

The effect of self-related humour on convergent and divergent thinking

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Abstract

Humour enhances creativity, but the question is whether different types of humour have a similar effect on improving individual creativity. It is evident that negative humour style is negatively related to creativity, while positive humour style is positively related to it. However, no evidence has been found that self-related humour (self-enhancing and self-defeating humour) directly affects creative thinking in the experimental setting. Thus, this study aimed to investigate the effect of self-related humour on convergent and divergent creative thinking. We included 60 (38 male, 22 female) participants and randomly assigned 20 in each condition to conduct this experiment. To evoke humour, we used 12 stimuli (12 self-enhancing jokes, 12 self-defeating jokes, and 12 non-humorous statements) in each condition. Remote Association Task (RAT) was used to measure convergent thinking, and Alternative Uses Task (AUT) was used to measure divergent thinking. We expected that i) people who engage in self-enhancing humour would perform better at convergent thinking tasks than the control group and the self-defeating humour group and ii) people who engage in self-enhancing humour would perform better at divergent thinking tasks than the control group and the self-defeating humour group. Our results supported our hypotheses and suggested that self-enhancing humour induced individual creativity both in convergent or divergent thinking (originality, fluency, flexibility). In contrast, self-defeating humour failed to affect either convergent or divergent thinking.

Keywords: self-enhancing humour, self-defeating humour, creativity, convergent thinking, divergent thinking.

1. Introduction

There has been an increased recognition that more attention needs to be paid to the relationship between humour and creativity. In the classical definition, creativity refers to generating new useful ideas that are appropriate to norms or solving problems (Amabile et al., 2005). Guilford's structure of intellect theory emphasized two types of creativity: convergent and divergent thinking (Cayirdaga & Acarb, 2010), which were getting attention in modern creativity research (Ulrich, 2018). Convergent thinking refers to a mental process that focuses an individual on one correct response or a few responses to a question or stimulus (Clapham, 2011). Divergent thinking refers to the ability to produce multiple novel ideas, solutions by combining various types of information to a given stimulus in a variety of contexts (Madore et al., 2016; Hass, 2018).

Humour is an amusing social experience that "benignly" violates norms (Warren & McGraw, 2016) that refers to a specific cognitive experience that produces amusement, enjoyment, laughter/smile evoked by the quality of action, speech or writing, picture, event that is inconsistent with our expectation. Humour style refers to the way individuals use humour as a strategy for coping as well as shifting their perspectives (Dozois et al., 2009). According to the model of Martin et al. (2003), there are four types of humour consisting of two types of focus: self- versus other-focus (intrapersonal vs. interpersonal). Self-enhancing and self-defeating humour are self-focused humour, while affiliative and aggressive humour are other-focused humour. Martin et al. (2003) also classified affiliative and self-enhancing humour as adaptive humour, and aggressive humour and self-defeating humour as maladaptive humour (Martin et al., 2003).

Self-enhancing humour refers to the tendency to take a humorous perspective on life in an adverse life situation where a person tells jokes about him/herself to put him/herself in a better light or praise. This is coping humour, highly related with competencies that protect the self. The other type of self-focused humour is self-defeating humour, which refers to the tendency to use humour to criticize one's own abilities or weaknesses to put oneself down. This self-defeating humour is also coping humour where one can hide one's underlying feeling and gain the attention and approval of others (Kuiper et al., 2004; Cann et al., 2010). Affiliative humour is a type of other-focused (interpersonal) humour that refers to the tendency to use non-hostile, funny, harmless, silly jokes to make fun of others and engage in spontaneous, witty banter to amuse others, whereas aggressive humour, the final type of other-focused humour, refers to the tendency to use humour to criticize others through irony, sarcasm, teasing, mockery, ridicule, or silly funny jokes (Martin, 2007). In this present study, we only focused on self-related (intrapersonal) humour, which included self-enhancing and self-defeating humour.

Humour has a positive relationship with creativity, claimed by a number of researchers (Craik & Ware, 1998; Leung Hiu Ching, 2007; McGhee, 2010). Humour influences divergent thinking and convergent thinking; for example, Ziv (1976) found that simply listening to jokes increased divergent creativity: fluency, flexibility, and originality, and in another study Ziv (1983) found that humorous films also increased divergent creative thinking. Isen et al. (1987) also found that comedy films improve creativity in insightful problem solving and convergent creative thinking. So, humour is evoked either by comedy films or by jokes that influence convergent and divergent thinking. Contrary, Wodehouse et al. (2014) found that humour videos have no positive effect on creative thinking. Moreover, the aforementioned studies focused solely on the unidimensional humour effect rather than the multidimensional humour effect on creativity.

Self-related or self-focused humour types have an opposite and compatible relationship with individual creativity in the educational institution. For example, Cayirdaga and Acarb (2010)

found that the self-defeating humour style was negatively correlated with the fluency component of divergent thinking of school children. Inversely, Chang et al. (2015) found that self-enhancing humour style was positively related to divergent thinking of the young adolescent. Similarly, finally, Kocak (2018) found that self-enhancing humour style was positively related to students' creativity, whereas self-defeating humour style was negatively related to students' creativity. The researcher also added that innovation climate partially moderates the relationship between students' creativity and different style of humour (Kocak, 2018). Thus, self-enhancing humour was positively related to creativity in divergent thinking, either in students or young adults, whereas self-defeating humour was negatively associated with students' creativity, specifically in the fluency component of divergent thinking in education.

Although all the abovementioned researchers focused on the relationship of self-related humour style and creative thinking, causal relationship of self-related humour style with creative thinking was still missing in young adulthood. Likewise, institutional settings of self-related humour types have the opposite relationship with individual creativity in an organizational environment. Lussiera et al. (2017) found that self-enhancing humour positively influenced creativity in a salesperson. Deog-Rolee (2015) identified leaders' self-enhancing humour was positively related to subordinates' individual creativity. Similarly, Masih et al. (2020) found that self-enhancing humour in leaders was associated with followers' creativity. Inversely, Amjed and Tirmzi (2016) found a negative relationship of self-defeating humour with employee creativity. Moreover, Hu et al. (2023) found that leader humour influenced employee creativity positively. Thus, self-enhancing humour was not only positively related to individual creative performance but also positively related with subordinate creative performance, whereas self-defeating humour was negatively related with employee creativity. However, a contradictory finding of self-related humour showed an inverse relationship with creativity. Romero and Arendt (2011) found that the self-related humour (self-enhancing and self-defeating humour) was significantly less related to organizational performance than other related (affiliative and aggressive) humour. Moreover, Yue and Hui (2015) found that neither self-enhancing humour nor self-defeating humour type was related to divergent creative thinking: flexibility, fluency, and originality. More interestingly, Janes and Olson (2010) found that self-defeating humour produced greater creativity than other humour types, instead of decreasing it. Fan et al. (2021) found that self-enhancing humour was not associated with creativity, whereas self-defeating humour was positively associated with overall creativity, specifically with imaginative creativity. Emilisa et al. (2021) found that self-enhancing humour had a positive effect on creativity and self-defeating humour had a negative effect on creativity and work engagement. Wu and Chen (2019) found that incongruity-resolution humour comprehension was positively associated with convergent thinking, while nonsense humour comprehension was positively associated with insightful problem solving, indicating that different types of humour comprehension are connected with each dimension of creativity (Wu & Chen, 2019).

Therefore, the influence of incongruity-resolution humour on convergent creativity and self-enhancing humour is poorly related to organizational performance, even with no relation to divergent thinking. Similarly, self-defeating humour has no relation with divergent thinking but is negatively related with other creativity, work engagement, and even has hardly any relation with organizational performance, but a completely inverse relation with creativity in a group and imaginative creativity.

Above findings clearly showed the inconsistent relation between self-related humour style and creative thinking. Thus, the aim of this experiment is to mitigate this confusion by investigating

the impact of self-related humour style (self-enhancing and self-defeating) on creativity (divergent and convergent).

This study is different from traditional co-relational research in the following way. First of all, the literature showed there was an inconsistent relationship between humour type and creativity. Finally, there was not enough solid evidence that directly investigated the self-related humour impact on creative thinking in an experimental setting. Thus, this study will fill some gaps in this research area.

We took the following hypotheses to fulfill our objectives.

H₁: People who engage in self-enhancing humour would perform better at convergent thinking than people who engage in no humour or self-defeating humour.

H₂: People who engage in self-enhancing humour would perform better at divergent thinking than people who engage in no humour or self-defeating humour.

2. Method

2.1. Participants

A total of 60 undergraduates (38 males and 22 females) from Chittagong University were included in this study. Their average age was 21.70 ± 1.71 years old. In this experiment, participants were randomly assigned to one of three groups: self-enhancing humour (12 males, 8 females), self-defeating humour (10 males, 10 females), and non-humour (12 males, 8 females). These types of humour serve as a between-subjects factor.

2.1.1. Consent form

The consent form was provided to the participants prior to beginning the experiment to ensure that subjects understand the voluntary and anonymous nature of the study as well as the possibility to withdraw from the study at any stage (yet before the data collection). The consent forms briefly describe the study objectives, potential benefits, discomfort, confidentiality of given responses, and so on.

2.2. Ethics

The current study was conducted in accordance with the Helsinki Declaration and its subsequent amendments, or a comparable ethical standard. Our study was ethically approved by the Psychology Department Ethical Review Board, Biological Science Faculty, University of Chittagong. The ethical approval number is EBR-PSY-CU-23-2021.

2.3. Research design

A single factor, the three-level between-subject design, was used in this study. The independent variable was humour type (self-enhancing, self-defeating humour) comprised of non-humorous statements (control group). The dependent variable was chosen to be the accuracy of association words in remote association tasks (convergent thinking) and production of alternative thinking tasks (divergent thinking).

2.4. Instruments

2.4.1. Convergent thinking

Remote Association Task (RAT) was used in this study to measure convergent creativity, which was developed by Mednick (1968). In this RAT, three words were presented, and the participant was required to identify the (fourth) word that connects these three seemingly unrelated words (e.g., “bass, complex, sleep, ___” where the solution is “deep”). In this experiment, we used 15 problems to solve in the Bangla language, which were standardized based on Mednick’s principle, in a pilot study 1 on 70 university students (40 males, 30 females). All items of the test solution word were remote, uncommon associates of each stimulus word, requiring the respondent to work outside of the common analytical constraints. The score was determined by the number of valid answers given within a particular time (50sec).

2.4.2. Divergent thinking

Alternative Uses Task (AUT), developed by Guilford (1967), was used in this study to measure divergent thinking. In this task, participants were asked to list as many possible alternative uses for a “pen” and a “sock” within 3 minutes. Scoring was comprised of four components; i) *originality* - the number of unusual and unique ideas were used to calculate originality score of each participant. For an “unusual” response a participant got 1 point; if the participant’s response was only 5% similar to that of the whole group - we counted it as unusual (1 point). For a “unique” response the participant got 2 points; if the participant’s response was only 1% similar to that of the whole group – we counted it as unique (2 points). ii) *fluency* - the total number of ideas generated by the participant were used to calculate the fluency score of the participant, iii) *flexibility*- a number of different categories were used to calculate the flexibility score of the participant; and iv) *elaboration*- each detailed description of the ideas that were generated was used to calculate the participants’ elaboration score.

2.4.3. Humorous materials

A total of three types of stimuli were used in the experiment. Two kinds of humour stimuli were humorous (self-enhancing, self-defeating), and one type of stimulus was non-humorous (statement). The first humour material was the 12 self-enhancing humour stimuli (jokes), and the second one was the 12 self-defeating humour stimuli (jokes), and the other one was the 12 non-humour stimuli (statements). To make those self-enhancing and self-defeating humour style jokes, a team of 6 people were formed including one professional comedian and the rest who were familiar with Martin et al.’s (2003) four humour styles.

The research team also consulted the national and international humour expert at the initial stage and developed 60 jokes, 20 in each category, following Martin’s humour styles (self-enhancing, self-defeating humor), and non-humorous statements. As agreed with the expert, in a separate pilot study 2, we presented our initially developed 60 jokes materials to 40 participants (21 males and 19 females) whose age range was from 16 to 23 (19.60 ± 2.84) years old. The participants of this pilot study 2 classified those jokes as self-enhancing, self-defeating or non-humour and rated the degree of their comprehensibility and funniness on a 9-point scale, with a higher score indicating a higher degree. Before presenting the materials for categorization in the pilot study 2, all the respondents were briefly explained the humour style category in the following

way. “If the speaker tells jokes about hardship of his own life and stays positive, e.g. jokes about his/her work life, family life or academic life etc.,” the jokes are labeled as Self-enhancing Jokes and rated on 9-point scale. “If the speaker tells jokes about himself to put down his abilities, such as intellectual fault and academic weakness or any other lacking” the jokes are labeled as Self-defeating Jokes and rated on an 9-point scale. Statements that are self-related but not rated funny are considered as non-humorous statements. The overall average of funniness for those humour materials was 7.10 ± 1.03 , which meant that humour materials successfully produce amusement to our participants in the pilot study. Non-parametric Kruskal-Wallis one-way analysis of variance by ranks tests was performed on the funniness ratings for the two types of humour and the non-humour conditions. Funniness ratings were significantly different across the three conditions, $\chi^2(2) = 18.25, p < 0.001$.

In our present study, we chose 12 jokes from each category from the pilot study and used those humorous materials with an engaging story. Before presenting humorous materials (self-enhancing, self-defeating) and non-humorous materials (statements) one by one on a computer screen, each participant was provided with the following scenario for more engagement.

“Imagine that one day your boss gives you a task to solve a problem by discussing it with your colleague. You greet the colleague and take him to two other members of your team who sit in the row in front of you. Before the discussion begins, the four of you start a small conversation. ...[indicating the target of jokes as enhancing or defeating self or neutral]”

For self-enhancing humour style condition, this section read:

“At one point, you start telling the following 12 funny jokes about yourself to put yourself in a better light or praise even in an adverse situation.” [this sentence indicated the target as “self up”]. The jokes included this one: “I have a hobby to keep gold fish in a fish tank. Thus, I bought two gold fish to put them into the tank and gave them the names ‘One’ and ‘Two’. After hearing this naming one of my friends asked me why I had given such strange names to my fish as ‘One’ and ‘Two’. I replied I gave them this type of name because if ‘One’ died, then I would still have ‘Two’ gold fish”.

For self-defeating humour style condition, this section read:

“At one point, you start telling the following 12 funny and silly jokes about your weakness in order to put yourself down.” [this sentence indicated the target as “self down”]. The jokes included this one: “One day, one person came to me and stood in front of my office desk. I saw him but pretended I was busy and ignored him. I also pretended talking with someone over my office land line. I was showing him how busy I was at the office. No time to talk to an unknown person at my office hours. The man was still waiting for me. Then I said to him: “Can’t you see how busy I am with office tasks and talking over the phone, please come later”. The man replied: “Sir, I am the technician. I came here to fix your land line.”

Finally, for non-humorous condition, the section read:

“At one point, you start telling 12 statements about yourself.” [this sentence indicated the target as neither “self up” nor “self down”]. The statements read e.g. “Time spent with the family always flies, so I need to cherish it.”, or “This self-portrait of mine is vivid; the character’s charm is expressive”

2.5. Procedure

We followed the following procedure sequentially. First of all, the interested participants were invited to fill in a written consent form with demographic information. After obtaining the consent from participants, they were assigned randomly to experimental and control conditions. In the self-enhancing humour condition, the participants were shown 12 self-enhancing jokes on a computer screen after following the engaging story, whereas in the self-defeating humour condition, the participants were shown 12 self-defeating jokes on a computer screen also following the engaging story. In the control condition, the participants were shown 12 non-humorous statements on a computer screen following the engaging story as well. After that, the participants were given Remote Association Task (RAT) and Alternative Uses Task (AUT). Each participant was shown jokes on an HP 17inch monitor screen presented by using E-Prime 2.0 software. In each case, on the monitor, a participant was shown a story + 12 jokes one by one. In the Remote Association Task, the participants were given 15 RAT problems in the Bangla language to solve, where each task was shown for 50s and a fixation point for 250ms, followed by a black screen for 250ms. In the Alternative Uses Task, a participant was shown two objects (“pen” & “sock”) and given 3min to write alternative ideas for each object. After finishing all the tasks, each participant was thanked for participating in this study and offered a small goodbye gift (worth 1.25\$).

2.6. Control variables

There were a few control variables in this experiment. First of all, after showing the stimulus (self-enhancing/self-defeating jokes) in each category, each participant was asked to rate how funny those jokes were on a 1 to 9 point scale. In this rating, the self-enhancing humour and self-defeating humour average rating scores were $6.80(\pm 1.29)$ and $6.47(\pm 1.11)$, respectively, which clearly indicated that those jokes produced humour to the participants successfully in this experiment. Finally, to counterbalance the sequential effect of RAT and AUT after the humorous stimulus presentation, half of the participants were given RAT first, and then AUT, and the rest of the participants were given AUT task first, and then RAT.

2.7. Analysis

Data was inputted and analysed with the help of SPSS 25.0 software. One-way Analysis of Variance (ANOVA) and descriptive statistics were employed in this study to find out the effect of self-enhancing and self-defeating humour.

3. Results

The performance of the correct mean scores of RAT and mean scores of four components of AUT was good and is shown in Table 1. The One-way Analysis of Variance (ANOVA) of humour types, RAT and AUT are shown in Table 2.

3.1. Convergent thinking

The results of One-way Analysis of Variance among three groups of self-enhancing humour, self-defeating humour, and non-humour were significant, $F(2, 57) = 6.02, p < .05$; post hoc tests indicated that Remote Association Task scores of self-enhancing humour ($M = 6.50, SD = 2.11$)

were significantly higher than those of non-humour ($M = 4.90, SD = 1.58$) group. In contrast, it was found that self-defeating ($M=4.50, SD=2.03$) humour score was a little lower than non-humour ($M = 4.90, SD = 1.58$), although the difference was not significant. Moreover, RAT score of self-enhancing humour ($M = 6.50, SD = 2.11$) was significantly higher than that of self-defeating humour ($M= 4.50, SD = 2.03$). Therefore, it can be concluded that not all humorous groups significantly differed from the non-humorous group in terms of convergent thinking. In other words, self-enhancing humour increased creative thinking more significantly than non-humorous and self-defeating humour.

Table 1. Descriptive statistics of Remote Association Task (RAT) and Alternative Uses Task (AUT) for self-related humour

Independent variable	Convergent thinking(RAT) M(SD) [Min.- Max.]	Divergent thinking (AUT)			
		Originality	Fluency	Flexibility	Elaboration
		M(SD) [Min.- Max.]	M(SD) [Min.- Max.]	M(SD) [Min.- Max.]	M(SD) [Min.- Max.]
Non-humour	4.90(1.58) [1-7]	2.55(1.46) [1-7]	5.05(1.76) [1-8]	4.75(1.74) [1-8]	4.65(2.36) [1-8]
SE humour	6.50(2.11) [4-11]	4.40(1.42) [3-8]	6.75(1.88) [3-10]	5.65(1.98) [3-9]	6.85(3.95) [1-16]
SD humour	4.50(2.03) [0-8]	2.70(1.12) [1-4]	4.45(2.37) [1-8]	3.80(2.09) [1-7]	4.55(3.41) [1-14]

Note: SE= Self-enhancing, SD humour= Self-defeating humour

Table 2. One-way Analysis of Variance of Remote Association Task (RAT) and four dimensions of Alternative Uses Task (AUT) for self-related humour

		Sum of Squares	df	Mean Square	F	Sig.
RAT	Between groups	44.800	2	22.400	6.028	.004
	Within groups	211.800	57	3.716		
	Total	256.600	59			
Originality	Between groups	42.233	2	21.117	11.579	.000
	Within groups	103.950	57	1.824		
	Total	146.183	59			
Fluency	Between groups	56.933	2	28.467	6.945	.002
	Within groups	233.650	57	4.099		
	Total	290.583	59			
Flexibility	Between groups	34.233	2	17.117	4.527	.015
	Within groups	215.500	57	3.781		
	Total	249.733	59			
Elaboration	Between groups	67.600	2	33.800	3.087	.053
	Within groups	624.050	57	10.948		
	Total	691.650	59			

3.2. Divergent thinking

The results of One-way Analysis of Variance among three groups of self-enhancing humour, self-defeating humour, and non-humour found a significant effect on originality, fluency, and flexibility. The significant variance of originality was $F(2, 57) = 11.57, p < .001$; post-hoc tests revealed that the self-enhancing humour group ($M = 4.40, SD = 1.42$) produced significantly more original ideas than the non-humorous group ($M = 2.70, SD = 1.12$) and self-defeating humour group ($M = 2.70, SD = 1.12$). Next, the significant variance of fluency was $F(2, 57) = 6.94, p < .05$; post-hoc tests showed that the self-enhancing humour group ($M = 6.75, SD = 1.88$) significantly produced ideas more fluently than the non-humorous group ($M = 5.05, SD = 1.76$) and self-defeating humour group ($M = 4.45, SD = 2.37$). Thirdly, the variance of flexibility was also found significant, $F(2, 57) = 3.55, p < .05$; post-hoc tests showed that the self-enhancing humour group ($M = 5.65, SD = 1.98$) failed to produce significantly more flexible ideas than the non-humorous group ($M = 4.75, SD = 1.74$), but succeeded in producing significantly more flexible ideas than the self-defeating humour group ($M = 3.80, SD = 2.09$). Finally, the variance of elaboration was found insignificant, $F(2, 57) = 3.07, p > .05$. Therefore, it can be concluded that self-enhancing humour group did not produce significantly more elaborated ideas than the non-humour and self-defeating humour groups in terms of divergent creative thinking, but the self-enhancing humour group produced significantly more original, fluent and flexible ideas than non-humour and self-defeating humour groups.

4. Discussion

The aim of this experiment was to examine the effect of self-related humour, such as self-enhancing humour and self-defeating humour, on individual creative thinking. To get the answer, we formed two hypotheses. Our first hypothesis, that people who were engaged in self-enhancing humour would perform better at RAT task than people who engaged in self-defeating humour or no humour, was confirmed. Our result showed that people who engaged in self-enhancing humour performed better in convergent thinking (RAT task) than people in the non-humour and self-defeating humour groups. This finding indicated that self-enhancing humour successfully increased convergent thinking, which supported our first hypothesis. This result is consistent with the previous research of Belanger et al. (1998), who showed some jokes and simple sentences to the participants that increased creative performance. Our result is also in line with the correlational study of Deog-Rolee (2015), who showed self-enhancing humour positively associated with individual creative thinking.

Our second hypothesis, that people who engaged in self-enhancing humour would perform better at divergent thinking than people who engage in self-defeating humour or no humour, was partially confirmed. Our result showed that participants who engaged in self-enhancing humour performed better at divergent thinking, in originality, fluency, and flexibility, than people who engaged in non-humour or self-defeating humour. Furthermore, our results also showed that self-enhancing humour fails to improve the performance in elaboration of ideas in divergent thinking. These findings suggested that self-enhancing humour helped to produce more original, unique ideas fluently, as well as more flexible ideas, but failed to produce more elaborate ideas. These

findings were partially consistent with the correlational study of Chang et al. (2015), where they showed that self-enhancing humour is positively related to overall divergent thinking.

Participants benefited from self-enhancing humour in convergent thinking and three components of divergent thinking. This finding can be explained in that when individuals engaged in self-enhancing humour in our experiment, they experienced humour while telling jokes about their own personal qualities and accomplishments to others. According to the Incongruity-Resolution theory of humour, in this case, first, the participants' expectations were violated by self-enhancing humour, which then produced physiological arousal and triggered an interpretation (Kubovy, 1999). Then, this interpretation helps to find out the cognitive rule and resolved incongruity that finally produced humour. According to the theory of generation and exploration model of creativity, after experiencing self-enhancing humour, when the participants started solving the Remote Association Task, they built a mental representation of possible solutions that retrieved the existing structure from their memory. During this time, cognitive dissonance was raised (Finke et al., 1992), which existed until solving the problem. In this situation, the cognitive dissonance was produced from the start of solving the problem already induced by self-enhancing humour because cognitive dissonance is an arousal process (Croyle & Cooper, 1983). Finally, this process helped our participants retrieve more accurate information from memory for convergent thinking.

5. Conclusion

The objective of the present study was to identify the effect of self-related humour type on creativity. Participants engaged in self-enhancing and self-defeating humour before the convergent and divergent thinking task in an experimental setting. It has been found that people benefited from self-enhancing humour in convergent thinking and from the originality, fluency, and flexibility components of divergent thinking, whereas self-defeating humour had no effect on convergent and divergent thinking. This study extends the previous correlational research and is consistent with the previous correlation findings on the influence of humour type on creativity.

5.1. Implications

The findings of this study provide some theoretical and practical implications. As for the theoretical implication, this finding contributed to the literature extending the previous correlation research in an experimental setting that confirms that different humour types have different impacts on individual creativity. Secondly, the findings of this study may be practically helpful for promoting creativity in education, organization, and government agency. In education, the teacher should learn the appropriate use of humour. When they use self-related humour they must be careful about using self-defeating humour and pay more attention to using self-enhancing humour to promote creativity. In an organization or government agency, the authority could use self-enhancing humour to encourage the employee creativity.

5.2. Limitations and future directions

One of the limitations of this study was that we examined only two types of self-related humour. We did not consider other types of humour in this experiment. In future research, one could investigate other types of humour, such as eight comic styles of humour and their effect on

creativity. Secondly, this research used only university students, where we considered certain age groups. But in different life stages, the pattern of the physiological and psychological mechanisms of humour has different characteristics. Thus, in the future, one could investigate other age groups. Thirdly, we used between-group designs in each experiment which require more participants. However, we used a small number of participants. If we were able to include more participants, that would increase the generalizability. Fourthly, we conducted this experiment in developing countries and Asian cultures. Thus, this research generalizability is limited to a particular culture. Finally, in our present study, we only investigated individual creativity. Thus, in the future, one can examine the self-related humour effect on collaborative or group creativity.

Disclosure of conflict of interest

The authors declare there are no conflicts of interest.

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