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# The role of creativity in L2 speech production:

## The importance of both cognitive and social-personality approaches

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International Online Symposium on Individual Differences and Creativity in L2 learning,  
Universidad de La Rioja, Spain

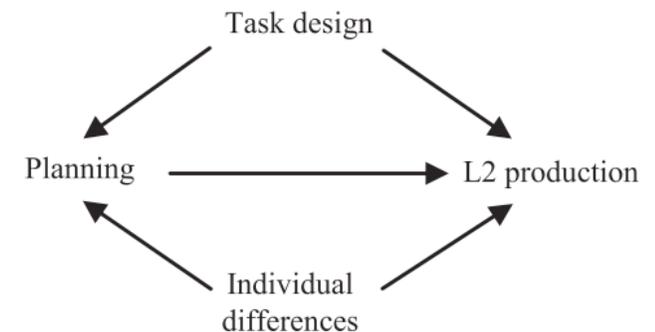
# Inter- & Intra-speaker variability in L2 speech

## Proficiency can't explain everything!

- Learner-**external** factors: Task characteristics and conditions
- Learner-**internal** factors: Individual difference factors

## Interplay between ID factors and task design

- “...it is important to examine **how individual learner factors ... affect how they [learners] rehearse a task, engage in strategic planning or carry out on-line planning.**” (Ellis, 2009, p.505)



Ellis, R. (2009). The differential effects of three types of task planning on the fluency, complexity, and accuracy in L2 oral production. *Applied Linguistics*, 30(4), 474–509.

# Why creativity?

## Significance in academic performance

- Creativity has been reported as a significant predictor of **academic achievement** in various subject areas (Gajda et al., 2017).

## Significance in L2 learning and speaking

- Creativity can be both **theoretically and pedagogically related to** L2 speaking performance (Albert & Kormos, 2004).
- Performance test scores could be **biased** toward those with high/low creative skills
- Creativity has been regarded as one of the **most neglected** areas in the field of SLA (Dörnyei & Ryan, 2015).

Albert, Á., & Kormos, J. (2004). Creativity and narrative task performance: An exploratory study. *Language Learning*, 54(2), 277–310.

Dörnyei, Z., & Ryan, S. (2015). *The Psychology of the Language Learner Revisited*. Routledge.

Gajda, A., Karwowski, M., & Beghetto, R. A. (2017). Creativity and academic achievement: A meta-analysis. *Journal of Educational Psychology*, 109(2), 269–299.

# Creativity as a cognitive construct

## Cognitive approach

- The ability to produce novel **ideas**, logical solutions and rationalized plans in response to **a specific problem** (Guilford, 1959)
- Two sub-components
  - **Divergent thinking skills**: To produce different ideas flexibly in response to a given problem: *Fluency* (number of ideas), *Flexibility* (variety of ideas), *Originality* (rarity of ideas), and *Elaboration* (detailed ideas).
  - **Convergent thinking skills**: To specify the appropriate solution to the given problem by choosing among different ideas



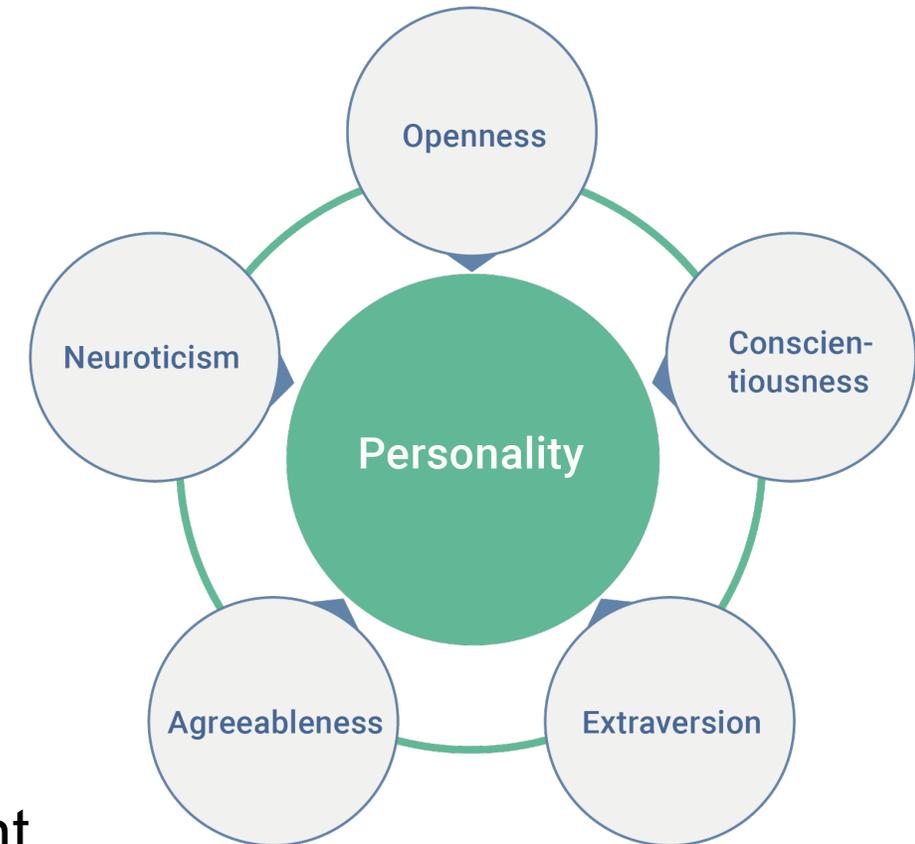
Guilford, J. P. (1959). Three faces of intellect. *American Psychologist*, 14(8), 469– 479.  
<https://doi.org/10.1037/h0046827>

source – batesmeron.com

# Other sources of creativity

## Social-personality approach

- “The cognitive work on creativity has tended to ignore or downplay the personality and social system...” (Sternberg & Lubart, 1996, p. 682)
- Source of creativity = personality, motivational factors, and sociocultural environments
  - **Openness to Experience** (see Simonton, 2012)
  - A moderate-to-strong correlation with divergent thinking skills



[https://ja.wikipedia.org/wiki/%E3%83%93%E3%83%83%E3%82%B0%E3%83%95%E3%82%A1%E3%82%A4%E3%83%96\\_%28%E5%BF%83%E7%90%86%E5%AD%A6%29](https://ja.wikipedia.org/wiki/%E3%83%93%E3%83%83%E3%82%B0%E3%83%95%E3%82%A1%E3%82%A4%E3%83%96_%28%E5%BF%83%E7%90%86%E5%AD%A6%29)

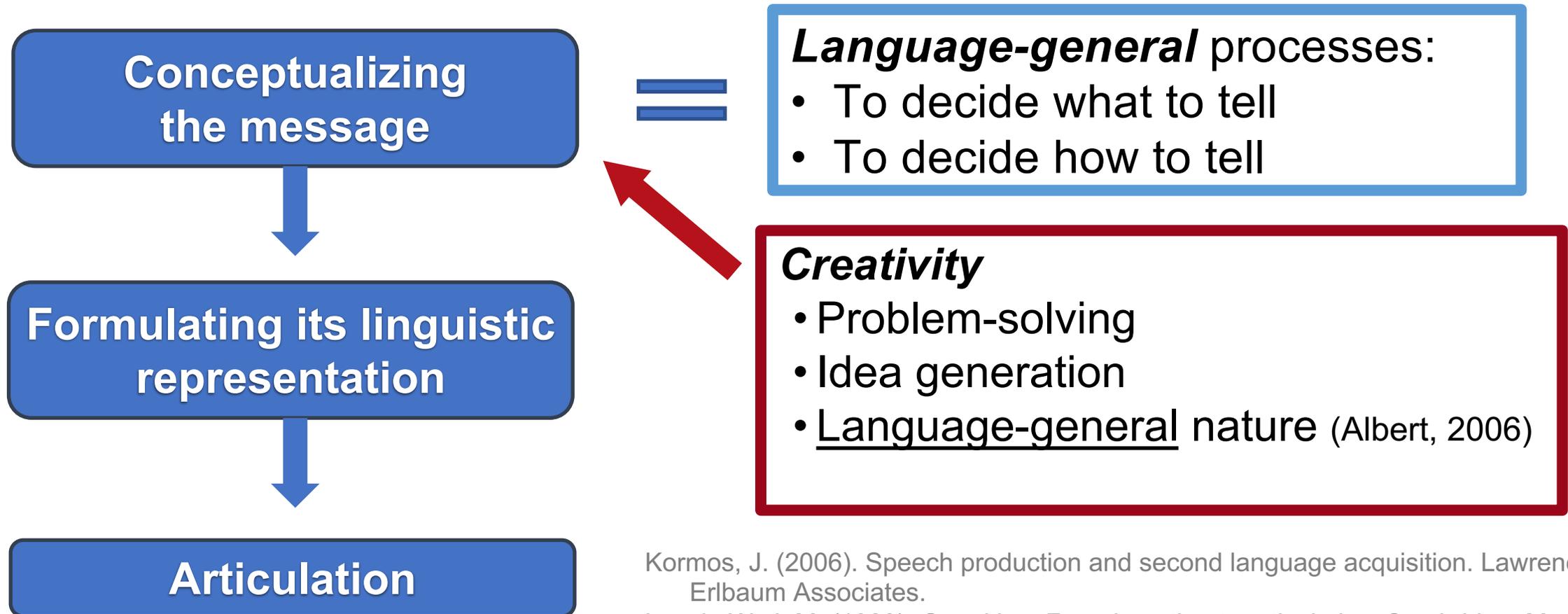
Simonton, D. K. (2012). Teaching Creativity: Current Findings, Trends, and Controversies in the Psychology of Creativity. *Teaching of Psychology*, 39(3), 217–222.

Sternberg, R. J., & Lubart, T. I. (1996). Investing in creativity. *Psychological Inquiry*, 51(7), 677–688.

# How can creativity affect L2 speech production?

# L2 speech production mechanisms

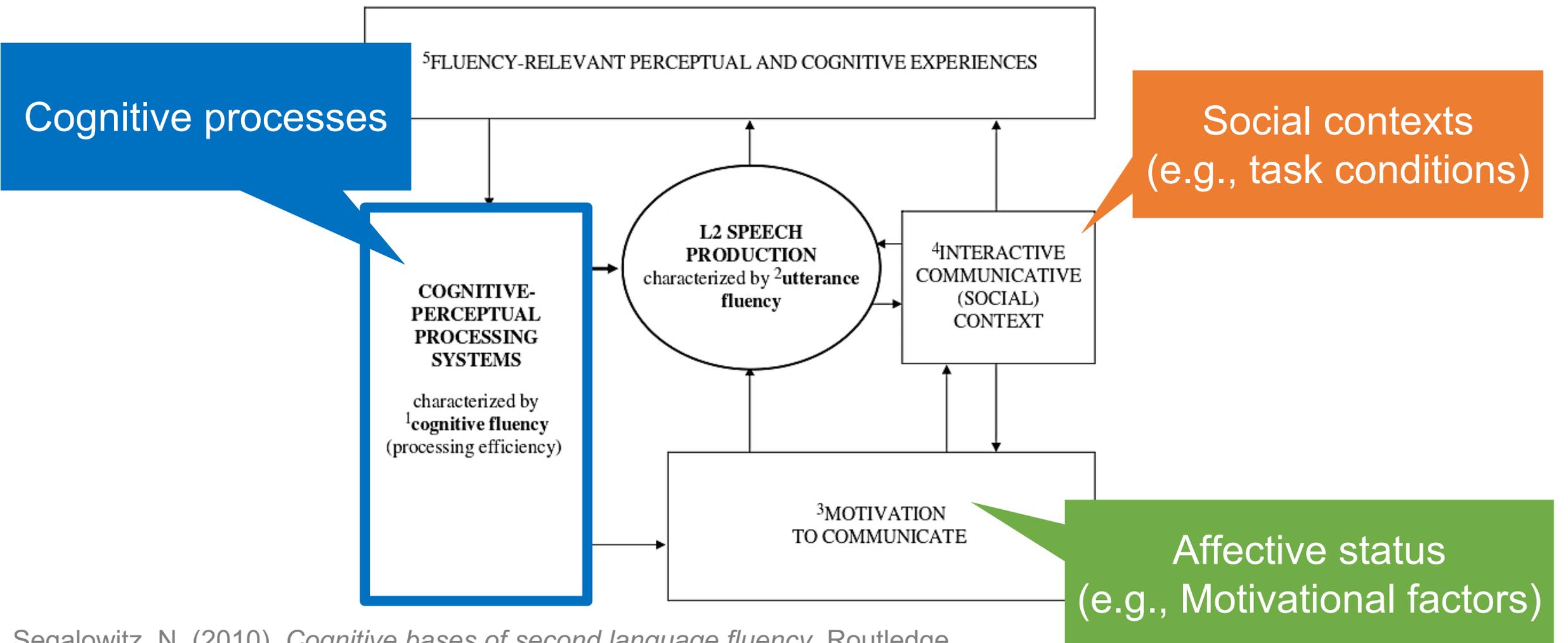
**Speech Production Model** (e.g., Kormos, 2006; Levelt, 1989)



Kormos, J. (2006). *Speech production and second language acquisition*. Lawrence Erlbaum Associates.

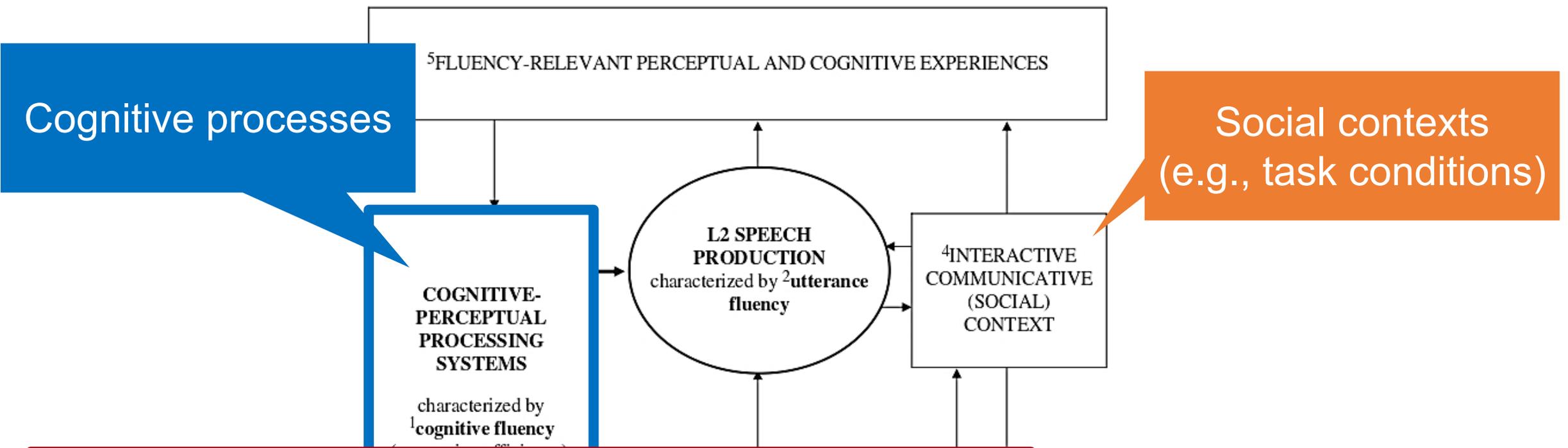
Levelt, W. J. M. (1989). *Speaking: From intention to articulation*. Cambridge, Mass: MIT Press.

# Towards More Dynamic Perspectives



Segalowitz, N. (2010). *Cognitive bases of second language fluency*. Routledge.

# Towards More Dynamic Perspectives



Cognitive processes

Social contexts  
(e.g., task conditions)

In both areas of creativity and L2 speech production, it is important to integrate **cognitive**, **affective** and **social** factors.

Affective status  
(e.g., Motivational factors)

Segalowitz, N. (2010). *Cognitive bases of second language fluency*. Routledge.

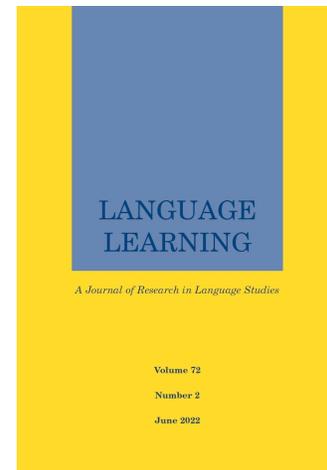
**What we have known so far.**

# Albert & Kormos (2004)

- **Focus:** Effects of creativity on speaking performance
- **Participants:** Hungarian learners of English ( $N = 35$ )
- **Creativity:** Standardized creativity test (Cognitive skills)
- **Speaking task:** Unrelated picture narrative tasks
- **Findings:**
  - DT fluency x Productivity (speech quantity):  $r = .33$ ,  $p < .05$
  - DT originality x Temporal connectives:  $r = .34$ ,  $p < .05$

Divergent thinking is tied with discourse aspects.

Albert, Á., & Kormos, J. (2004). Creativity and narrative task performance: An exploratory study. *Language Learning*, 54(2), 277–310.

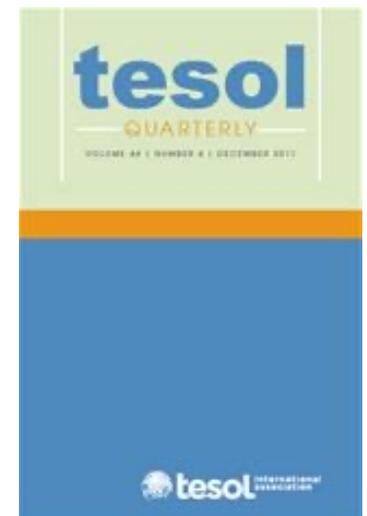


# McDonough et al. (2015)

- **Focus:** Effects of creativity on interactional performance
- **Participants:** Thai-speaking learners of English ( $N = 55$ )
- **Creativity:** Figural Torrance Test of Creative Thinking (Cognitive)
- **Speaking task:** Problem-solving task in a group
- **Findings:**
  - Composite score x No. of Questions:  $r_s = .25, p < .05$
  - Composite score x Connectives for reasoning:  $r_s = .27, p < .05$

Creative thinking skills are related to discourse aspects.

McDonough, K., Crawford, W. J., & Mackey, A. (2015). Creativity and EFL Students' Language Use During a Group Problem-Solving Task. *TESOL Quarterly*, 49(1), 188–199.

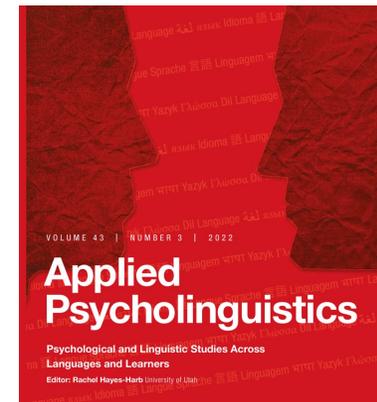


# Verhoeven & Vermeer (2002)

- **Focus:** Personality traits x Communicative competence
- **Participants:** L1 and L2 Dutch-speaking children ( $N = 213$ )
- **Creativity:** Openness to Experience (Questionnaire)
- **Language skills:** Pencil-and-paper test; Role-play task
- **Findings:**
  - Openness x Vocabulary knowledge:  $r = .32, p < .001$
  - Openness x Pragmatic competence:  $r = .29, p < .01$

Creative personality is linked to lexical and pragmatic competence.

Verhoeven, L., & Vermeer, A. (2002). Communicative competence and personality dimensions in first and second language learners. *Applied Psycholinguistics*, 23(3), 361–374.



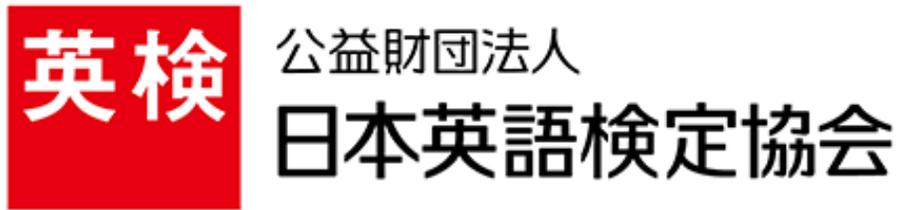
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# Suzuki, Yasuda, Hanzawa & Kormos (2022)

- **Focus:** Role of creativity in speaking performance
- **Participants:** Japanese learners of English ( $N = 60$ )
- **Creativity:** Divergent thinking, Convergent thinking, Openness
- **Speaking task:** Argumentative task, Related picture narrative task



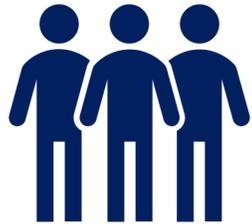
Suzuki, S., Yasuda, T., Hanzawa, K., & Kormos, J. (2022). How Does Creativity Affect Second Language Speech Production? The Moderating Role of Speaking Task Type. *TESOL Quarterly*, 1–25. <https://doi.org/10.1002/tesq.3104>



# Research Design

1

**Japanese learners  
(N = 60)**



2

**Creativity  
tests**



- ✓ **Alternative Use Test**
- ✓ **Remote Associates test**
- ✓ **Personality Questionnaire**

3

**Speaking  
tasks**



- ✓ **Picture narrative**
- ✓ **Argumentative**

# Creativity: Divergent thinking

**Material — Alternative Use Test** (Guilford, 1967)

- To list as many different uses of objects as possible in 4 min
- Item: *Newspaper, Pen, Towel, Cup*

**Measure — Divergent thinking fluency**

- Frequency of different uses
- Reliability of coding:  $\alpha = .94$



<https://davebirss.com/altuses/>

Guilford, J. P. (1967). *The nature of human intelligence*. New York, NY: McGraw Hill.

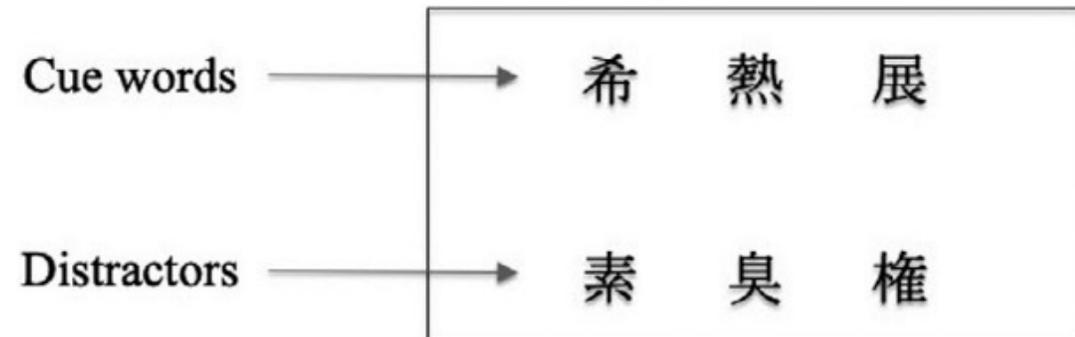
# Creativity: Convergent thinking

## **Material — Remote Associates Test** (Terai et al., 2013)

- To select one kanji character which can form existing compound nouns with all three cue kanji characters

## **Measure — Convergent thinking skills**

- The number of correct responses



Terai, H., Miwa, K., & Asami, K. (2013). Development and evaluation of the Japanese Remote Associates Test. *The Japanese Journal of Psychology*, 84(4), 419–428.

# Creativity: Openness to Experience

**Material — Japanese Big Five scale** (Namikawa et al., 2012)

- Adjective checklist scale with a 5-point scale
- 1 = *Disagree*; 5 = *Agree*
- Item: *versatile, progressive, creative, quick-witted, with wide interest, and curious* ( $\alpha = .75$ )

**Measure — Openness to Experience**

- Average score

Namikawa, T., Tani, I., Wakita, T., Kumagai, R., Nakane, A., & Noguchi, H. (2012). Development of a short form of the Japanese Big-Five Scale, and a test of its reliability and validity. *The Japanese Journal of Psychology*, 83(2), 91–99.

# Speaking tasks



## *Argumentative task*

Statement:

*The Tokyo Olympics in 2020 will bring economic growth to Japan.*

How far do you agree?

Give some specific examples, and explain why or why not.

## ***Picture narrative***

- 20-sec pre-task planning
- from Eiken test

## ***Argumentative speech***

- 3-min pre-task planning
- from Suzuki & Kormos (2020)

Suzuki, S., & Kormos, J. (2020). Linguistic dimensions of comprehensibility and perceived fluency: An investigation of complexity, accuracy, and fluency in second language argumentative speech. *Studies in Second Language Acquisition*, 42(1), 143–167.

# Speaking performance measures

## ***Syntactic complexity***

- Subordination ratio
- Clause length

## ***Lexical complexity***

- Measure of textual lexical diversity
- Imageability
- Familiarity
- Hypernymy

## ***Accuracy***

- Weighted clause ratio

## ***Fluency***

- Articulation rate
- Mid-clause pause duration
- End-clause pause duration
- Disfluency ratio

## ***Discourse***

- Total number of words
- Temporal / Causal / Logical connectives rate

# Regression analyses

## Cognitive aspects

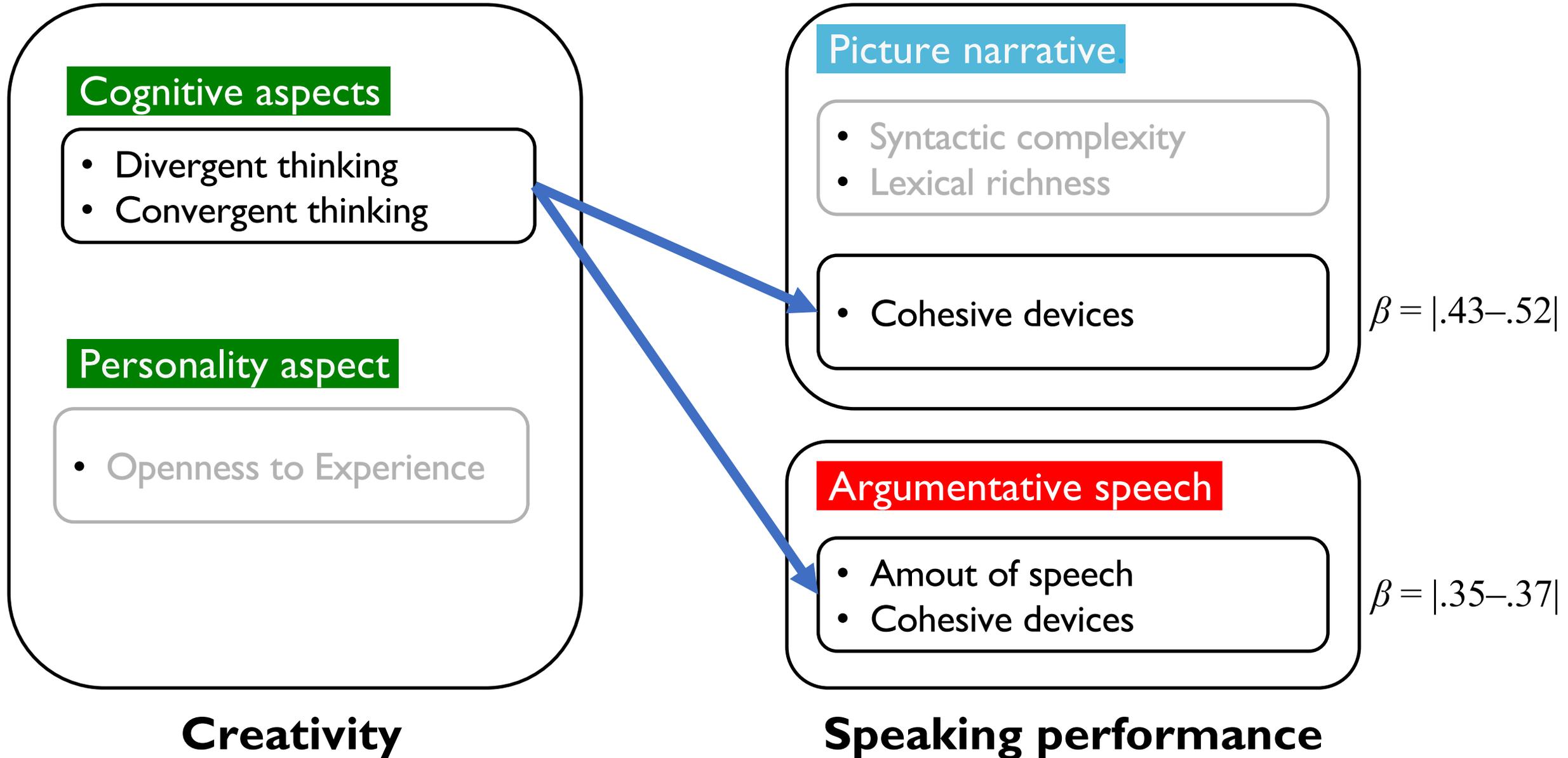
- Divergent thinking
- Convergent thinking

## Personality aspect

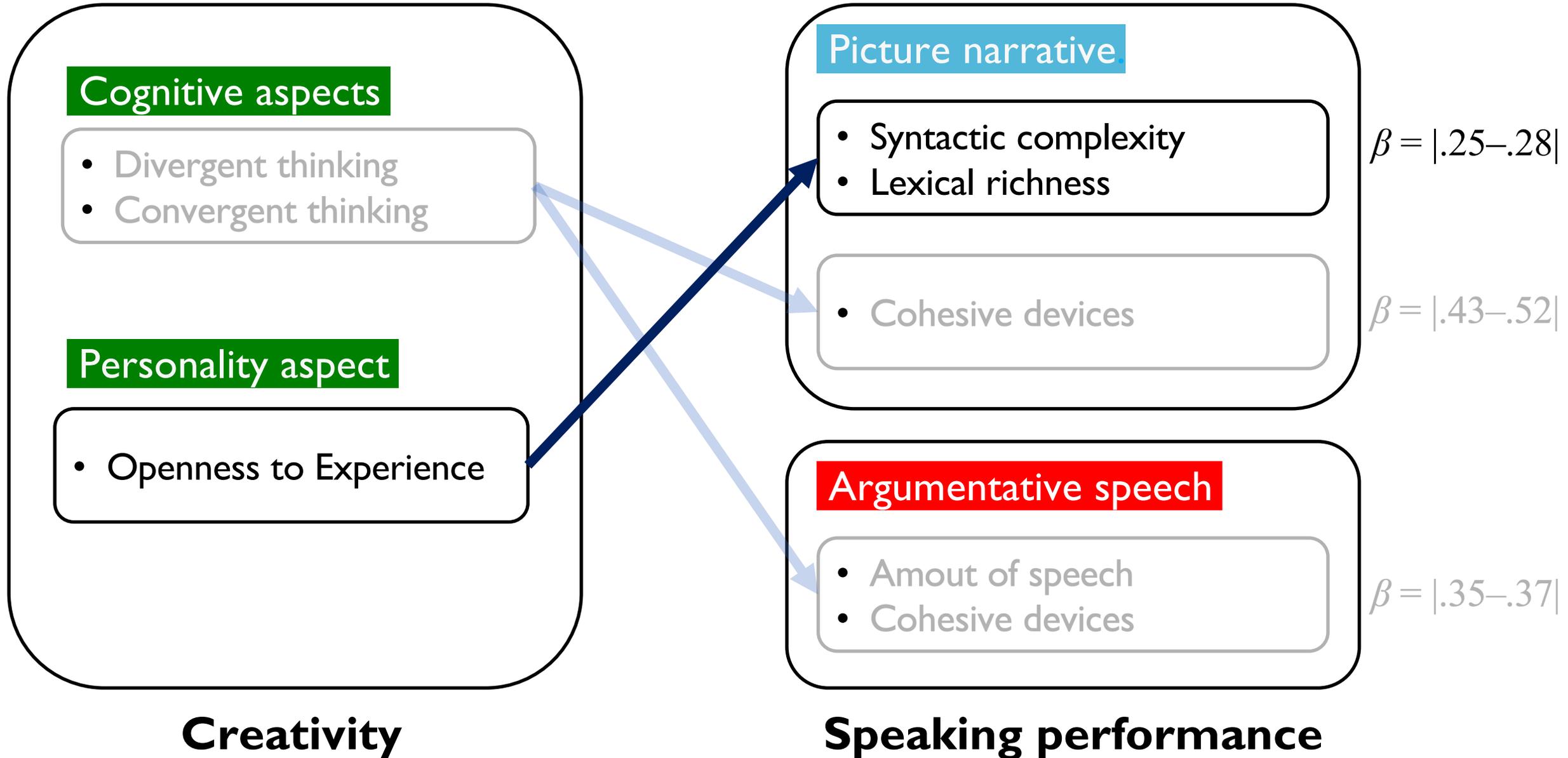
- Openness to Experience

**Creativity**

# Regression analyses



# Regression analyses



## WHAT WE FOUND IS ...



Learners with **high creative thinking skills** may produce extended and structured **discourse**.

Learners with **creative personality** may prefer to use sophisticated **grammar** and **vocabulary**.



# Discussion & Limitations

## *Findings*

- Cognitive skills were related to **discourse** aspects of speech in both speaking tasks. (Albert & Kormos, 2004; McDonough et al., 2015)
- Creative personality was associated with **grammatical** and **lexical choice** in their picture narrative speech (cf. Verhoeven & Vermeer, 2002).
- Creativity can be primarily linked to **conceptualization** processes.

## *However...*

- Why only in a picture narrative task? (cf. planning time)
- How about open-ended but more spontaneous tasks?



# A follow-up exploratory study

- **Focus:** Role of creative personality in oral interaction
- **Participants:** Japanese learners of English ( $N = 69$ )
- **Creativity:** Openness
- **Speaking task:** Oral proficiency interview

## Methodological challenge

- *Interactional variability*...Speaking performance in dialogic speaking tasks can vary according to the interlocutor's performance.
- To control for such variability, our project has developed **a spoken dialog system.**

# A spoken dialog system—*InteLLA*



- <https://www.youtube.com/watch?v=RzCq5Z4cDBk>



# Creativity and speaking measures

## ***Creativity***

- Openness to Experience  
(Namikawa, 2013)

## ***Syntactic complexity***

- Subordination ratio
- Clause length

## ***Lexical complexity***

- MTLD
- Imageability
- Familiarity
- Hypernymy

# Results—*Partially replicated!*

## ***Syntactic complexity***

- Openness x Subordination ratio:  $r_s = .25$ ,  $p < .05$

## ***Lexical sophistication***

- Openness x Imageability:  $r_s = -.29$ ,  $p < .05$
- Openness x Hypernymy: n.s.

Students with **creative personality** may tend to use complex grammar and abstract lexical items in a spontaneous interview.

# Interim summary

## Defining and operationalizing creativity in L2 (speaking) research

- **Cognitive and social-personality** components of creativity may capture different aspects of speaking performance that learners' creativity may contribute to.

## Findings

- Creativity may be associated with **conceptualization processes** in L2 speech production.
- Cognitive skills tend to contribute to **discourse aspects**, whereas creative personality is linked to **lexicogrammatical choice**.

# Research Agenda?

# 1. The interaction between L2 knowledge and creativity

## *Theoretical assumptions*

- **Speech production:** A conceptualized idea cannot be expressed unless corresponding linguistic resources are available (cf. Kormos, 2006; Levelt, 1989).
- **Thinking for Speaking:** The availability of linguistic resources may limit creative thinking skills in L2 speaking performance.

## *Hypothesis*

- Creativity is theoretically a language-general construct, but in **the realization of creativity**, linguistic resources can moderate how creativity affects L2 speaking performance.

## *Approaches*

- Both L1 and L2 (and even L3) can be activated during L2 speech production processes.
- Speech production processes, as opposed to product (e.g., CAF indices), should be first explored.

## 2. Dual problem-solving in L2 speech production

### *Theoretical assumptions*

- Creativity is the ability to solve **a given problem**.
- In actual L2 use, there are two types of problems:
  - **Communicative outcome**...task-based speaking performance
  - **Communicative breakdowns**...Strategic competence, such as paraphrasing, as a problem-solving mechanism (cf. Peltonen, 2021)

### *Hypothesis*

- Creativity may also play a role in maintaining the flow of communication when students handle speech production difficulties and communication breakdowns.

### *Challenges*

- Lack of valid methodologies to identify the source of breakdowns and strategic competence

## 3. Social dynamics of creativity in L2 use

### *Theoretical assumptions*

- **Creative groups** have been studied in the field of Psychology (e.g., Harvey, 2013)
- “Group dynamics” in L2 speaking research
  - Interactional performance — co-construction of meaning (Galaczi & Taylor, 2018)
  - Dynamic assessment — L2 development as a social interaction (Lantolf & Poehner, 2011)

### *Hypothesis*

- Creativity of group members may interact with each other and thus how creativity contributes to interactive discourse may differ from its role in monologic speaking tasks.

### *Challenges*

- Lack of “generic” assessment scales and measurements for interactional competence (cf. context-specific nature of interaction)

## 4. Methodological advances in assessing creativity

### ***Methodological challenges***

- Two inherent methodological challenges in assessing divergent thinking skills in the Alternative Use Test: **Labour cost** & **Subjectivity** (i.e., coding)

### ***Tentative solution — SemDis*** (Beaty & Johnson, 2021)

- Applying natural language processing techniques (e.g., semantic distance), scholars have developed and validated the automated creativity assessment system.

### ***Challenges***

- Limited to English language (only at this moment?)
- Cultural specificity of creativity (Sawyer, 2017)

Beaty, R. E., & Johnson, D. R. (2021). Automating creativity assessment with SemDis: An open platform for computing semantic distance. *Behavior Research Methods*, 53(2), 757–780.

Sawyer, R. K. (2017). Creativity Research and Cultural Context: Past, Present, and Future. *Journal of Creative Behavior*, 51(4), 352–354.

# Summary

## How to define and operationalise creativity?

- In the context of L2 research, creativity may be **a multi-faceted construct**.
- Both **cognitive and personality aspects** of creativity may offer different insights into how L2 speaking performance is realized.

## Future directions?

1. The interaction between L2 knowledge and creativity
2. Dual problem-solving in L2 speech production
3. Social dynamics of creativity in L2 use
4. Methodological advances in assessing creativity

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