The role of creativity in L2 speech production:

The importance of both cognitive and social-personality approaches

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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)

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).

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

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


How can creativity affect L2 speech production?
L2 speech production mechanisms

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

- **Conceptualizing the message**
  - Language-general processes:
    - To decide what to tell
    - To decide how to tell

- **Formulating its linguistic representation**

- **Articulation**
  - Creativity
    - Problem-solving
    - Idea generation
    - Language-general nature (Albert, 2006)


Towards More Dynamic Perspectives

Towards More Dynamic Perspectives

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

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.

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.

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

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: $\alpha = .94$

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

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 (α = .75)

**Measure — Openness to Experience**
- Average score

Speaking tasks

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

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


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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.
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

Cognitive aspects
- Divergent thinking
- Convergent thinking

Personality aspect
- Openness to Experience

Picture narrative
- Syntactic complexity
- Lexical richness
- Cohesive devices

Argumentative speech
- Amount of speech
- Cohesive devices

Creativity

Speaking performance

\[ \beta = |.43 - .52| \]

\[ \beta = |.35 - .37| \]
Regression analyses

**Cognitive aspects**
- Divergent thinking
- Convergent thinking

**Personality aspect**
- Openness to Experience

**Creativity**

**Picture narrative**
- Syntactic complexity
- Lexical richness

- Cohesive devices

**Speaking performance**
- Amount of speech
- Cohesive devices

\[ \beta = |.25-.28| \]

\[ \beta = |.43-.52| \]

\[ \beta = |.35-.37| \]
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)

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
Acknowledgements