THE RELATIONSHIP BETWEEN INDIVIDUAL AND GROUP CREATIVE BEHAVIORS

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Abstract

The purpose of this study is to examine the relationship between individual and group creative behaviors. Creativity is defined as the interaction among aptitude, process, and environment by which an individual or a group produces a perceptible product that is both novel and useful (Plucker et al. 2004).Group creativity are performed via brainstorming and group meetings (Reiter-Palmon et al., 2012). Data was collected from 108 Indonesian college students. Individual creative behaviors were measured via the activity checklist developed by Runco et al.(2001). Group creative behaviors were evaluated by the self-reported scale that clearly reflected the process to generate ideas in group activities. Factor analysis found five factor solutions for group creative behaviors. Linear regression analysis found that Runco's individual creative behaviors exerted the significant influences on four out of five group creative factors, i.e., collaborative, originality, ingenious, and self-confidence. Theoretical and practical implications are considered.

Key Words: Individual Creative Behavior, Group Creative Behavior

INTRODUCTION

In recent years, most of activities are operated in organizations. Organizations provide products and services that are novel and useful. However, past studies put considerable focuses on individual processes that develop creative products (Puccio and Cabra, 2012). For example, cognitive process, creative thinking, and creative behavior are heavily studied.

Regarding the organizational level, researchers investigate the planning process to generate creative products under the name of "innovation" (Hunter, Cassidy, and Ligon, 2012).Practically, organizations produce creative products through the group activities rather than individual works (Paulus, Dzindolet, and Kohn, 2012). A lot of project teams are composed in Google, IDEO, and Nintendo to develop new products. However, few studies uncover to what degree

group processes are effective (Palmon, Wigert, and Vreede, 2012). This study aims to explore the process to generate creative products via group activities.

Hocevar (1981) argued that past behaviors are one of the most effective predictors of creative outcomes. The behavioral approach focuses on behaviors and activities that ordinary people, not genius and incredible person, take to produce creative products (Runco, Plucker, and Lim, 2001). For example, the behavioral approach involves an activity that a sales clerk in the book store used to make unique point-of-purchase advertisings (POP ads). Assessments of behaviors are usually used as self-reported scales (Kaufman, Plucker, Baer, 2008). However, the behavioral approach has the depending on a specific situation. Past studies tend to focus on educational setting (Kaufman, Plucker, and Baer, 2008). Researches on educational setting specified the two dimensional model: artistic and scientific (Carson et al. 2005; Dollinger, Burke, and Gump, 2007; Hocevar, 1979; Ivcevic and Mayer, 2007).However, the two dimensional model doesn't fit organizational setting.

In organizational setting, creativity defined as ideas that are novel and useful (Mumford, Hester, and Robledo, 2012). Because the ideas, such as new concepts of automobiles and planning surprise events in the hotel, are likely to contribute to the organization (Acar and Runco, 2012). Walczyk, Runco, Tripp, and Smith (2008) argued that the ideational behavior is the effective indicator to evaluate people who have a tendency to generate ideas well.

In order to assess behaviors to generate ideas, Runco et al. (2001) developed the Runco Ideational Behavioral Scale (RIBS). The scale measures ideational behaviours that reflect underlying potentials and talents to generate ideas (Plucker and Makel, 2010). Runco et al. (2001) designed the RIBS to target ordinary people who generate original and unique ideas in everyday life. However, the RIB Sevaluates ideational behaviors in individual works only, excluding ideational behaviors in group works.

According to Reiter-Palmon, Herman, and Yammarino (2008), the idea generation in groups are facilitated by the brainstorming and group meeting. The brainstorming is the most basic and effective technique of the ideas generation (Baruah and Paulus, 2011; Brown and Paulus, 2002; Paulus and Yang, 2000). Osborn (1957) organized the brainstorming based on the Guilford's (1971) structure of intelligence (SOI) model. The SOI model explains that creative productions are produced by the combination with divergent and convergent thinking. Divergent thinking leads to four characteristics of ideas: quantity of ideas (fluency), variety of ideas (flexibility), quality of ideas (Elaboration) and uniqueness of ideas (originality). Convergent thinking facilitates feasibility, workability, and persuasion of ideas.

Osborn (1957) argued the brainstorming should be operated via two steps: 1) listing ideas (divergent thinking) and 2) sophisticating ideas (convergent thinking). However, most of studies focus on the Step

1only (Reiter-Palmon, Wigert, and Vreede, 2012). Especially, quantity of ideas is treated as creative outcomes (Brown and Paulus, 2002).Because original and unique ideas correlate with the number of ideas, quantity of ideas is the most important factor of creative outcomes (Kohn, Paulus, and Choi, 2011).Few studies examine both listing and sophisticating ideas in the brainstorming processes. Therefore it is important to examine both listing and sophisticating process in the group brainstorming.

Two research questions are examined. First, this study aims to explore the factor structure of group ideational behaviors. Ideational behavior is one of the most effective predictors of creative outcomes (Plucker 1998; Plucker and Makel, 2010). In recent studies, two popular behavioral scales are existed: the Creative Achievement Questionnaire (CAQ; Carson, Peterson, and Higgins, 2005) and the Runco Ideational Behavior (RIBS; Runco, Plucker, and Lim 2001). However, these two behavioral measurements are focused on behaviors in individual works only, not consider behaviors in group activities.

This study assumes that the group ideational behavior is the multi-dimensional. According to Sawyer (2010), in order to produce creative outcomes, individuals have to take more diverse roles in group processes than individual works. In this study, the structure of group ideational behaviours was explored in the brainstorming workshops empirically.

Second, this study aims to specify the relationship between individual and group ideational behaviors. Because the best scientific explanation of creativity is hybrid, incorporating properties of both individuals and groups (Sawyer, 2010). This study assumes that the individual creative behavior positively influences on group ideational behaviors via divergent thinking, not influences on group ideational behaviors based on improving persuasions and feasibility of ideas. If the individual creative behaviourhas no relationship with behaviors based on implementability of ideas, groups might consist of not only people who are able to show high individual creativity, but also people who can commit to improve persuasion and feasibility of ideas. This study is the exploratory investigation of the group ideational behaviors.

RESEARCH METHOD

Data was collected from 108Indonesian university students (52 male and 54 female) in economy and business majors. Five freshmen, 95 sophomore students, and 6 junior students completed the survey in the courses in the faculty of economy and business. The average age is 19.47 (SD = .73).

Individual creative behaviors. The RIBS (Runco *et al.* 2001)is used as the measurement of individual creative behaviors, the RIBS describes creative behaviors in everyday life that are adaptable to organizational situations. Runco et al. (2001) provided the uni-dimensionality of the RIBS. The RIBS measures creative behaviors by 23items with 5 point Likert scale rating from 1 (Never) to 5 (Very often).

Group ideational behaviors. The group ideational behavior was measured by the original items in this study. The conceptual framework was derived from the discussion with two faculties and eight graduate students. By the close look at the actual brainstorming workshops, group ideational behaviors are differentiated into three constructs: flexibility of ideation, fluency of ideation, and storytelling. Flexibility of ideation means the degree to which the person makes open ideation and avoid stereotype in brainstorming. Fluency of ideation is based on Guilford's (1967) four factors, i.e. fluency (quantity of ideas), flexibility (variety of ideas), originality, and elaboration (quality of ideas). Fluency describes the behavior that stimulates the discussion and generates more ideas. Storytelling is the behavior that makes idea understood easily and improves the persuasion by making the plot and visual aids.

In addition, levels of creative thinking and creative magnitude are measured. Levels of creative thinking and creative magnitude depend on the four C model of creativity (Kaufman and Beghetto, 2009): little C, big C, mini C, and pro C. Little C is described as everyday creativity which can be found in nearly all people. Big C means the eminent creativity which is the genius ideation and being able to find in the gifted innovator. Mini C is presented as creativity inherent in the learning process. Pro C is defined as the developmental and effortful progression beyond little C that represents professional level expertise in any creative areas.

All items were described actual behaviors to perform creative ideation. 35 items, rating from 1 (Never) to 5 (Very often) were designed under the assumption of having the multi-dimensional structure divided into the ideational process and improving persuasion.

FINDINGS AND DISCUSSION

In order to examine the structure of group ideational behaviors, the exploratory factor analysis was used. The exploratory factor analyses were conducted by the maximum likelihood estimation with the promax rotation with the Kaiser normalization. Five factors eigen values were extracted of sizes looking at 7.27, 1.77, 1.44, 1.14, and 1.00,accountingfor 25.08%, 6.12%, 4.96%, 3.95%, and 3.45% of the total variance, respectively. Six items were eliminated because they didn't have high loadings on five factors. Item loadings and eigen values of five factor solution were appeared in Table 1. Factor 1 was interpreted as collaborative that was behaviors that stimulate discussions to generate ideas. Factor 2 was named as originality that was behaviors that showed originality in group discussions. Factor 3 was organized as storytelling that was behaviors that made the plot and storyline to present ideas. Factor 4was identified as ingenious that was behaviors that developed quality of ideas in group discussions. Factor 5 was categorized as self-confidence that was behaviours based on confidence own potentials and talents to generate ideas. The calculation of Cronbach's alpha for overall group ideational behaviors produced an estimate (.86).

Table 1: Factors loadings of Groups Ideational Behaviors

	I	II	III	IV	V
When I join the meeting and group work, I am confident in showing unique ideas.	,687	-,161	-,047	,142	,052
I often break the ice when the discussion became calm down.	,599	,151	,176	-,197	-,081
I am good at brushing up my ideas on the basis of other ideas.	,529	-,106	,219	-,084	,005
I often show a lot of ideas in the meeting.	,524	,216	,100	-,154	,160
When I join the meeting and group work, I have open ideas which are unbounded by the provided theme.	,512	-,020	-,038	-,064	,196
When I join the meeting and group work, I always suggest concrete ideas.	,504	-,098	,271	,076	-,050
My colleagues think that I'm good at generating new ideas.	,477	,138	-,197	,129	,216
I have a trouble showing my ideas in the meeting.	,431	-,156	-,214	,259	-,266
I am able to have the bizarrest ideas in my colleagues.	-,001	,739	-,120	-,012	-,029
I would like to personalize things (e.g. painting the wall in personal color).	-,236	,700	-,095	-,036	,110
My colleagues often said that my ideas are avoided	,481	,494	-,190	-,153	,162
I often enjoy adding new elements to existed ideas.	,171	,480	,106	,258	-,244
I am able to show my originality in my major feild.	,043	,470	,122	,052	-,060
I sometimes come up with genius ideas suddenly.	,046	,434	,294	,081	-,214
I always want to buy products and services that I can modify by myself.	,028	,411	,066	,300	,092
I am good at Kaizen and improving existed ideas.	,012	,385	-,031	,324	-,035
When I presented my ideas to others, I always consider the structure of my explanation (e.g. introduction, development, turn, and conclusion).	,220	,041	,852	-,318	-,057
When I presented my ideas to others, I am conscious of the plot and the storyline.	,058	-,098	,706	,039	-,112
When I presented my ideas to others, I express my ideas with visual aids like figures, pictures, and so on.	-,015	-,046	,479	,166	,132
I am not satisfied being the same as everyone else.	-,264	,122	,441	,174	,219
I always show my originality through I get immersed in anything I do.	,088	,004	-,129	,766	-,153
I think the important thing is the uniqueness and originality of ideas rather than feasibility.	-,229	,106	-,023	,658	-,010
When I presented my ideas to others, I improve originality and ingenuity of ideas in my presentation.	-,046	-,012	,241	,443	,226
I am confident in my ideas and qualities of my performance.	,299	,151	-,015	,410	-,058
I often think new ideas by combining with resources and materials in my hands.	,152	-,063	,182	,347	,223
Qualities of my productions and ideas are so high, that people sometimes understand that I have an expertize.	,223	-,180	-,100	-,124	,822
My ideas are sometimes unacceptable as being too creative.	-,082	,334	-,039	-,033	,498
I am confident that my idea is the best in the world.	,103	,163	,126	,099	,359
Whatever I do, I'm always conscious of having originality	,237	-,210	,148	,255	,337
Eigen value	7,275	1,776	1,440	1,146	1,002
% of Variance	25,085	6,123	4,966	3,951	3,454

Note: N = 108, most likelihood estimation, promax lotation, overhall cronbach alpha (= .86)

In order to examine the relationship between individual and group ideational behaviors, the multiple regression analyses were used. Control variables, such as age and sex, were considered, and factors of group ideational behaviors except a factor to be the dependent variable. The relationship between individual and group ideational behaviors was appeared in Table 2. The individual ideation behaviors exerted significant influence on group ideational behaviors except storytelling; collaborative (□ □ ˜ □ ˜□.), originality (□ = .609**), ingenious (□ = .272*), and self-confidence (□ = .425**). Storytelling were affected from age (□ = .037*), sex (□ = .004**), collaborative (□ = .037*), self confidence (□ = .025). Multi-collinearity was not found in all independent valuables.

Collaborative			Originality			Storytelling			Ingenious			Self-confiden	
Beta	t	*P*	Beta	t	*P*	Beta	t	*P*	Beta	t	*P*	Beta	t
			,002	,025	,981	,205	2,116	,037	,056	,582	,562	,036	,419
,002	,025	,981				,116	1,156	,250	,089	,917	,361	-,129	-1,482
,209	2,116	,037	,114	1,156	,250				,170	1,790	,077	,192	2,273
,061	,582	,562	,093	,917	,361	,182	1,790	,077				,226	2,603
,049	,419	,676	-,167	-1,482	,141	,255	2,273	,025	,281	2,603	,011		
,125	1,437	,154	,003	,039	,969	,179	2,112	,037	-,108	-1,293	,199	,096	1,290
-,120	-1,339	,184	,002	,025	,980	,251	2,917	,004	,160	1,878	,063	-,219	-2,931
,330	2,604	,011	,609	5,396	,000	-,041	-,316	,753	,272	2,220	,029	,425	4,082
8,10			9,01			8,53			10,10			16,03	
7	100		7	100		7	100		7	100		7	100
,000			,000			,000			,000			,000	
0,36			0,387			0,37			0,414			0,529	

CONCLUSION

The goal of this study was two holds. First, this study explored the factor structure of group ideational behaviors. Second, this study explored the relationship between individual and group ideational behaviors.

Regarding the first research question, the factor structure of group ideational behaviors was explored via factor analyses. The result of factor analyses found that the structure of group ideational behaviors had more complexity than the individual ideational behaviors. Although the individual ideational behaviors were found to be one factor (Runco

et al. 2001), this study found the five factor solution of group creative behaviors: collaborative, originality, storytelling, ingenious, and self-confidence.

Collaborative is defined as behaviors to commit and facilitate the discussion to generate ideas. Originality is interpreted as competencies to produce original and unique ideas. Storytelling described behaviors to improve persuasions of ideas in presentations. Ingenious was similar to originality, but more practical than originality. Ingenious was defined as activities to add more originality to ideas. Self-confidence consisted of the confidence in quality of own ideas. These five factors could be interpreted by brainstorming theories. Osborn (1957) argued that the brainstorming consisted of two dimensions: generating ideas and brushing up ideas. In order to generate quantity of ideas, group members are required taking on collaborative behaviors, originality, and self-confidence of own ideas. On the other hand, storytelling and ingenious ideations are useful for brushing up ideas. In summary of the implication about the first research question, the factor structure of group ideational behaviors was interpreted as two dimensions: 1) three factors (collaborative, originality, and self-confidence)were behaviors that stimulate quantity of ideas, and 2) two factors (storytelling and ingenious) were behaviours that sophisticate ideas.

Regarding the second research question, this study found that the individual ideational behaviors significantly influenced on most of group ideational behaviors. The individual ideational behaviors positively were correlated with group ideational behaviors that improve quantity and quality of ideas. In contrast, the individual ideational behaviors were not related to storytelling. Storytelling is the behaviors to improve persuasions of ideas. In other words, people who have competencies to generate ideas in individual works take effective behaviors to generate ideas in groups. However, the individual ideational behavior does not influence on improving persuasions to present ideas.

This study implies the practical benefits that organizations have to recognize the differentiation of ideation skills and presentation skills. In many organizations, ideational skills are sometimes confused with presentation skills. Presentation skills increase feasibility and persuasiveness of ideas by making prototypes, sketching and roughing ideas, and describing the plot and storylines (Puccio and Cabra, 2012). In order to produce creative outputs, both ideational skills and presentation skills need to be combined. It is desirable that groups have to be composed of diverse members; person who can produce unique ideas, clever people who have critical thinking, and the storyteller who has good technique to present ideas.

One of the biggest limitations of this study was the process of data collection. The present study collected data from university students only. Therefore, results need to be replicated with more diverse samples before they can be generalized confidently. Additionally, the

present sample size was modest. Larger samples will provide greater findings than occurred herein in future researches.

Future research is expected to develop the five factor model of group ideational behaviors more elaborately. The group ideational behavior receives influences from environments and group situations, e.g. organizational contexts, creative leadership, diversity of groups, and personality of group members. In order to confirm the validity, future researchis expected to specify the relationship between group ideational behaviors and creative outcomes.

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