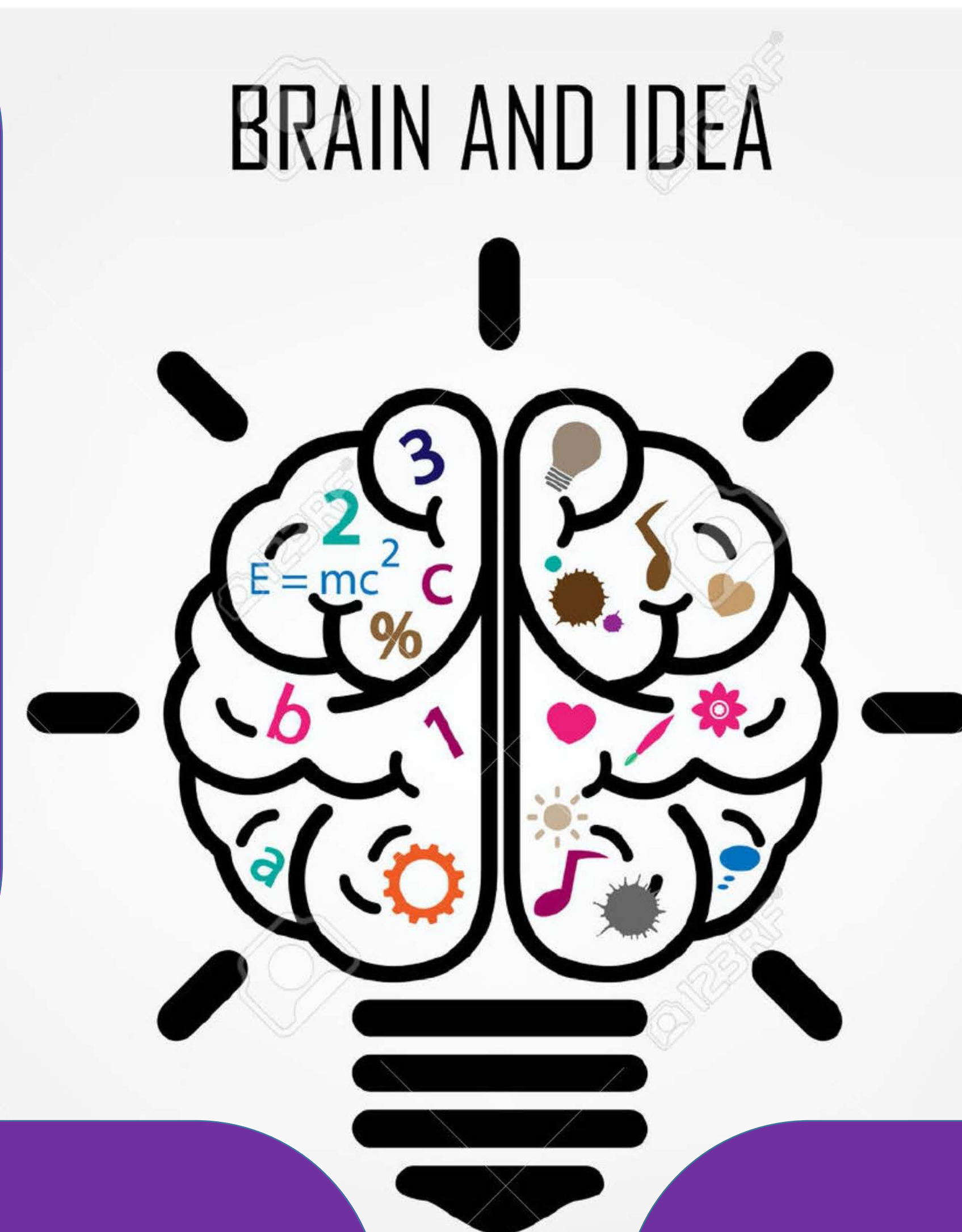


Effectiveness of Brainwriting as an Alternative to Idea Generation in Agricultural Education

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Introduction

- According to the 2009 and 2012 PISA reports, the United States' performance in reading, science, and mathematics has continued to decline (Frye, 2015).
- Students will vary in their preferred learning styles and may experience different levels of success dependent upon the different instructional techniques to which they are exposed (Moussa-Inaty, Atallah, & Causapin, 2019).
- Students' preferences of primary learning styles include visual, auditory, and tactile kinesthetic and are concepts that do ". . .not change throughout life but changes the individual's life" (Baltaoğlu, & Güven, 2019, p. 2; Moussa-Inaty, Atallah, & Causapin, 2019).
- Brainwriting provides opportunities for silent reflection on provided prompts in group settings, and "involves a group of people silently writing and sharing their written ideas" (Heslin, 2009, p. 130), generating superior ideas through the process. (Gryskiewicz, 1981; Paulus & Yang, 2000; Thompson, 2003).



Methodology

- The population consisted of all students enrolled in an introductory Agricultural Economics course at a regional university ($N = 148$).
- Students were divided into equal groups to complete a prompt in which half of the students responded to the prompt in a traditional brainstorming activity, while the other half completed the prompt through brainwriting activities.
- Both groups participated at the same time, covering a 10-minute timespan.
- Responses were evaluated by a content expert for feasibility, rigor, and originality using a 5-point Likert scale (1–Strongly Disagree to 5–Strongly Agree).
- Quality measures were defined as: *feasibility*—degree to which the response could be implemented, *rigor*—resulting response represented an academically challenging concept; and *originality*—degree to which the idea generated was novel or unusual in comparison to peers.

Theoretical Framework

- This study was viewed through the lens of the Cognitive Model of Brainstorming (CMB) (Nijstad & Stroebe, 2006; Paulus & Brown, 2007).
- Theoretically, the cognitive model of brainstorming suggests that ". . .when an idea is activated in memory, ideas semantically related to the activated idea will get activated first" (Baruah & Paulus, 2016, p. 334).
- This process leads to additional related ideas resulting from the process.
- As similar ideas become exhausted, more exceptional ideas occur, resulting in greater originality of ideas. (Baruah & Paulus, 2016).

Results

Table 1. Summary Statistics by Group¹

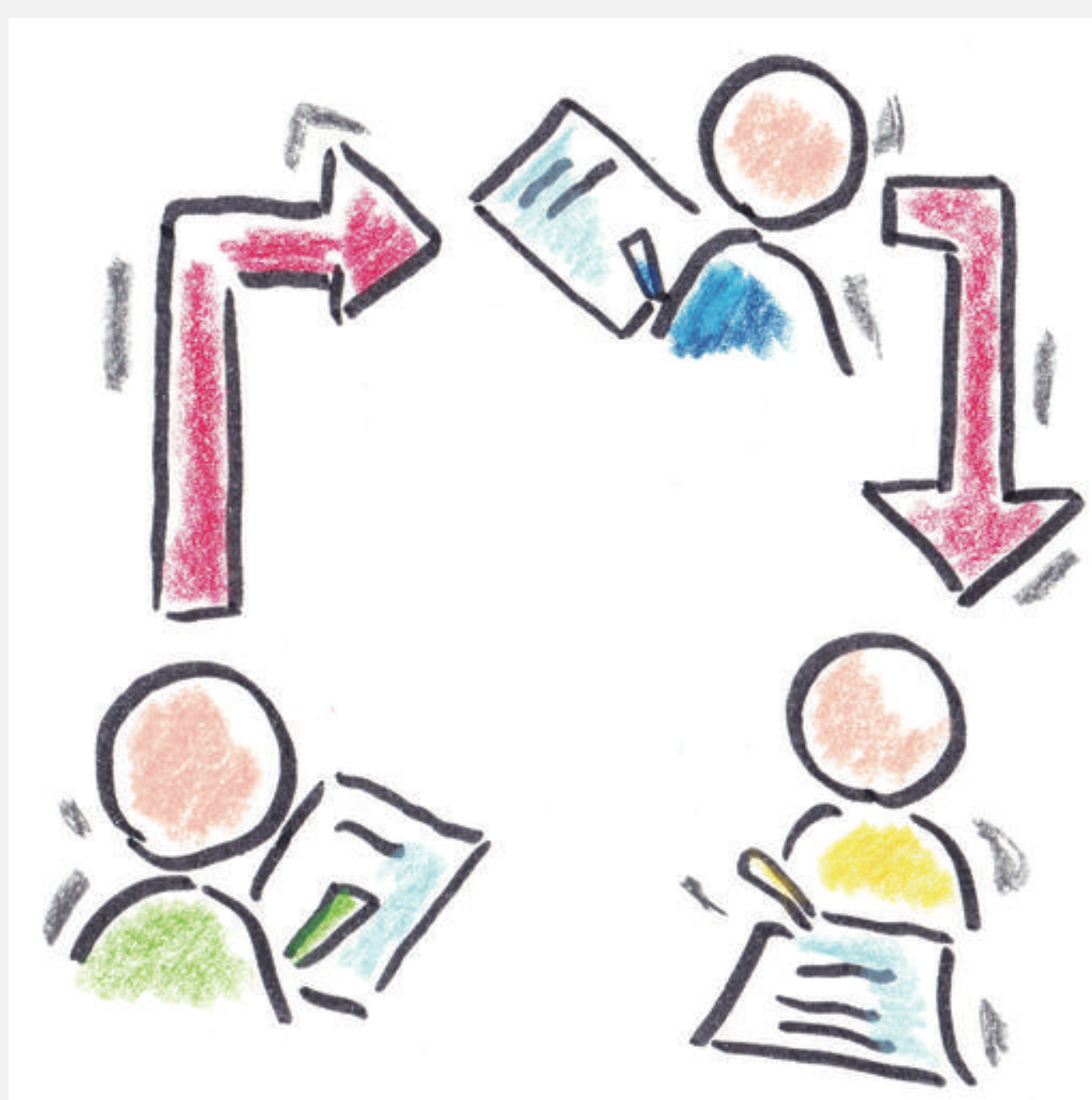
Variable	Brainwriting	Brainstorming	Difference	t-value ²	p-value
Number of Responses	99 (5.65)	92 (10.61)	7	0.411	0.7204
Feasibility	3.41 (1.64)	2.67 (1.63)	0.74	3.117	0.0011
Rigor	3.29 (1.56)	2.45 (1.42)	0.84	3.938	0.0001
Originality	3.22 (1.35)	2.41 (1.37)	0.81	4.098	0.0000

¹: Feasibility, Rigor, and Originality measured on a 1-5 Likert scale

²: $H_A - \text{diff} (\text{Brainwriting} - \text{Brainstorming}) > 0$; (standard deviation)

Implications and Recommendations

- The study's results provide insight into the effectiveness of brainwriting as a valuable tool for engaging agricultural students of diverse backgrounds to generate discipline-specific ideas.
- The use of brainwriting in comparison to traditional brainstorming leads to more and better ideas surrounding agricultural topics.
- To better understand the generalizability of brainwriting across all disciplines within agriculture, the study should be examined across all agricultural disciplines. However, this pilot study indicates brainwriting has potential to be an effective tool for idea generation within the agricultural classroom.



	Idea 1	Idea 2	Idea 3
Person A	PERSON A WRITES AN IDEA HERE...	ANOTHER IDEA FROM PERSON A	ANOTHER IDEA FROM PERSON A
Person B	PERSON B WRITES AN IDEA HERE...	PERSON B IDEA MAY BUILD UPON PERSON A'S	OR BE A COMBINATION OF IDEAS
Person C	PERSON C WRITES AN IDEA HERE...	THEY COULD BUILD UPON OTHER IDEAS	OR BE A COMPLETELY NEW ONE