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STUDYING CREATIVITY IN EDUCATION

CHALLENGES & OPPORTUNITIES

第四届全国教育实证研究论坛



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OPERATING ASSUMPTIONS

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OPERATING ASSUMPTIONS

CREATIVITY AS RETROSPECTIVE DISTINCTION

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OPERATING ASSUMPTIONS

CRITERIA FOR DESCRIBING
PHENOMENA AS “CREATIVE”

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$$C = O \times TC$$

CONTEXT

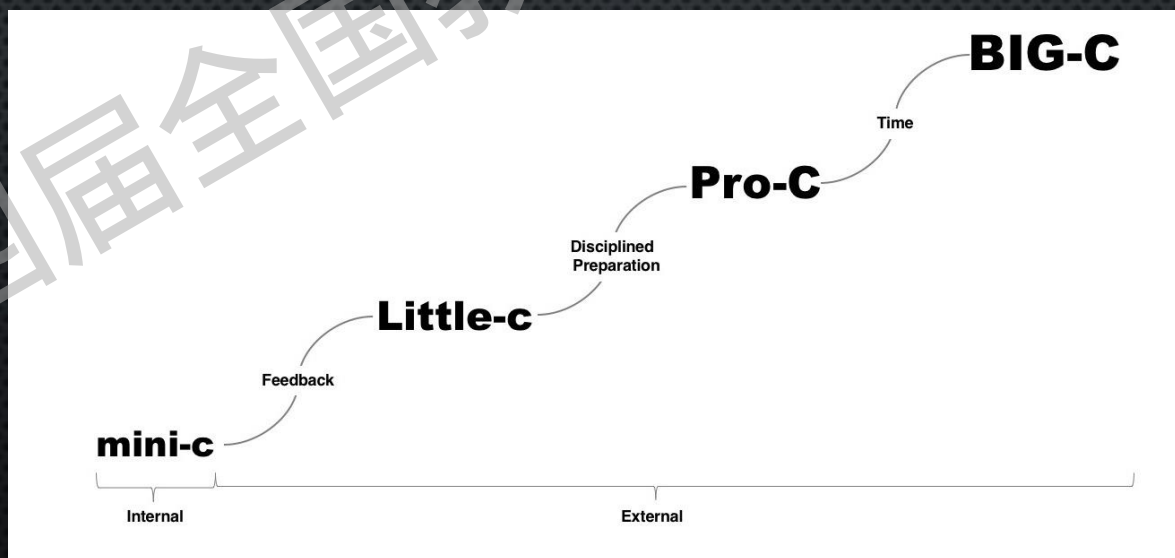
Original (unique, novel, different, new)	Meets Task Constraints (meaningful, effective, useful)	CREATIVE
1	0	No
0	1	No
1	1	Yes



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OPERATING ASSUMPTIONS

DETERMINED INDIVIDUALLY (**MINI-C**) AND
SOCIALY (**LARGER-C**)





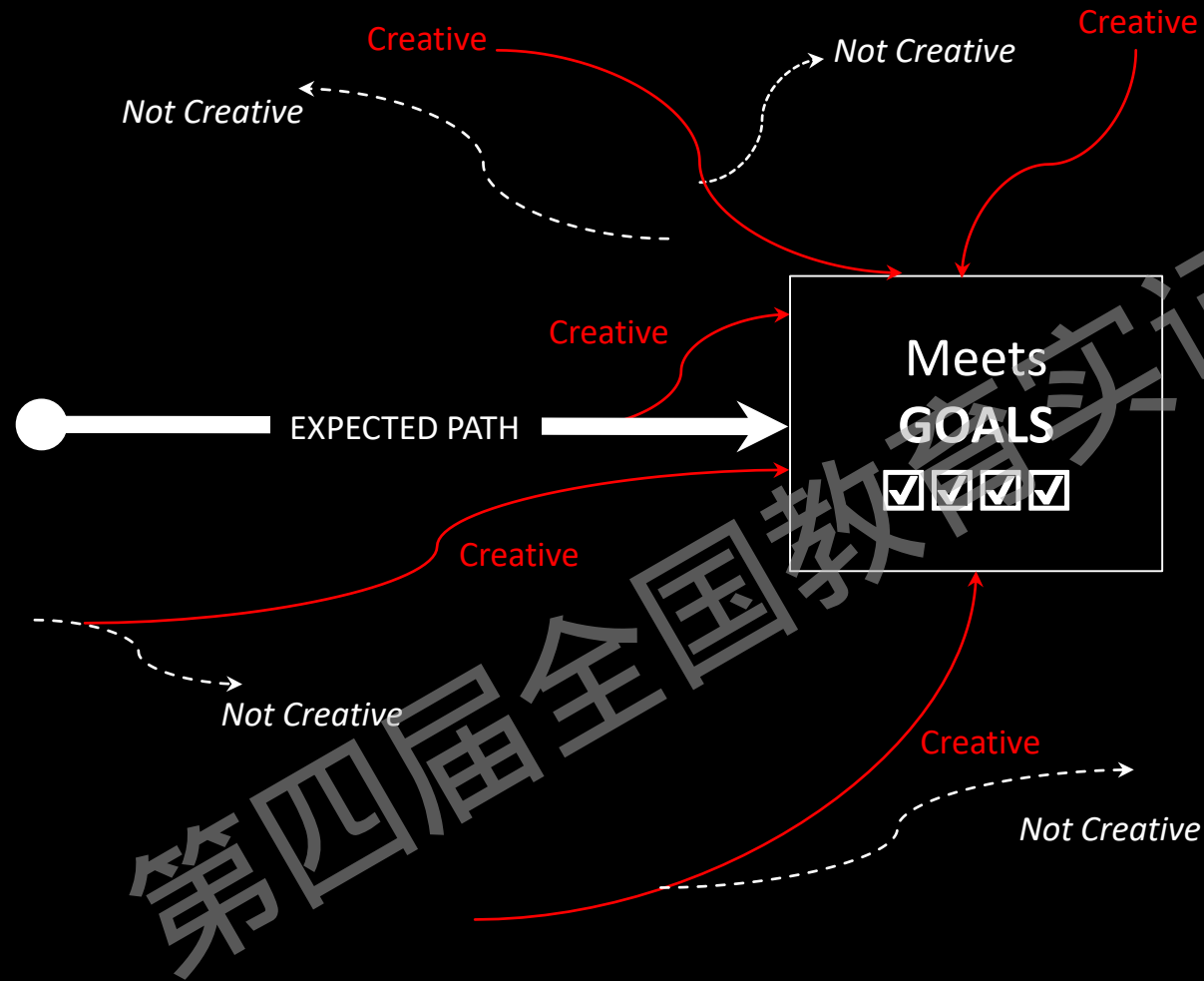
OPERATING ASSUMPTIONS

Type	Description	CREATIVE
Encountered Uncertainty	Unexpected rupture in a planned experience	Resolving the uncertainty in a new and meaningful way
Induced (Planned) Uncertainty	Systematically including TBD elements in a planned experience	To-Be-Determined elements resolved in new and meaningful way

UNCERTAINTY AS A CATALYST



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Creativity in Education=
Different and unexpected ways of meeting goals or criteria

(Beghetto, in press)



STRUCTURED UNCERTAINTY

BLEND of Pre-Determined elements and To-Be-Determined Elements



CHALLENGES & OPPORTUNITIES

CHALLENGE

Studying engagement with uncertainty in contexts designed to eliminate uncertainty

Untangling indicators of creative potential, creative behavior, and mediating/moderating factors

Studying dynamic features and emergent processes of creative expression

OPPORTUNITY

Design studies to examine encountered and planned resolution of uncertainty

Specify and test middle-range theories and models that clarify relationships amongst indicators

Design studies that use blended, more dynamic, and micro-longitudinal approaches



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EXAMPLE 1

BLENDED, **DYNAMIC** APPROACH

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THEORETICAL ASSERTION

OPENINGS FOR THE EXPLORATION AND
ELABORATION ON UNEXPECTED IDEAS

(ENCOUNTERED UNCERTAINTY) IS A NECESSARY

CONDITION TO FOSTER CREATIVE IDEATION IN
ACADEMIC LEARNING

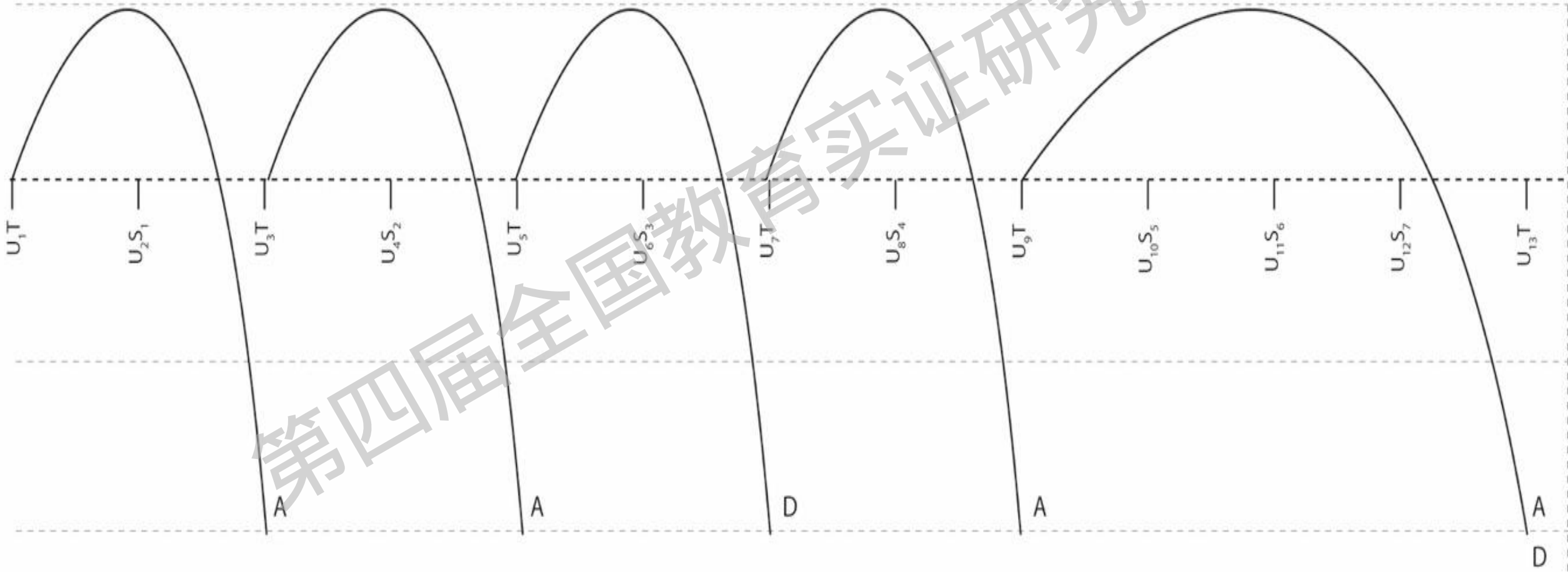
(SEE BEGHETTO, 2016; GADJA ET AL. 2016; BEGHETTO & SCHUH, SUBMITTED)

METHODOLOGICAL HIGHLIGHTS:

- **CLASSIFY:** Classify classrooms based on **positive, null, negative** relationship between creative production (Urban & Jellen's TCT) and academic achievement (school grades).
- **BEHAVIORAL ANALYSIS:** Conduct observational analysis of teacher and student creativity conducive behaviors (Karwowski, 2017; Karwowski & Jankowska, 2017).
- **DYNAMIC, MICRO-LEVEL VISUALIZATIONS:** Develop visual displays using transcribed audio recordings of academic discussions (Beghetto, 2016; Beghetto & Tanggaard, 2015).

Indeterminate

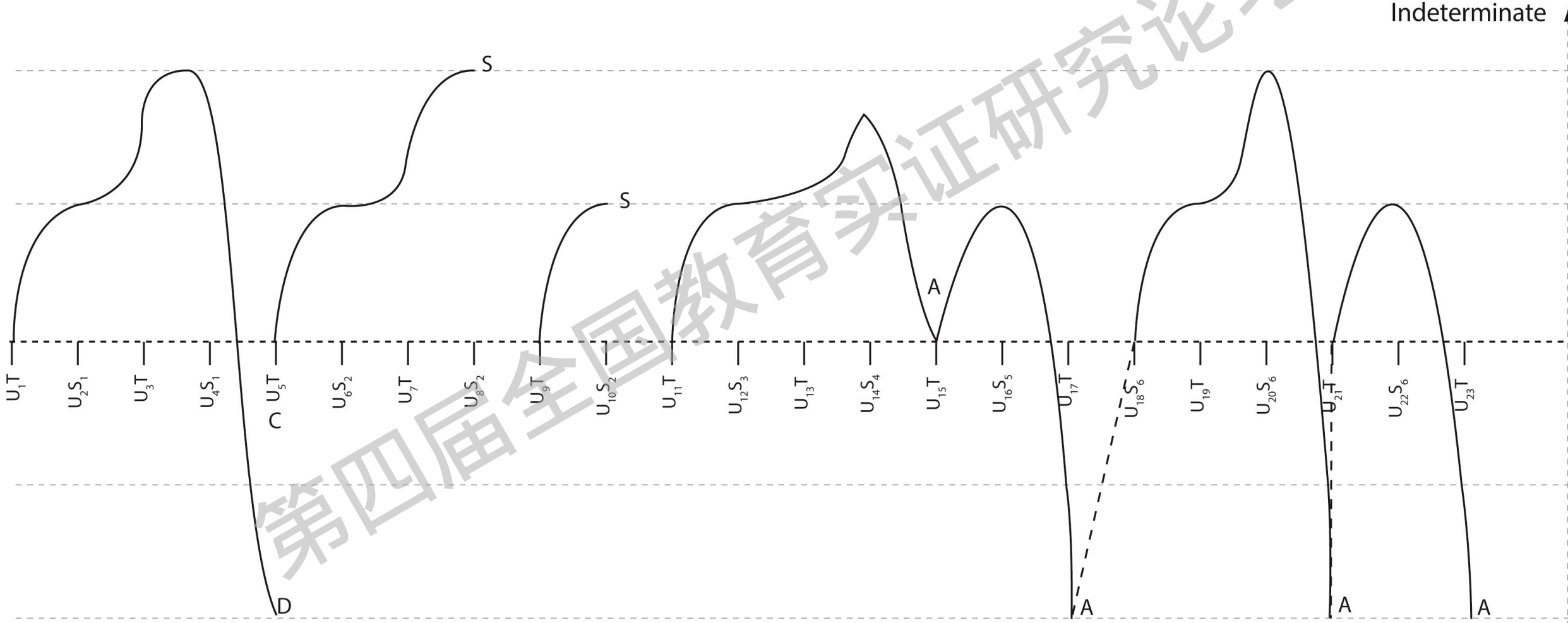
Example of micro-longitudinal visual display (Gadja, Beghetto, Karwoski, 2016). Note: U = each utterance. U# = temporal order of each utterance. T = teacher utterances. S = student utterances, S# = number of a particular student in order of the appearance. A = idea accepted or acknowledged by the teacher, D = dismissed by the teacher. Dotted lines (---) represent the teacher or students reanimating and building on a previous ideas.



Negative Association ($r = -0.34, n = 28$)

Determinate

Example of micro-longitudinal visual display (Gadja, Beghetto, Karwoski, 2016). Note: U = each utterance. U# = temporal order of each utterance. T = teacher utterances. S = student utterances, S# = number of a particular student in order of the appearance. A = idea accepted or acknowledged by the teacher, D = dismissed by the teacher, S = idea not acknowledged, but suspended. Dotted lines (- - -) represent the teacher or students reanimating and building on a previous ideas.



Positive Association (r = 0.60, n = 22)

A FEW ADDITIONAL HIGHLIGHTS

BEHAVIORAL ANALYSIS:

- **Positive association classrooms:** Teachers tended to demonstrate more caring (listening, delayed assessment of ideas) and emotionally supportive (friendly humor, managing failure) behaviors
- **Null and negative classrooms:** Limited opportunities to share and build on ideas & quick acceptance, dismissal, and contesting of ideas.
- **Across classrooms:** Encouraging creativity was associated with positive engagement, self-expression, and ideation
- **Difficult to sustain:** Emotional support, encouraging creativity, and student engagement declined with lesson duration.



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EXAMPLE 2

UNTANGLING INDICATORS OF CREATIVE
POTENTIAL, MEDIATORS, MODERATORS, AND
BEHAVIORS

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THEORETICAL ASSERTION

CREATIVE **SELF-BELIEFS** PLAY A ROLE IN
MEDIATING AND MODERATING THE LINK
BETWEEN CREATIVE **POTENTIAL** AND CREATIVE
BEHAVIOR

(SEE KARWOWSKI & BEGHETTO, IN PRESS)

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METHODOLOGICAL HIGHLIGHTS:

- **INDICATORS OF CREATIVE POTENTIAL:** Indicators predictive of creative behavior, e.g., divergent thinking, Intellectual risk-taking; openness to experience, performance on insight problems
- **INDICATORS OF CREATIVE BEHAVIOR :** Actions or achievements judged to be creative, e.g., artifacts scored by judges, creative achievement (Carson et al. 2005), Creative activities (Jauk et al. 2014)
- **INDICATORS OF CREATIVE SELF-BELIEFS:** Beliefs that comprise the creative identity (Beghetto & Karwowski, 2017), e.g., Creative confidence beliefs, perceived personal value of creativity (Karwowski et al. 2013).

Creative Behavior as Agentic Action

(Karwowski & Beghetto, in press)

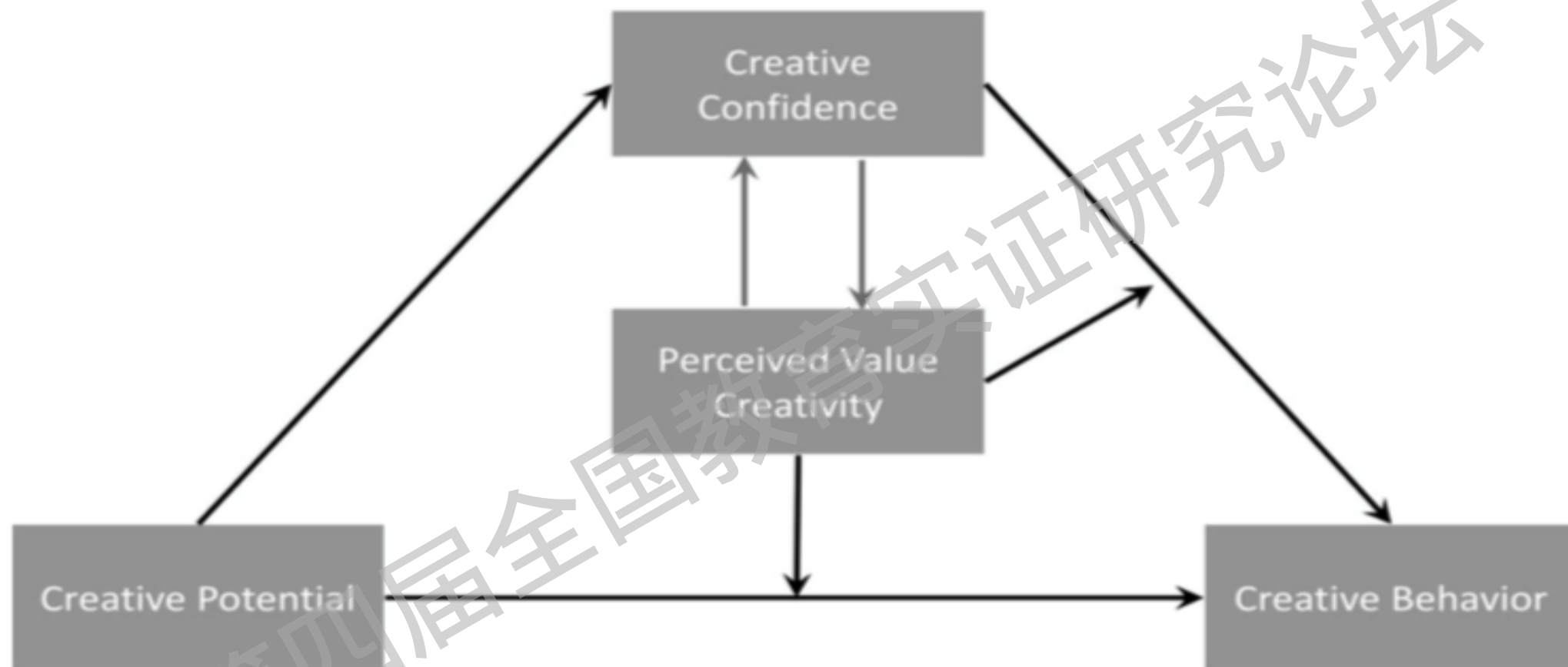


Figure 1. Creative behavior as agentic action (CBAA) model. Gray lines between creative confidence and perceived value of creativity denote a reciprocal relationship. Note that perceived value creativity is depicted here as moderating the link between creative potential and creative behavior *and* moderating the mediational relationship of creative potential → creative confidence → creative behavior.



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EXAMPLE 3

DYNAMIC, MICRO-LONGITUDINAL (AND
LARGER TIMESCALE) DESIGNS FOR STUDYING
CREATIVE RESOLUTION OF INDUCED
UNCERTAINTY

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DESIGNING STRUCTURED **UNCERTAINTY** TASKS

A blend of pre-determined (PD) and to-be-determined (TBD) elements

Example: Moderately complex challenge

Element	PD	TBD
Criteria	1	-
Problem	1	-
Process	-	1
Product	-	1

Example: Legacy Challenge

Element	PD	TBD
Criteria	1	-
Problem	-	1
Process	-	1
Product	-	1





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THEORETICAL ASSERTION: CREATIVE SELF-
BELIEFS ARE SITUATIONALLY AND
TEMPORALLY DYNAMIC.

(SEE BEGHETTO & KARWOWSKI, IN PERSS; KARWOWSKI, HAN, & BEGHETTO, ACCECPTED)

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Example of Dynamic, Micro-Longitudinal Designs

(Beghetto & Karwowski, in press)

Measurement Window 1

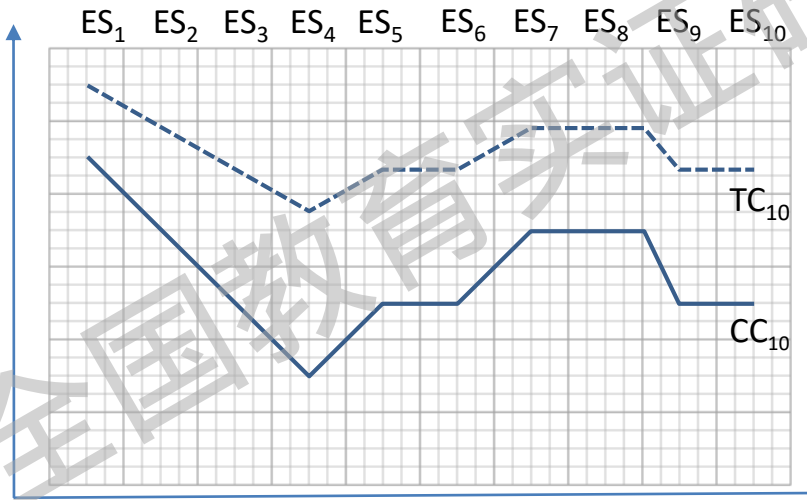
Prior to Introducing
Performance Task

- ✓ Assess General Creative Confidence (0 – 100)
- ✓ Assess secondary variable (e.g., general confidence solving problems)
- ✓ Assess tertiary variable (e.g., emotional state, physiological state)
- ✓ Assess any additional variables of interest (e.g., background variables, situational variables)

Measurement Window 2

Immediately Before & During
Task Performance

Brief Interval Assessments



CC = Creative confidence
TC = Confidence in task completion
ES = Emotional state

Measurement Window 3

Following Completion of
Performance Task

- ✓ Re-assess General Creative Confidence (0 – 100)
- ✓ Re-assess secondary variable (e.g., general confidence solving problems)
- ✓ Re-assess tertiary variable (e.g., emotional state, physiological state)
- ✓ Assessment of creative product (judges)



CURRENT AND FUTURE DIRECTIONS

- Blended & Dynamic approaches
- Connections with academic learning
- Development and testing of more robust, theoretical models
- Use of more sensitive and less intrusive measures and analytic techniques
- Applied (lesson unplanning, legacy projects)
 - Interocular traumatic test



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QUESTIONS & COMMENTS

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