How Aptitude-treatment-interaction Studies can Benefit Learning-oriented Assessment

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“Optimal learning is the result of the instruction being perfectly matched to the learner’s aptitudes.”

Cronbach & Snow (1977)
Learning-oriented Assessment

Focuses not only on assessment but also on how instruction and feedback can be tailored to L2 learning (Purpura & Turner, 2013).
LOA is fundamentally iterative and recursive until a criterion level of mastery is achieved (Purpura, 2004)
Learning-oriented Assessment

How can I use assessment results to provide feedback for guiding learning?

How can I design interesting and cognitively engaging tasks so my students will enjoy learning?

Needs to be informed not only by a theory of L2 testing, but also by a theory of L2 learning (e.g., VanPatten’s model in Purpura, 2004).
Individual differences in cognitive ability play a major role in second language learning.
Individualization of L2 Learning

“...different sets of cognitive abilities can enhance learning under various learning conditions” (Kormos, 2013; Snow, 1992)

Some instructional strategies (treatments) are more or less effective for particular individuals depending upon their specific abilities (Snow, 1989).
Aptitude-treatment Interaction (ATI)

ATI is “using learner **aptitude profiles** to inform **pedagogical interventions** exploiting learner strengths and circumventing or avoiding learner weaknesses.”

(Doughty, 2013:165)
L2 Aptitudes

Are considered to be relatively stable “traits”

Readiness to learn a L2 in instructed foreign language settings

It is a multi-componential construct
L2 Aptitude Components

DeKeyser & Koeth (2011):

- Various aspects of memory
  - Phonological short-term memory
  - Working memory
- Language analytic ability (explicit induction)
- Aptitude for learning elements of pragmatics
- Implicit learning ability
- Phonetic sensitivity
Aptitude-Treatment Interaction (ATI)

Ideal Results
(Pashler et al., 2009)
Aptitude-Treatment Interaction (ATI)

Ideal Design
(Vatz et al. 2013)
Possible scenarios with implications for LOA:
Possible scenarios with implications for LOA: *Cross-over interaction*

Meaning: One treatment was **beneficial** for high-aptitude learners but **not beneficial** for low-aptitude learners.

Examples:
Brooks, Kempe and Sionov (2006)
Perrachione, Lee, Ha and Wong (2011)

Implications:
- Choice of treatment has an impact on *both* high and low aptitude learners.
- Individualization of treatment is essential
- If not, in terms of fairness, we should somehow account for the disadvantage
Possible scenarios with implications for LOA:

*One superior treatment with no aptitude effect*

Meaning: One treatment type led to superior results for both high- and low-aptitude learners *and* strongly attenuated the effects of aptitude

Examples:
Payne and Whiney (2002)
Erlam (2005)

Implications:
- The choice of treatment is clear
- The treatment enhances the fairness of LOA
Possible scenarios with implications for LOA:

*One superior treatment with a clear aptitude effect*

Meaning: One treatment type led to superior results for both high- and low-aptitude learners. However, the high aptitude learners clearly benefited much more than low-aptitude learners.

Examples:
Sheen (2007)

Implications:
- The choice of treatment is clear
- The teacher can consider other ways to accommodate individual differences
Conclusions

- ATI studies enhance our understanding about the effectiveness of different types of instruction and feedback

- ATI studies have important fairness implications for LOA

- SLA and LOA researchers need to collaborate and conduct ATI studies more specifically aimed at LOA
Thank You!

"How do you know I have a learning disability?
— Maybe you have a teaching disability!"