched Swedish native controls. “All of the adoptees claimed to have ‘forgotten’ their L1 completely”

Ten measures of Swedish:
- VOT production
- VOT perception
- recognize and repeat words in babble noise
- repeat sentences heard in white noise
- grammaticality judgment (audio modality)
- grammaticality judgment (written modality)
- response times in GJT’s
- cloze test
- knowledge of idioms
- knowledge of proverbs

**SEE HANDOUT:** Adoptees did not outperform immigrants

*Only earliest-arriving adoptee performed in NS range*

⇒ “the four participants in the study who were adopted and thus had experienced dominant-language replacement did not outperform those participants who had maintained their L1. (...) severe L1 attrition has not served them in their acquisition of a new dominant language as the IH (Impediment Hypothesis) predicts.”

⇒ **Results are seen as supporting a maturational account of impediments to L2 learning. They “provide evidence that the gradual loss of brain plasticity is a fact even in cases where the condition of a triggered language learning mechanism has been met”**
Dominance in the literature

Dominants who fail

Hyltenstam et al. (2009):

Characteristics of adoptees not specified:
- normal L1 development?
- normal cognitive development?
- trauma before/during/after adoption?
- conditions for socialization and language development in orphanage and after adoption?
- Swedish-only environment after adoption?
- identify themselves with Swedish language & culture?

= Did the adoptees have external and internal facilitating conditions for language learning?
Dominance in the literature

**Dominants who fail**

Hyltenstam et al. (2009):

Performance on language battery measures (Handout, last page)

- low scores in experience-based ‘anthropological’ learning (idioms, proverbs: items 9 & 10; possibly collocations in item 8) can’t be attributed to loss of language-specific learning ability

- composite scores (DSN) of immigrants do not correlate with AoA, nor do DSN of (immigrants + adoptees), calling into question maturational account of overall performance
Dominance in the literature

**Dominants who fail**

Hyltenstam et al. (2009):

Overall
- risky to generalize from N = 4
- case study methodology warranted here w/r/t conditions and motivations for learning Swedish
- need independent assessment of residual Spanish knowledge
Patterns of dominance among early bilinguals

Dupoux et al. (2009): 23 French-Spanish early bilinguals; 20 Spanish monolinguals*
   from Barcelona; 39 French native late (>10 YOA) learners of Spanish, stress
   perception tasks:

Individual early bilinguals’s scores on composite stress deafness measures = bimodally
distributed

- about half patterned like Spanish monolinguals, half like late L2 learners of Spanish
Dominance in the literature

Patterns of dominance among early bilinguals

Dupoux et al. (2009): 23 French-Spanish early bilinguals; 20 Spanish monolinguals* from Barcelona; 39 French native late (>10 YOA) learners of Spanish, stress perception tasks:

Individual early bilinguals’ scores on composite stress deafness measures = bimodally distributed
- about half patterned like Spanish monolinguals, half like late L2 learners of Spanish

Observed bimodal distribution of performance “cannot exclude that some or all bilinguals who have native-like performance in Spanish also have (near-)native-like performance in French. (...) it is indeed necessary to probe the performance of simultaneous bilinguals on two contrasts, one specific to one of the bilinguals’ language, the other one specific to the other language”
Dominance in the literature

**Syntactic priming, test of Shallow Structure Hypothesis**

**Mallonee Gertken (in progress):** Anglophone L2 French users at varying proficiencies, including highly-proficient L2 dominants, AoA controlled; French natives, syntactic priming under eye-tracking, four experiments:

*In context of SSH, determine processing capacities at varying levels of proficiency and upper limits of attainment. Convergence with natives?*

**Motivation & design of study (1):** support for SSH is substantial but “it remains to be seen whether all late L2 learners are limited to shallow processing.”

**Motivation & design of study (2):** “To date, there is no independent evidence that, given the option of either a shallow processing route or ‘deep’ structural route, L2 speakers and NS make different decisions or construct different representations”
Dominance in the literature

**Syntactic priming, test of Shallow Structure Hypothesis**

*Mallonee Gertken (in progress):* Anglophone L2 French users at varying proficiencies, including highly-proficient L2 dominants, AoA controlled; French natives, syntactic priming under eye-tracking, four experiments:

*In context of SSH, determine processing capacities at varying levels of proficiency and upper limits of attainment. Convergence with natives?*

Motivation & design of study (1): support for SSH is substantial but “it remains to be seen whether all late L2 learners are limited to shallow processing.”

Motivation & design of study (2): “To date, there is no independent evidence that, given the option of either a shallow processing route or ‘deep’ structural route, L2 speakers and NS make different decisions or construct different representations”

Sample prime, containing conflicting grammatical and plausibility information: *Un journaliste aborda l’avocat de la chanteuse qui est très passionné de la musique / qui est très passionnée du droit* ‘A journalist approached the lawyer of the singer who is very passionate about music/who is very passionate about law’
OPERATIONALIZING DOMINANCE
Operationalizing dominance

**L2 dominance**

- **EXPERIENTIAL**
  - Current L2 use greater than L1 use; *cf. LOR, AOA variables*
  - Early and current country of residence

- **PSYCHOLINGUISTIC**
  - Processing / speaking in L2 more efficient (faster, more accurate, less effortful) than in L1; *cf. grammatical proficiency*

- **PSYCHO-SOCIAL**
  - Self-identification, ‘comfort’, cultural assimilation, family allegiance
Operationalizing dominance

**L2 dominance**

*Mack (1989)*

Characteristics of English dominant participants

- had acquired English and French in early childhood
- self-rated as nativelike in English but somewhat less so in French
- their English independently judged to be better than their French
- all independently judged to be native speakers of English
- French and English used regularly, but English more extensively
Operationalizing dominance

**L2 versus L1 dominance**

**Flege, MacKay & Piske (2002)**

Gradient dominance measure was developed from self-ratings in both languages (English L2 and Italian L1) for:

- speaking and understanding
- reading and writing

... expressed as ratios (Italian rating ÷ English rating)

... for Low vs. High L1 use and Early vs. Late arrivals
Operationalizing dominance

**L2 versus L1 dominance**

*Flege, MacKay & Piske (2002)*

Gradient dominance measure is developed from self-ratings in both languages (English L2 and Italian L1) for:
- speaking and understanding
- reading and writing
... expressed as ratios (Italian rating ÷ English rating)
... for Low vs. High L1 use and Early vs. Late arrivals

=> “both the age of L2 learning and language use patterns are associated with differences in bilingual dominance. The bilinguals who were most likely to be Italian dominant arrived in Canada as young adults and continued to use Italian frequently whereas the bilinguals who were most likely to be English dominant arrived in Canada as children and used Italian relatively seldom.”
Operationalizing Dominance

L2 versus L1 dominance

Flege, MacKay & Piske (2002)

Gradient dominance measure was developed from repeating aloud aurally-presented sentences in Italian vs. English:

... expressed as ratios (sentence length [duration] Italian ÷ English)

The sentence-length ratios significantly correlated with:
  - verbal self-rating ratios
  - written self-rating ratios
  - LOR
  - L1 use
  - AoA
Operationalizing dominance

L2 versus L1 dominance

Flege, MacKay & Piske (2002)

Gradient dominance measure was developed from repeating aloud aurally-presented sentences in Italian vs. English:

... expressed as ratios (sentence length [duration] Italian ÷ English)

The sentence-length ratios significantly correlated with:
- verbal self-rating ratios
- written self-rating ratios
- LOR
- L1 use
- AoA

=> Correlates of dominance, as operationalized as ratios “the later in life the bilinguals had arrived in Canada, the fewer years they tended to have resided in Canada, and the more often they used Italian, the more dominant in Italian [on the ratio measures] the bilinguals tended to be”
Operationalizing dominance

L2 versus L1 dominance

Flege, MacKay & Piske (2002)

NB: Discrete (nominal) classifications for dominance are not informative; Flege, MacKay & Piske (2002) found that nominal classifications suggested erroneously that dominance is not affected by L1 use.
Operationalizing Dominance

Correlates of observed dominance

Dupoux et al. (2009)

- Country of residence between 0-2 YOA (binary)
- Country of residence between 2-4 YOA (binary)
- Amount of exposure between 2-4 YOA (gradient)

Operationalizing dominance

Composite dominance measure

Golato (2002)

Components of the measure:
- Recall of words in sentences presented in noise (background speech)
- Read-aloud speed with distracter noise
- Judgments of grammaticality for
  Exceptional Case Marking (French)
  tense/aspect distinctions (English)

=> Composite scores aligned with self-reported dominant (preferred) language: “self-ratings of language dominance are indeed related to performance on linguistically-based tasks.”
Operationalizing dominance

A quick, gradient Bilingual Dominance Scale

Dunn & Fox Tree (2009)

Components of the measure (self report):
- Age of learning each language [0-5 YOA = 5 points; 6-9 = 3; 10-15 = 1; 16+ = 0]
- Age at which comfortable speaking each language [0-5 YOA = 5 points, 6-9 = 3; 10-15 = 1; 16+ = 0; “not yet comfortable” = 0]
- Which language is predominantly used at home [discrete; 5 points if one language, 3 for each if equally used]
- Which language are math calculations done in [discrete; 3 points if one, 0 if both]
- Which language is foreign-accented? [discrete; 5 points if one language, 3 for each if equally accented]
Operationalizing dominance

A quick, gradient Bilingual Dominance Scale

Dunn & Fox Tree (2009)

Components of the measure (self report) - continued:
- Which language would you retain for the rest of your life [discrete, 2 points]
- Years of schooling in each language [discrete (1-6 years = 2 points; 7+ years = 1 point)]
- Loss of fluency in one language [discrete, -3 points; 0 if no loss]
- Predominant language of country/region of residence [discrete, 5 points]
Operationalizing dominance

A quick, gradient Bilingual Dominance Scale
Dunn & Fox Tree (2009)

PROS:
Questions are understandable
Instrument is quick and easy to administer
Operationalizing dominance

A quick, gradient Bilingual Dominance Scale

Dunn & Fox Tree (2009)

PROS:
Questions are understandable
Instrument is quick and easy to administer

CONS:
- Schooling question neglects ages at which schooling took place
- Predominant language of current residence question has no LOR information
- Instrument would be more conceptually consistent if all items were framed to allow for scaled (continuous) answers
- Weights assigned to individual answers seem arbitrary
- Not clear if instrument is equally applicable to heritage and immigrant contexts
- A score of “0” (= non-dominant bilingual) can be reached in various incommensurable ways; “0” might mask various underlying dominances
CONCEPTUALIZING DOMINANCE
Conceptualizing dominance

Reflections on the construct of dominance:
Dunn & Fox Tree (2009) text (and other researchers) refer to high proficiency and fluency as equivalent to strong dominance

What is the relationship of dominance to proficiency?

- A balanced (non-dominant) bilingual can be highly proficient in both languages
- Another balanced (non-dominant) bilingual can be weakly proficient in both languages
- A person who is L2 dominant doesn’t necessarily perform like a native monolingual in that language
- A person who is L1 dominant doesn’t necessarily perform like a native monolingual in that language

THM: When thinking about dominance one can’t assume a high proficiency score, only relative proficiency (use/processing capacity, etc.) in the L1 vs the L2
Conceptualizing dominance

Reflections on the construct of dominance: Dunn & Fox Tree (2009) text (and other researchers) refer to high proficiency and fluency as equivalent to strong dominance

What is the relationship of dominance to proficiency?

- Dominance is a construct deriving from the nature of bilingualism
- Dominance is inherently relativistic, *pace* ‘replacement dominance’ ‘forgetting’

- Proficiency does not require the context of bilingualism for its definition; can apply in monolingual context
- Proficiency is not inherently relativistic

THM: Proficiency and dominance are logically independent from but often correlated

THM: Proficiency is often incorporated in measures of dominance but should not alone define dominance (for the reasons above)
Conceptualizing dominance

Reflections on the construct of dominance:
Dunn & Fox Tree (2009) text (and other researchers) refer to high proficiency and fluency as equivalent to strong dominance

What is the relationship of dominance to proficiency?

=>When thinking about dominance one can’t assume a high proficiency score, only relative proficiency (use/processing capacity, etc.) in the L1 vs the L2

THM: BUT if proficiency is part of your operational definition of dominance, then you have to decide whether to use:
- relative L1-L2 proficiency
- criterion-referenced (cut-off scores) proficiency
- norm-referenced (natives) proficiency
- all of the above?
CLOSING THOUGHTS
Dominance in experimental design

In experimental studies, use of dominance

- As a grouping variable (e.g. in ANOVA)
- As a predictor variable (e.g. regression)

The latter takes advantage of the gradient nature of dominance.

Example: In Golato (2002) does degree of English dominance predict the frequency of parsing-strategy switch?
Limits on bilingualism = conditioned by operationalization of dominance?

Mack (1989): “Thorough examination of individual differences is beyond the scope of this study. However, it is of interest that bilingual subjects M.T. and N.T. were siblings who claimed to have had nearly identical exposure to their two languages. Yet their speech production parameters were quite dissimilar, as inspection of their VOT and vowel durations reveals.”
Limits on bilingualism = conditioned by operationalization of dominance?

Mack (1989): “Thorough examination of individual differences is beyond the scope of this study. However, it is of interest that bilingual subjects M.T. and N.T. were siblings who claimed to have had nearly identical exposure to their two languages. Yet their speech production parameters were quite dissimilar, as inspection of their VOT and vowel durations reveals.”

=> Individuals who are comparable on exposure- and use-based operationalizations of dominance may not perform comparably in the dominant language.

- Consider inter-individual differences in other biographical variables: AoA, AoT, gender (?), motivation, socialization, etc. cf. Hyltenstam et al. (2009)

- Consider L1 maintenance: for Mack (1989) - type studies, compare VOT and vowel duration in individuals’ non-dominant language
Capacities model

In upper limits – capacities explorations

Assessments of dominance for grouping-variable and predictor-variable designs for upper limits study should include individual differences in relevant dimensions, e.g., identification, especially w/r/t accent.
Profiling

**The value of profiles**

Especially when two L2 dominants vary by AoA, both can be strongly dominant in L2 but differ markedly in proficiency dimensions (and perform differently on tests of processing, production, grammatical knowledge, etc.).

=> Observations such as these point to idiosyncrasies involved with dominance at the end state, and point to the need for theory-independent descriptive profiling.
The value of profiles

Profiling can reveal how dominance effects are selective; effects may vary by:
- domain (e.g. morpho-syntax, interface, sociolinguistic self-ID marking)
- sub-domain (e.g. uninterpretable features, prosodic cues to interpretation, ‘shibboleth’ features of accent)
Big-picture considerations

AoA, dominance and learning context:

Explore: to what AoA is L2 dominance possible, and to what degree:

– In immigrant L2A context
– In heritage context
– In L1 attrition context

(L1 use / maintenance varies between contexts)
Big-picture considerations

Dominance as a socio-political fact:
Mallorca context
Border-states context
European immigration context

- Look at longitudinal dynamics of proficiency-based dominance, within and across generations
- Consider accompanying evaluative attitudes from insiders (L2-dominant speakers themselves), and from outsiders (local monolinguals)
Big-picture considerations

Brain-based research:

- What are the electrophysiological correlates of (varying degrees of) dominance?

- What regional brain activations are associated with (varying degrees of L2 dominance)?

*dominance distinct from proficiency*
WITH GRATITUDE

Molly Mack
• Notes to self slide:

**NB:** In the **immigrant context**, observed significant correlations of performance with AoA (as in Flege et al., 2002) are readily interpretable. However, correlations with AoA aren’t always straightforwardly applicable in heritage context, where L2 is later learned but becomes dominant.

• Dupoux and company!
• Include lee / dekeyser dissoc
• Results are idiosyncratic but are less grim and are not monolithically failure and are more accurate depiction of outcomes: range where L1 effects may or may not be seen; processing versus production vs. knowledge; interface incompleteness vs divergence
• Say about molly preview of things to come
• Flege AND Golato worked on dominance scale
• Get the montrul book; QUOTE JASON ROTHMAN’s take on AGE and incomple
• Highly variable a la rbv
• nonMonolingual likeness even at early biling
• What to make of this?
• Fast forward to present: dunn and fox tree / marian
• Hyltenstam
• Lee / dekeyser dissoc
• Reactions to monolingual standard; call for more descriptive comprehensive; rejection of monolingual
More notes to self

• Has done a lot in the deficit model tradition too
More notes to self

- Idiosyncratic
- As predictor variable
- Mention Peter w/r/t correlation/prediction

- Dominance as the flip side of attrition
- As the increasingly less likely outcome with increasing AOA
- As a sociopolitical fact (Mallorca)
- As a dynamic defining phenomenon in heritage
- As a grouping variable
- As a predictor variable
- As a targeted population understudied and needing more study
- Esoecuakky [test tace] in the ‘capacities’ model, where fewer disadvantages
- Extreme L1 attrition is replacement by now dom
- Ortega; a phenomenon that is worthy of attention in own right, reflecting more or less influence of L1 and a stew pot of social/id influences
5- L2 dominance & nativelikeness

Upper limits of late attainment as observed in L2-dominants

Flege, MacKay & Piske (2002)
Both groups of late bilinguals (late low, late high) and both groups of early bilinguals (early low, early high) were found to produce English sentences with detectable accents. However, a group of 18 bilinguals (all early bilinguals) selected from the original sample of 72 based on their dominance in English did not have detectable foreign accents. This suggested that interlingual interference effects may not be inevitable.
Table 6. Characteristics (M, SD, range) of three groups of bilinguals who were classified as English dominant, balanced, or Italian dominant

<table>
<thead>
<tr>
<th></th>
<th>English dominant</th>
<th>Balanced</th>
<th>Italian dominant</th>
<th>F(2, 51)</th>
<th>Post hoc</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>6m, 12f</td>
<td>11m, 7f</td>
<td>8m, 10f</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>49 (5)</td>
<td>50 (5)</td>
<td>50 (8)</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40–58</td>
<td>35–59</td>
<td>29–62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L1 use</td>
<td>19 (20)</td>
<td>31 (24)</td>
<td>39 (22)</td>
<td>3.8*</td>
<td>1 &lt; 3</td>
</tr>
<tr>
<td></td>
<td>1–67</td>
<td>2–75</td>
<td>5–70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOR</td>
<td>42 (4)</td>
<td>37 (5)</td>
<td>30 (8)</td>
<td>17.2**</td>
<td>1 &gt; 2 &gt; 3</td>
</tr>
<tr>
<td></td>
<td>36–50</td>
<td>29–47</td>
<td>4–38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AOA</td>
<td>6 (3)</td>
<td>13 (6)</td>
<td>20 (3)</td>
<td>52.9**</td>
<td>1 &lt; 2 &lt; 3</td>
</tr>
<tr>
<td></td>
<td>2–11</td>
<td>2–23</td>
<td>15–25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sentence ratios</td>
<td>0.90 (0.04)</td>
<td>0.98 (0.03)</td>
<td>1.08 (0.05)</td>
<td>87.0**</td>
<td>1 &lt; 2 &lt; 3</td>
</tr>
<tr>
<td></td>
<td>0.82–0.97</td>
<td>0.92–1.05</td>
<td>0.99–1.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verbal ratios</td>
<td>0.67 (0.13)</td>
<td>1.0 (0.11)</td>
<td>1.26 (0.10)</td>
<td>118.8**</td>
<td>1 &lt; 2 &lt; 3</td>
</tr>
<tr>
<td></td>
<td>0.29–0.86</td>
<td>0.83–1.27</td>
<td>1.08–1.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Written ratios</td>
<td>0.53 (0.17)</td>
<td>0.97 (0.36)</td>
<td>1.65 (0.58)</td>
<td>34.7**</td>
<td>1 &lt; 2 &lt; 3</td>
</tr>
<tr>
<td></td>
<td>0.14–0.86</td>
<td>0.21–2.00</td>
<td>1.00–3.50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: M, male; f, female; age, chronological age; L1 use, percentage use of Italian; LOR, length of residence in Canada; AOA, age of arrival in Canada; sentence ratios, ratios of the mean duration of English compared to Italian sentences; verbal ratios, ratios of self-rated ability to speak and understand Italian compared to English; written ratios, ratios of self-rated ability to read and write Italian compared to English. The post hoc tests were t tests comparing all three groups (Bonferroni p < .05).

*p = .05; **p = .01.
Figure 2. (a) The mean ratios of the self-reported ability to speak and understand Italian compared to English obtained for four groups of Italian–English bilinguals; (b) the mean ratios of the ability to read and write Italian compared to English. The error bars enclose ±1 SE.
### Table 5. Mean duration of the English and Italian sentences produced by four groups of bilinguals

<table>
<thead>
<tr>
<th></th>
<th>Verbal</th>
<th>Written</th>
<th>AOA</th>
<th>L1 use</th>
<th>LOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sentence ratios</td>
<td>.68***</td>
<td>.55**</td>
<td>.70*</td>
<td>.30*</td>
<td>−.52**</td>
</tr>
<tr>
<td>Verbal ratios</td>
<td>.79**</td>
<td>.78**</td>
<td>.36**</td>
<td>−.54**</td>
<td></td>
</tr>
<tr>
<td>Written ratios</td>
<td>.69**</td>
<td>.42**</td>
<td></td>
<td>−.45**</td>
<td></td>
</tr>
<tr>
<td>AOA</td>
<td></td>
<td>.18</td>
<td></td>
<td>−.66**</td>
<td></td>
</tr>
<tr>
<td>L1 use</td>
<td></td>
<td></td>
<td></td>
<td>−.12</td>
<td></td>
</tr>
</tbody>
</table>

*Note: Sentence ratios, ratio of the mean duration of English compared to Italian sentences; verbal ratios, ratios of self-rated ability to speak and understand Italian compared to English; written ratios, ratios of self-rated ability to read and write Italian compared to English; AOA, age of arrival in Canada; L1 use, average self-reported percentage use of Italian; LOR, length of residence in Canada.*

*p = .05; **p = .01; df = 70.
Dominance in the literature

**Direction of ‘dominance’ among early bilinguals**

Dupoux et al. (2009): 23 French-Spanish early bilinguals; 20 Spanish monolinguals* from Barcelona; 39 French native late (>10 YOA) learners of Spanish, stress perception tasks:

*Individual early bilinguals’s scores on composite stress deafness measures = bimodally distributed*

- about half patterned like Spanish monolinguals, half like late L2 learners
Idiosyncratic

• The phenomenon is very much at the level of the individual

• Characteristics (social, exposure, proficiency) highly variable

• Predictions hard

• PUT THIS ELSEWHERE (note to self) distinction between proficiency and dominance. Tend to go hand in hand but dom doesn’t mean prof.