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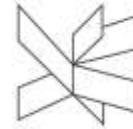
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Preface

Dear colleague,

It is with great pleasure we welcome you to the *3E Conference - ECSB Entrepreneurship Education Conference 2023*. This book presents the abstracts of the 3E Conference held on 10-12th May 2023 in Aarhus, Denmark. The Conference is hosted by local organisers who are: the Research Centre for Innovation and Entrepreneurship, VIA University College Aarhus, the Entrepreneurship Research Group at the Department of Management, and the Centre for Educational Development (CED), Aarhus University (AU), supported by the European Council for Small Business and Entrepreneurship (ECSB).

Just ten years ago, the iCARE group of entrepreneurship education researchers at Aarhus University Business School discussed the idea of hosting a European Entrepreneurship Education conference. Not only did they want to bring together European entrepreneurship educators, but they wanted to provide a conference format that would nurture deep discussion of ideas, methods, and concepts, and inspire educators with innovative ways of teaching entrepreneurship. They brought the idea to ECSB which was more than happy to include the conference under their umbrella and the first 3E conference saw the light of day in May 2013 in Aarhus. Since then, the conference has taken place in Turku, Lüneburg, Leeds, Cork, Enschede, Gothenburg, online, and Dijon. The conference format we have today reflects the initiatives of these pioneers and we return to Aarhus to celebrate the anniversary of the first decade of 3E. The strong research and practitioner network and the continuous rise in the number of delegates attest to the success of this conference format and the strong ties that have been developed throughout the last ten years. The conference takes as its starting point 'the questions we care about', questions to which we do not yet know the answer. Indeed, such questions have always been a significant part of entrepreneurship, and the conference seeks not necessarily to answer these questions, but to arrive at new questions that arise from the original questions.

This year, with its theme *Back to the Future of Entrepreneurship Education*, the conference seeks, once again, to provide an opportunity for researchers and practitioners to share their ground-breaking ideas in a collaborative yet critical setting. With a broad approach to entrepreneurship, this book of abstracts demonstrates how far we have come and what are the important questions that we need to ask for the future. In an ever-increasing, unpredictable world, there will be even more need for people able to solve difficult problems, collaboratively and across disciplines. As entrepreneurship educators, we are aware of the importance of introducing students to entrepreneurship through the research and practices that are presented at this year's conference.

Central themes for this conference focus on mindset and identity, the role of the educator, the dialogue between theory and practice, and the importance of being interdisciplinary to name but a few. However, we see new themes emerging such as the power of eco-systems, the ability to create value, and agency and authenticity. It is great to see how the field is evolving to capture new trends in entrepreneurship education.

On behalf of the organisers, we thank all the presenters, discussants, and session chairs for their important contributions, and wish you an inspiring, exciting, and stimulating 3E Conference.

Conference chairs

Michael Breum Ramsgaard (Co-Director),

(Research Centre for Innovation & Entrepreneurship, VIA University College)

Helle Neergaard (Co-Director)

(Department of Management, Aarhus University)

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SPARKING CREATIVITY IN ENTREPRENEURSHIP COURSES: THE EFFECT OF USING THE SCAMPER TECHNIQUE IN BRAINSTORMING SESSIONS

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Introduction

Based on the passive search view of opportunity discovery, scholars argue that it is possible to increase the likelihood of discovering business opportunities by stimulating individuals' creativity (Ardichvili et al., 2003; DeTienne & Chandler, 2004). As such, various techniques have been employed to stimulate individuals' creativity in EE programs to improve their capability in identifying business opportunities (DeTienne & Chandler, 2004; Karimi et al., 2016; Promsiri et al., 2018). One of the most frequently used techniques is brainstorming (e.g., DeTienne & Chandler, 2004; Lindberg et al., 2017). The brainstorming technique was initially developed by Osborn (1957) based on the premise that generating more ideas increases the likelihood of coming up with a higher-quality idea (Clapham, 2003; Simonton, 1990).

However, the empirical findings show that in traditional brainstorming sessions, individuals often move too quickly to convergence or arrive at a point where no new ideas are generated, that is, where idea generation gets exhausted (Ritter & Mostert, 2018). In addition, the empirical findings in the entrepreneurship field indicated that for some individuals, there is a high tendency toward automaticity (i.e., Einstellung effect) in the brainstorming sessions which results in identifying fewer and less innovative business ideas by them (Sahai & Frese, 2019). The Einstellung effect hinders individuals' cognitive adaptability and flexibility (Wegner & Wenzlaff, 1996) and promotes fixation (Wiley, 1998) as one of the most common cognitive obstacles that obstruct creative idea generation (Aviña et al., 2018). To overcome these pitfalls, creativity scholars argued that brainstorming sessions should be supported by structured idea-generation techniques, such as the SCAMPER² technique (Ritter & Mostert, 2018). Many scholars showed the positive effect of using the SCAMPER technique on idea-generation outcomes in various contexts such as engineering design (e.g., Chulvi et al., 2013), fashion design (e.g., Kamis et al., 2020) and science learning (e.g., Rahimi & Shute, 2021). A few entrepreneurship scholars also employed this technique to support individuals' opportunity identification (e.g., Nab et al., 2013). However, there is still no empirical study exploring the effect of the SCAMPER technique on business idea generation outcomes.

Study purpose

In response to the above-mentioned gap in the entrepreneurship education field, the primary purpose of this empirical study is to explore the effect of using the SCAMPER technique in entrepreneurship courses on brainstorming session outcomes, in particular, on the *comprehensibility, concreteness, flexibility, persistence, and originality* of generated business ideas.

Approach

This study's research design is an experimental, posttest-only control group design. The study was conducted with 58 bachelor's and master's students who were enrolled in a course at a Dutch university in 2022. The students were randomly assigned to one of the following conditions: (1) *Traditional*, wherein students were only provided with the Osborn rules they needed to consider while brainstorming (n=29) and (2) *Supported*, wherein students were provided with Osborn rules first and then received guidance for using the SCAMPER technique while brainstorming (n = 29). An online platform (<http://ideation-hub.nl>) was designed and used in this study to provide participants with information about the task they were required to do, control the time they had for completing the tasks, and inform them about the rules they needed to consider while brainstorming.

² The acronym for Substitute, Combine, Adapt, Modify, Put to other uses, Eliminate, Rearrange.

Results

The one-way multivariate analysis of covariance (MANCOVA) was used to explore the effect of using the SCAMPER technique on the quantity and quality of generated business ideas (i.e., comprehensibility, concreteness, flexibility, persistence, and originality) as the dependent variables, conditions (i.e., traditional and supported) served as the independent variable, and students' educational level was included as a covariate. The findings indicated that individuals in the supported brainstorming condition generated more concrete business ideas that were also more original than the traditional brainstorming condition. The flexibility (i.e., number of associated categories) of generated ideas using the SCAMPER technique was not significantly different from ideas generated in the traditional condition but the persistence (i.e., the number of ideas in a category) was increased significantly.

Implications

The current study's findings highlight the importance of supporting brainstorming sessions in entrepreneurship courses to improve the outcomes. Such findings can offer practical guidelines for entrepreneurship educators in designing effective brainstorming sessions that enable individuals to generate more quality business ideas.

Value/Originality

In line with the ongoing call, for more methodologically rigorous studies in the entrepreneurship education field to compare the effectiveness of different strategies to their alternatives (Pittaway & Cope, 2007), this empirical study provides new insight into designing entrepreneurship courses efficacious in developing students' opportunity identification outcomes using a robust empirical design. The use of the SCAMPER technique for fostering students' opportunity identification outcomes in a real educational setting with high ecological validity could be seen as the added value of this study.

Sparkling creativity in entrepreneurship courses:

The effect of using the SCAMPER technique in brainstorming sessions

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1. Introduction

Opportunity identification (OI) has been recognized as one of the key entrepreneurial capabilities (Ardichvili et al., 2003; Lans et al., 2018) and has consequently become a central topic in entrepreneurship education (EE) programs (Lumpkin et al., 2004). OI is defined as an individual's ability to identify ideas and transfer them to products, processes, or services that have value for customers, end-users, or society (Baggen et al., 2016; Lumpkin and Lichtenstein, 2005; Farrokhnia, Baggen, et al., 2022). Many scholars believe that OI capability is not a natural gift that only some people possess (Baron and Ensley, 2006), and it can be developed through teaching (Fiet, 2002; Saks and Gaglio, 2002). Based on the passive search view of opportunity discovery, scholars argue that it is possible to increase the likelihood of discovering business opportunities by stimulating individuals' creativity (Ardichvili et al., 2003; DeTienne and Chandler, 2004). As such, various techniques have been employed to stimulate individuals' creativity in EE programs to improve their capability in identifying business opportunities (DeTienne and Chandler, 2004; Karimi et al., 2016; Farrokhnia, Biemans, et al., 2022; Farrokhnia, Noroozi, et al., 2022; Promsiri et al., 2018). One of the most frequently used techniques is brainstorming (e.g., DeTienne and Chandler, 2004; Lindberg et al., 2017).

The brainstorming technique was initially developed by Osborn (1957) based on the premise that generating more ideas increases the likelihood of coming up with a higher-quality idea (Clapham, 2003; Simonton, 1990). However, the empirical findings show that in traditional brainstorming sessions, individuals often move too quickly to convergence or arrive at a point where no new ideas are generated, that is, where idea generation gets exhausted (Ritter and Mostert, 2018). In addition, studies in the entrepreneurship field indicated that for some individuals, there is a high tendency toward automaticity (i.e., Einstellung effect) in the brainstorming sessions which results in identifying fewer and less innovative business ideas (Sahai and Frese, 2019). The Einstellung effect hinders individuals' cognitive adaptability and flexibility (Wegner and Wenzlaff, 1996) and promotes fixation (Wiley, 1998) as one of the most common cognitive obstacles that obstruct creative idea generation (Aviña et al., 2018). To overcome these pitfalls, creativity scholars argued that brainstorming sessions should be supported by structured idea-generation techniques, such as the SCAMPER technique (Ritter and Mostert, 2018).

1.1. SCAMPER technique

The SCAMPER technique is a well-established brainstorming method that was first introduced by Eberle (1972) to stimulate innovative thinking by guiding individuals through a systematic exploration of alternative approaches to problem-solving. SCAMPER stands for Substitute (e.g., replacing material in a product), Combine (e.g., getting some pieces from other ideas and creating a new idea), Adapt (i.e., changing something known), Modification (i.e., improving previous ideas using tools), Put (i. e., using objects for other uses than they were planned to be used for), Eliminate (i.e., removing things to solve a problem creatively), and Rearranging or Reversing (e.g., left-handed scissors). According to Rahimi and Shute (2021), the SCAMPER technique can help individuals bring new ideas to mind—rather than waiting for the ideas to

form. It can increase motivation (Altıparmak and Eryılmaz-Mustu, 2021), stimulate engagement (Rahimi and Shute, 2021), and improve creative imagination (Gündoğan, 2019).

The SCAMPER technique has demonstrated significant benefits across various fields, enhancing the productivity of brainstorming sessions. Many scholars reported its effect on generating design ideas. Moreno et al. (2016) reported that this method effectively mitigates design fixation, as evidenced by the increased quantity of novel ideas generated during its application. Likewise, Yeo and Quek (2014) showed the positive influence of the SCAMPER technique on the quality of design ideas produced. Furthermore, Chulvi et al. (2013) found that the utilization of the SCAMPER technique led to an improvement in the practicality of the generated ideas when compared to the condition employing traditional brainstorming techniques. There are also several empirical findings regarding the positive effect of the SCAMPER technique in stimulating students' creativity in science classes (Rahimi and Shute, 2021) and their academic achievement and motivation toward science learning (Altıparmak and Eryılmaz-Mustu, 2021).

Many scholars showed the positive effect of using the SCAMPER technique on idea-generation outcomes in various contexts. A few entrepreneurship scholars also employed this technique to support individuals' OI (e.g., Nab et al., 2013). However, there is still no empirical study exploring the effect of the SCAMPER technique on business idea generation outcomes. The main objective of this empirical study is to examine how using the SCAMPER technique in entrepreneurship courses influences brainstorming session outcomes, particularly in terms of the quantity and quality of business ideas generated.

2. Method

2.1. Participants

The study was conducted with 62 university students ($M_{Age} = 23.90$, $SD = 2.50$; Min = 19, Max = 32; Females = 48%, Males = 52%; undergraduate students = 20%; graduate students = 80%) who were enrolled in a career exploration course.

2.2. Study design

This empirical study utilized a posttest-only control group design to examine the impact of the SCAMPER technique on brainstorming outcomes among university students, in conjunction with Osborn rules for brainstorming. The students were randomly assigned to one of two conditions, ensuring the elimination of potential confounding variables and increasing the internal validity of the study (Shadish et al., 2002). In the first condition (i.e., *Traditional*), students ($n = 29$) were provided with only the Osborn rules to consider while brainstorming. In the second condition (i.e., *Supported*), students ($n = 32$) were given both the Osborn rules and guidance on using the SCAMPER technique during brainstorming sessions. Following the intervention, students' idea generation outcomes were assessed in both groups.

2.3. Procedure

The workshop was conducted on an online platform (i.e., <https://ideation-hub.nl>) during the course, with prior permission from the lecturer. The platform guided students in both conditions, providing them with information about the task they were required to complete, controlling the time allotted for task completion, and informing them about the rules to consider while brainstorming. To maintain anonymity, each student was randomly assigned a username and password for accessing the online platform, and informed consent was obtained from all participants before the start of the online workshop. In particular, they were informed that their results would be used in scientific research and that they could request their data be excluded. In addition, ethical approval was received from the social sciences ethics committee of the particular university.

Sustainable development was selected as the problem case to generate business ideas. It is defined as a form of development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (UN, 1987, p. 6). This was a deliberate

choice as sustainable development is a broad topic that is familiar to many people (Baggen et al., 2017) and aligns with the recommendation to raise awareness among students about sustainable development goals in courses at the university where the study took place. At the beginning of the workshop, an explanation was provided of what sustainable development is about, and several specific examples were given, such as energy, climate change, and education. The participants were then asked to imagine they "are asked to give input for business ideas for new start-ups in the area of sustainable development. These business ideas can concern people, the planet, and/or profit and may lead to social, environmental, and/or economic gains. What ideas for new start-ups come up in your mind?".

It should be noted that students in both conditions received Paulus et al.'s (2006) instructions for individual brainstorming at the beginning of the workshop. However, students in the supported condition received additional instruction after three minutes of brainstorming in the form of prompts (see Figure 1).

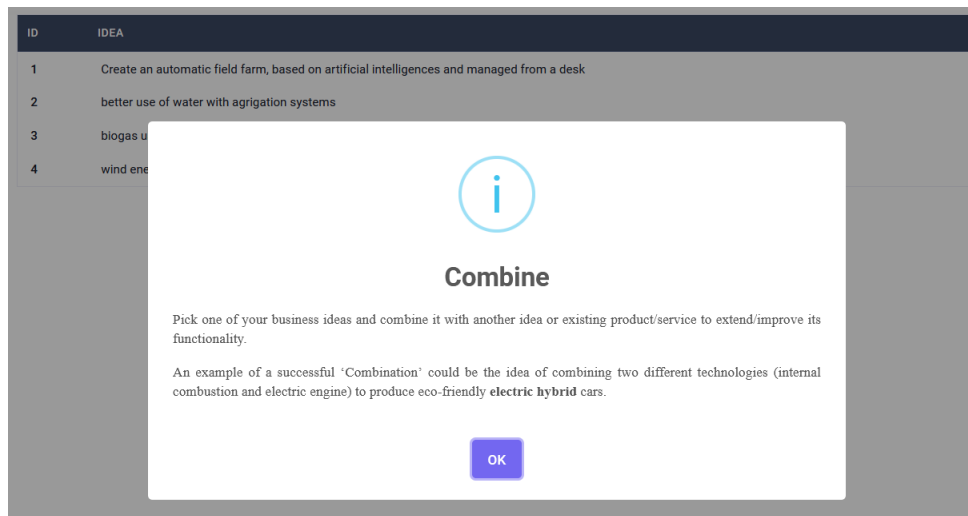


Figure 1. The prompt that was displayed to students in the Supported condition during brainstorming

These prompts could provide students with adapted rules of the SCAMPER technique specifically developed for this study (see Appendix 1 for the instructions). The details of the workshop are summarized in Table 1.

Table 1. An overview of the workshop

Condition	Step	Tasks	Time
<i>Traditional</i>	1	Reading the problem case	5 min
	2	Reading individual brainstorming instructions	2 min
	3	Idea generation	10 min
<i>Supported</i>	1	Reading the problem case	5 min
	2	Reading individual brainstorming instructions	2 min
	3a	Idea generation (<i>without</i> SCAMPER)	3 min
	3b	Idea generation (<i>with</i> SCAMPER)	7 min

2.4. Dependent measures

The dependent measures of students' idea generation performance were the quantity and the quality of the generated business idea. In line with previous research (Baggen et al., 2017; Baruah and Paulus, 2008), the following criteria were used to evaluate the quantity and quality of ideas:

- (1) *comprehensibility*, i.e., whether or not the idea can be qualified as an opportunity in terms of socially valued products or services in the context of sustainability (1 = comprehensible,

0 = incomprehensible). "Banning cars from cities to reduce air pollution is technically possible but does not constitute a product or service" (Eller et al., 2020). As such, ideas such as "wearing an extra sweater" or "turning down the heating" were scored as incomprehensible as they were more general recommendations to address sustainability-related issues than an idea for a start-up business. Incomprehensible ideas were excluded from further analysis. It is to be noted that in this study, the number of comprehensible ideas is attributed to the quantity of generated ideas.

- (2) *concreteness*, i.e., whether or not it was possible to visualize or apply the idea (1 = concrete, 0 = not concrete). For instance, "recycling used water for other purposes" could be considered a comprehensible business idea to address a sustainability issue, but since it does not provide enough information, it is hard to visualize and apply the ideas; thus, it was scored as a non-concrete business idea.
- (3) *flexibility*, i.e., the extent to which participants generated ideas in different categories. The categories were based on the examples of sustainable development in the problem case. Each idea was scored into one category, i.e., (1) affordable and adequate food supply, (2) decent housing, (3) energy, (4) climate change, (5) education, and (6) personal health and safety. The flexibility score was calculated by counting the number of scored categories per participant.
- (4) *persistence*, i.e., the number of comprehensible ideas in one category. According to the dual pathway to creativity model (Nijstad et al., 2010), creativity can be accessed through not only flexibility but also persistence, making it crucial to incorporate both as criteria when evaluating brainstorming outcomes. Persistence for each student was quantified by dividing the number of comprehensible ideas by flexibility.
- (5) *originality*, i.e., "the degree to which an idea is innovative" (Rietzschel et al., 2007, p. 934), was determined using DeTienne and Chandler's (2004) 6-point scale based upon the following categories: (1) no apparent innovation or not enough information to make a determination; (2) a product or service identical to an existing product/service offered to an underserved market; (3) a new application for an existing product/service, with little/no modification or a minor change to an existing product; (4) a significant improvement to an existing product/service; (5) a combination of two or more existing products/services into one unique or new product/service; and (6) a new-to-the-world product/service, a pure invention or creation.

2.5. Coding of ideas

First, data from the brainstorming session were screened to eliminate redundant ideas. Then, a codebook was developed with the assistance of two academic scholars in entrepreneurship to score the ideas generated by students in the individual phases. Initially, the experts each applied the preliminary version of the codebook to 10% (approximately 60) of the ideas generated by the students in the individual phases. After discussing their results, the codebook was refined and the evaluation process was repeated until the measures of inter-rater reliability reached acceptable levels: agreement of 91% (comprehensibility) and 88% (concreteness), as well as Cohen's kappa of .89 (flexibility) and .73 (originality). Subsequently, two master's student assistants were enlisted to evaluate the entire pool of ideas utilizing the final version of the codebook.

2.6. Statistical analysis

The one-way multivariate analysis of covariance (MANCOVA) was used to compare the effects of the two conditions on multiple dependent variables. The one-way MANCOVA allows researchers to control for the influence of one or more continuous covariates while examining the effect of a single independent variable (i.e., conditions in the current study) on multiple dependent variables (i.e., comprehensibility, concreteness, flexibility, persistence, and originality of ideas). The one-way MANCOVA is a robust statistical technique that considers

the intercorrelations among dependent variables, reducing the risk of Type I errors associated with conducting multiple univariate analyses separately (Tabachnick et al., 2013).

In the present study, students' educational level was treated as a covariate due to its potential influence on business idea generation performance. This consideration is grounded in the literature, as previous empirical studies have demonstrated the impact of students' educational level on their business idea generation outcomes (e.g., Baggen et al., 2017; Oftedal et al., 2018). These findings may be attributed to the greater prior knowledge that master's students can acquire through education (also referred to as *general human capital*), which has been shown to play a crucial role in the identification of business ideas (Shepherd and DeTienne, 2005).

To conduct the one-way MANCOVA, first, standard checks were performed to determine whether the assumptions of homogeneity and normality were met for all sets of data. It was shown that the conditions were homogeneous, and the data were normally distributed ($p > 0.05$) after assessing the scores using the Levene and Kolmogorov–Smirnov tests. After confirming that the assumptions were met, the one-way MANCOVA test was performed to determine whether there were significant overall differences between the two conditions in terms of the dependent variables. Post hoc pairwise comparisons were then conducted to identify specific differences between the groups for each dependent variable, using Bonferroni corrections for multiple comparisons (Field, 2011).

3. Results

The descriptive analysis of the individual idea generation outcomes before and after the group idea generation is shown in Table 2.

Table 2. The descriptive statistics of findings

	<i>Traditional</i>		<i>Supported</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
N. of ideas generated	9.93	7.28	8.10	4.58
N. of comprehensible ideas	3.59	2.78	5.33	3.06
N. of concrete ideas	1.72	1.05	3.55	2.11
Flexibility	2.17	1.10	2.52	1.18
Persistence	1.62	.85	2.32	1.16
Originality	1.96	.49	2.59	.47

The descriptive statistics revealed that, on average, students in the supported condition generated fewer ideas ($M = 8.10$, $SD = 4.58$) than in the traditional condition ($M = 9.93$, $SD = 7.28$). However, both the average number of comprehensible and concrete ideas generated in the supported condition ($M_{comp} = 5.33$, $SD_{comp} = 3.06$; $M_{concr} = 3.55$, $SD_{concr} = 2.11$) were higher than in the traditional condition ($M_{comp} = 3.59$, $SD_{comp} = 2.78$; $M_{concr} = 1.72$, $SD_{concr} = 1.05$). Moreover, the students of the supported condition generated ideas in more categories ($M = 2.52$, $SD = 1.18$) with higher persistence ($M = 2.32$, $SD = 1.16$) than in the traditional condition. In addition, the descriptive results showed that the individually generated ideas scored higher originality in the supported condition ($M = 2.59$, $SD = .47$) than in the traditional condition ($M = 1.96$, $SD = .49$).

A one-way repeated MANCOVA test was performed using Wilks' lambda as the test statistic to determine the significance of the differences in the means between the two conditions. The results of the MANCOVA revealed a significant main effect for condition, $F(1, 57) = 4.417$, $p = .001$, $Wilks' \lambda = .654$, $\eta^2 = .346$, indicating that the mean differences between the two conditions were statistically significant. As such, further analysis was conducted to locate the significant differences using pairwise comparisons with the Bonferroni correction to control for the type I error (i.e., false positives). The results are shown in Table 3.

Table 3. Tests of withing-subjects contrasts

Measure	(I)	(J)	Mean	Std. Error	F	Sig. ^b
	Cond.	Cond.	Difference (I-J)			
N. of ideas generated	Supp.	Trad.	-2.356*	1.774	1.764	.190
N. of comprehensible ideas	Supp.	Trad.	1.740	.918	3.358	.072
N. of concrete ideas	Supp.	Trad.	1.332*	.589	5.105	.028
Flexibility	Supp.	Trad.	.350	.363	2.534	.117
Persistence	Supp.	Trad.	.701*	.321	5.236	.026
Originality	Supp.	Trad.	.631*	.143	11.523	.001

* The mean difference is significant at the .05 level

^b Adjustment for multiple comparisons: Bonferroni

The pairwise comparisons revealed significant differences between the two conditions in the average number of concrete ideas ($p = .028$), the average number of comprehensible ideas in each category (i.e., persistence; $p = .026$), and the originality of ideas ($p = .001$). Overall, the results indicate that students in the supported brainstorming condition generated more concrete business ideas, which were also more innovative than those generated in the traditional brainstorming condition. The comprehensibility and flexibility of ideas generated using the SCAMPER technique were not significantly different from those generated in the traditional condition; however, the persistence (i.e., the number of ideas in a category) increased significantly.

4. Discussion

The brainstorming technique is widely used in entrepreneurship courses to stimulate individuals' creativity (Vogel, 2017), which in turn enhances their OI outcomes (DeTienne and Chandler, 2004). However, studies have shown that brainstorming sessions may not always yield high-quality outcomes, as the idea-generation process can become exhausted quickly (Ritter and Mostert, 2018) and some cognitive challenges such as the Einstellung effect can negatively impact the quantity and quality of the generated ideas (Sahai and Frese, 2019). To address these challenges, the current study investigated the impact of incorporating the SCAMPER technique into brainstorming sessions in entrepreneurship contexts. The findings indicated that using the SCAMPER technique, compared to traditional brainstorming, can help individuals come up with more concrete and original business ideas. This means that the technique could assist them in generating original ideas that are easier to envision as business opportunities for valuable products or services. Additionally, an intriguing finding of this study was that the SCAMPER technique could help individuals generate more ideas within a specific category, a concept known as persistence.

The findings of the current study align well with Nijstad et al.'s (2010) dual pathway to creativity model. This model proposes that two different processes can result in creativity (i.e., the generation of original and useful ideas): *flexibility* and *persistence* pathways. The flexibility pathway suggests that creative ideas can be achieved through the use of broad cognitive categories, flexible switching among categories, and the utilization of remote associations. On the other hand, the persistence pathway puts forward the idea that creative ideas can be attained through a systematic exploration of possibilities and an in-depth examination of only a few categories. According to Peterson and Pattie (2022), these two pathways do not exclude each other and may operate simultaneously. Nijstad et al. (2010) argue that an individual might utilize the flexibility pathway to identify novel and promising solutions to a problem, and then

switch to a more systematic approach to explore these solutions in depth. In support of this argument, the current study's findings revealed that implementing the structured idea-generation technique of SCAMPER following traditional brainstorming can promote systematic and in-depth examination of the generated ideas, leading to increased persistence and a greater number of original business ideas.

5. Conclusion and implications for practice

In response to the ongoing call for more methodologically rigorous studies in the entrepreneurship education field that compare the effectiveness of different strategies to their alternatives (Pittaway and Cope, 2007), this empirical study offers new insights into designing entrepreneurship courses that effectively develop students' opportunity identification outcomes using a robust empirical design. The findings of the current study underscore the significance of augmenting brainstorming sessions with structured idea-generation techniques, such as SCAMPER. These techniques are shown to be particularly effective in promoting systematic search and in-depth exploration during brainstorming, which leads to the generation of business ideas that are more concrete and original.

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Appendix 1. Instructions provided for students in both condition

Instructions for individual brainstorming for both conditions

In this phase, you should individually generate business ideas concerning your identified problems and/or needs using the brainstorming technique. In this regard, please first take **2 minutes** to read the following rules carefully:

- (1) **Stay Focused on the Task.** Concentrate on the problem at hand and avoid engaging in irrelevant thought processes or discussions.
- (2) **Do not tell stories.** We are only interested in your ideas. Do not tell stories about your experiences. Do not explain ideas. Do not expand on why you think something is good or bad. Simply state your idea and then continue with the next idea.
- (3) **Keep the Brainstorming Going.** When you have no ideas during a lapse of time, restate the problem and try to think of additional ideas.
- (4) **Do not Criticize.** Do not criticize any of the ideas that you generate. State any idea that you think of and do not evaluate its usefulness.
- (5) **Return to Previous Categories.** When you cannot think of other ideas, go back to the categories of ideas that you have already mentioned and try to build on these previous ideas.

The prompts used in the “Supported” condition

Substitute: Pick one of your business ideas and replace/change part of the idea (components, ingredients, materials, shape, process, etc.) to make it better and more appealing to customers.

An example of a successful ‘Substitution’ could be the **TIPA company** substituting conventional plastic material with *Bio-Based* material to produce compostable flexible food packaging.

Combine: Pick one of your business ideas and combine it with another idea or existing product/service to extend/improve its functionality.

An example of a successful ‘Combination’ could be the idea of combining two different technologies (internal combustion and electric engine) to produce eco-friendly **electric hybrid** cars.

Adapt: Pick one of your business ideas and adapt it to other customers/contexts or make it more competitive.

An example of a successful ‘Adaptation’ could be the **Uniqlo company** which adapted their previously developed *AIRism fiber* to make a highly breathable and reusable mask during the Corona pandemic. Or the idea of **Roll-on deodorant**, which was adapted from the ballpoint pen.

Modify: Pick one of your business ideas and modify, magnify, maximize, or minimize its features (e.g., size, shape, form, color, etc.) in a way that enhances its perceived value or improves its function.

An example of successful ‘Modification’ could be **Soda companies** that offer you different bottle *sizes* to fit your individual or family and party needs. This way, they maximize their profit by making the same product larger or smaller, thus appealing to more customers.

Put to another use: Pick one of your business ideas and use it for another purpose.

An example of successful ‘Putting to another use’ could be using **VR headsets** for educational purposes such as raising awareness of environmental concerns.

Eliminate — Pick one of your business ideas and remove one of its features to attract new customers and/or improve its perceived value.

An example of a successful “Elimination” could be **Beverage companies** that offer sugar and/or preservative-free drinks, thus managing to attract a whole new sector of health-oriented consumers.

Rearrange / Reverse — Pick one of your business ideas and evolve it into something new by reordering and/or reversing its parts/processes.

An example of a successful “Rearranging” could be **Uber**, which rearranged the process by which people take a taxi, i.e., ordering instead of searching!
