

Effect of Depressive Tendencies and Individual Differences in Imagery Ability on Imagery Experiences

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Abstract

The purpose of this study is to examine (1) the relationship between imagery vividness and controllability and depressive tendencies; and (2) the effect of depressive tendencies and imagery vividness on imagery experience. The shortened form of Betts' Questionnaire Upon Mental Imagery (QMI), the Test of Visual Imagery Control (TVIC), and the Beck Depression Inventory (BDI) were administered to participants. I asked participants to recall imagery of a successful examination (positive image) and an unsuccessful examination (negative image) for 3 minutes with their eyes closed. I counterbalanced to present the image and evaluated the participants' imagery experiences after each and every one of their recollections. To evaluate the imagery experiences, I used an 18-item scale that asked about the vividness of the imagery for each sensory modality, physical sensation, and sense of reality. The results showed a weak positive correlation between the vividness of imagery of physical sensations and depressive tendencies. Those expressing high depressive tendencies and high imagery vividness strongly felt tensed cheeks (straining) when recalling the negative image. Although imagery autonomy decreased, imagery of physical movements became stronger. Those with a high depressive tendency and low imagery vividness experienced a decreased sensation of physical movement when recalling the negative image. Participants who have depressive tendencies exhibit them through imagery, particularly with physical sensations. The manner in which such characteristics are exhibited may be influenced by the content of the recalled image and individual differences in imagery vividness.

Introduction

Clinical psychology is inconceivable without understanding the psychological world of clients. Such psychological worlds and experiences reflect the overall lives as perceived by clients through imagery (Mizushima, 1984). In actual clinical settings, imagery is used to understand and assess clients or as a medium to achieve successful psychological treatment. While imagery has a sensory and perceptual basis, it represents an overall experience that flexibly projects one's inner world in response to the outer world (Mizushima, 1984), presenting diverse phases. Considering the different sensory and perceptual aspects, not only visual, of basic imagery itself, but there is also imagery that exists for each sensory modality, such as auditory and gustatory.

If we consider imagery to be responsible for individual differences in one's ability to recall and experience, several dimensions emerge, such as vividness and controllability of imagery, and imaginative involvements. In particular, the extent to which imagery can be recalled vividly and the degree to which imagery one can control have an impact on the success or failure of psychological treatments that utilize imagery (Lazarus, 1961; Lazarus, 1964; Tameda, 1988; Koizumi, 2009; Tamura, Okuno, and Aoki, 2016, etc.).

From the perspective of recalled imagery and imagery experiences, the emotional values of imagery, such as comfort or discomfort, and the emotions aroused by imagery, have been examined. In general, imagery accompanied by positive emotions are recalled vividly, while the opposite is true for imagery that are associated with negative emotions (Matsuoka, 2006).

Factors that influence the recollection and experience of imagery, including personality traits and emotions have been examined, including those beset with anxious and depressive tendencies, and a thickness of boundaries in the mind which has effects on one's relationship with imagery. It is reported that when anxious tendencies are strong, imagery become suppressed, and the overall vividness of imagery decreases (Euse & Haney, 1975). Likewise, Tucker, Stenslie, Roth, and Shearer (1981) showed that when depressive tendencies are high, the vividness of visual imagery diminishes. The relationship between having a thin boundary and unregulated fluid imagery has already been indicated (Okuma and Suzuki, 1983).

Martin and Williams (1990) showed that under conditions in which a depressive mood is aroused, the group with the higher depressive tendencies experiences higher vividness of visual imagery regarding negative words. In

general, when one experiences negative emotions, the vividness of imagery tends to decrease; however, it has been confirmed that a “mood congruency effect of imagery” occurs in which some people with specific personality traits such as depression experience higher vividness of imagery that match their mood.

Thus, the relationship between personality traits such as depressive tendencies and vividness/controllability of imagery has been examined; however, when considering the mood congruency effect of imagery indicated by Martin and Williams (1990), it is assumed that associated aspects will vary depending on the type of emotional values associated with the imagery, particularly with regard to whether the emotional values of the imagery and the mood impacted by personality traits are consistent.

Therefore, in this study, (1) I examined the relationship between depressive tendencies and imagery vividness/controllability, and (2) on the basis of this relationship, I aimed to examine the effect of depressive tendencies and individual differences in imagery on the imagery experience of positive and negative images. In terms of imagery controllability, I measured the controllability of visual imagery on the basis of previous studies that discuss changes in visual imagery.

1. Methods

1.1 Participants:

Participants included 69 university students who provided consent to the experiment (16 male and 53 female, average age 22.1 years).

1.2 Scale:

1.2.1 Vividness of imagery

I used a shortened form of Betts' Questionnaire upon Mental Imagery (QMI; Sheehan, 1967), which measures imagery vividness. It consists of 35 questions, with five questions for each sensory modality: visual, auditory, cutaneous, kinaesthetic, gustatory, olfactory, and organic (physical) sensation. Participants were asked to recall imagery of “the sun going down below the horizon” for visual; a “cat’s meow” for auditory; “sand” for cutaneous;

“reaching for a high shelf” for kinaesthetic; “salt” for gustatory; “leather” for olfactory; and “hunger” for organic sensation. The score for each area was summed for the total score.

I used a 7-point scale ranging from “there is no imagery at all. I’ve only thought about the subject” to “the imagery is as vivid as the actual experience.” Higher scores indicated higher imagery vividness.

1.2.2. Controllability of Imagery

I used the Test of Visual Imagery Control (TVIC; Gordon, 1949), which is a scale that measures visual imagery control. It consists of 12 items that require a series of imagery operations associated with the shape and movement of a vehicle, such as “Can you see the vehicle on the road in front of the house?”; “Can you see the color of the vehicle?”; “Can you see a beautiful couple in the vehicle as it drives by?”; and “Can you see the vehicle becoming old, taken apart, and being discarded at a junkyard?” I used a 3-point scale—“no,” “unsure,” and “yes”—for each item. Higher total scores indicated higher visual imagery control.

1.2.3. Depressive tendencies

I used a Japanese version of the Beck Depression Inventory (BDI; Hayashi, 1988; Hayashi and Takimoto, 1991), prepared by Beck, Ward, Mendelson, Mock, & Erbaugh (1961) and Beck, Rush, Shaw, & Emery (1979). I used a 4-point scale for the total of 21 items. Higher scores indicated more depressive tendencies.

1.2.4. Evaluation of imagery experience

According to the scale prepared by Miyazaki and Hishitani (2004), I used a total of 18 items—vividness, outline, color, details, auditory, olfactory, cutaneous, movement, operability, responsiveness, autonomy, participation, loosened cheeks (smiling), tensed cheeks (straining), body warmth, body coolness, sense of reality, and being absorbed—on a 5-point scale to examine the imagery and experiences when recalling imagery.

1.3 Recalled imagery situations:

I presented situations using the following scripts:

1.3.1 Positive image

“You are at an examination venue. When the written examination begins, you find that you can solve the problems. You can think clearly and answer calmly with a steady hand.”

1.3.2 Negative image

“You are at an examination venue. When the written examination begins, you find problems that you do not understand. You cannot think clearly, your hands shake, and you answer frantically.”

1.4 Procedures:

The experiment was conducted on all groups at the same time. Prior to the experiment, I obtained responses to the QMI, TVIC, and BDI. Next, I had participants recall imagery of a positive image (a successful exam) and a negative image (an unsuccessful exam) for 3 minutes, each with eyes closed. I counterbalanced the image presentation, and participants evaluated the imagery experience after each recollection.

2. Results

2.1 The relationship between imagery vividness and controllability with depressive tendencies

To examine the relationship between imagery vividness (QMI) and imagery controllability (TVIC) with depressive tendencies (BDI), I calculated the Pearson’s correlation coefficient between the QMI scores of each sensory modality, the total score, the TVIC total score, and the BDI total score (Table 1).

Table 1—The correlation between vividness of imagery (QMI), controllability of imagery (TVIC), and depressive tendencies (BDI).

| TVIC | QMI | | | | | | | |
|------|--------|----------|-----------|--------------|-----------|-----------|---------|-------|
| | Visual | Auditory | Cutaneous | Kinaesthetic | Gustatory | Olfactory | Organic | total |
| TVIC | .36** | .25* | .41** | .44** | .21* | .23* | .35** | .41** |
| BDI | .01 | -.09 | .08 | .11 | -.03 | -.05 | .28* | .06 |

* $p < .05$ ** $p < .01$

A moderate-to-weak positive correlation was found between all sensory modalities of imagery vividness and controllability ($r = .21 \sim .44$). If I focus on the correlation between each sensory modality and controllability, then cutaneous, kinaesthetic, and the total had stronger correlations when compared with those of the other modalities.

In terms of imagery vividness and depressive tendencies, there was a weak positive correlation in the range of organic sensations ($r = .28$).

No significant correlation was found between imagery controllability and depressive tendencies.

2.2 Effect of imagery vividness and depressive tendency on imagery experience

I looked at depressive tendencies and imagery vividness, and a significant correlation with depressive tendency was confirmed. To examine the impact of positive and negative images on imagery experience with the mean depressive tendency (BDI) of 12.13 ($SD = 7.64$) as the reference, I assigned participants to a high-depression group (BDI-H: 33 people with a mean BDI of 18.79 and with SD of 4.70) and a low-depression group (BDI-L: 36 people with a mean BDI of 6.03 and with SD of 3.64). Similarly, for the total score of imagery vividness, on the basis of the mean of the QMI of 168.43 ($SD = 30.87$), I assigned participants to a high-vividness group (QMI-H: 36 people with a mean QMI of 193.50 and with SD of 17.61) and a low-vividness group (QMI-L: 33 people with a mean QMI of 141.10 and with SD of 14.44). Table 2 shows the mean and standard deviation of each item of the imagery experience.

Table 2—The mean and standard deviation of each item of the imagery experience.

| | | Positive image | | Negative image | |
|------------------|-------|----------------|-------------|----------------|-------------|
| | | QMI-L | QMI-H | QMI-L | QMI-H |
| vividness | BDI-L | 3.39 (0.95) | 3.72 (1.15) | 3.28 (0.99) | 4.00 (0.67) |
| | BDI-H | 3.13 (1.36) | 3.89 (1.10) | 3.07 (1.24) | 3.72 (0.93) |
| outline | BDI-L | 3.33 (1.00) | 3.56 (1.12) | 2.83 (1.07) | 3.50 (1.17) |
| | BDI-H | 2.93 (1.06) | 3.56 (1.07) | 3.20 (1.17) | 3.33 (1.15) |
| color | BDI-L | 2.67 (0.67) | 2.56 (1.21) | 2.06 (0.85) | 2.50 (1.21) |
| | BDI-H | 2.60 (0.88) | 2.56 (1.12) | 2.53 (1.09) | 2.28 (1.04) |
| details | BDI-L | 3.06 (1.03) | 3.33 (1.29) | 2.78 (1.03) | 3.00 (1.11) |
| | BDI-H | 2.93 (1.00) | 3.11 (1.10) | 2.93 (1.06) | 3.22 (1.08) |
| auditory | BDI-L | 1.89 (1.20) | 2.67 (1.60) | 1.94 (1.08) | 2.89 (1.41) |
| | BDI-H | 2.60 (1.40) | 2.39 (1.46) | 2.33 (1.40) | 2.28 (1.28) |
| olfactory | BDI-L | 1.22 (0.42) | 1.39 (0.49) | 1.28 (0.56) | 1.61 (0.95) |
| | BDI-H | 1.40 (0.49) | 1.50 (0.96) | 1.53 (0.81) | 1.44 (0.96) |
| cutaneous | BDI-L | 1.67 (0.47) | 2.72 (1.37) | 1.78 (0.79) | 2.67 (1.20) |
| | BDI-H | 2.00 (1.03) | 2.17 (1.46) | 2.13 (1.09) | 2.06 (1.39) |
| movement | BDI-L | 2.94 (1.18) | 3.61 (1.25) | 2.83 (1.26) | 3.22 (1.18) |
| | BDI-H | 3.20 (1.22) | 3.00 (1.15) | 2.27 (1.29) | 3.39 (1.16) |
| operability | BDI-L | 3.17 (1.21) | 3.17 (1.26) | 2.94 (1.22) | 3.17 (1.17) |
| | BDI-H | 3.13 (1.15) | 3.50 (1.17) | 2.87 (1.26) | 3.61 (1.11) |
| responsiveness | BDI-L | 3.17 (0.90) | 3.56 (0.90) | 3.06 (1.03) | 3.50 (0.83) |
| | BDI-H | 3.20 (1.05) | 3.28 (1.04) | 3.07 (1.00) | 3.06 (0.97) |
| autonomy | BDI-L | 2.94 (1.08) | 3.39 (1.34) | 2.72 (1.33) | 3.22 (1.31) |
| | BDI-H | 2.80 (1.11) | 3.33 (1.11) | 3.13 (1.26) | 2.56 (1.26) |
| participation | BDI-L | 3.83 (0.90) | 4.06 (0.97) | 3.72 (1.04) | 3.94 (0.85) |
| | BDI-H | 3.40 (1.02) | 4.00 (1.15) | 3.33 (1.14) | 3.61 (1.06) |
| loosened cheeks | BDI-L | 2.06 (1.18) | 2.44 (1.34) | 1.56 (0.60) | 1.61 (0.68) |
| | BDI-H | 2.87 (1.20) | 3.06 (1.35) | 1.60 (0.49) | 1.50 (0.96) |
| tensed cheeks | BDI-L | 1.56 (0.76) | 1.83 (0.83) | 3.89 (0.99) | 3.61 (1.11) |
| | BDI-H | 1.87 (0.81) | 1.94 (1.03) | 3.60 (1.14) | 4.33 (0.82) |
| body warmth | BDI-L | 2.17 (1.21) | 2.33 (1.05) | 1.89 (1.05) | 1.78 (0.79) |
| | BDI-H | 2.27 (1.29) | 2.83 (1.21) | 2.27 (1.12) | 1.56 (0.83) |
| body coolness | BDI-L | 1.44 (0.50) | 1.78 (0.71) | 2.67 (1.29) | 2.94 (1.22) |
| | BDI-H | 1.80 (0.65) | 1.67 (0.58) | 3.33 (1.14) | 3.17 (1.30) |
| sense of reality | BDI-L | 2.94 (0.97) | 3.72 (1.19) | 3.50 (1.01) | 3.89 (0.87) |
| | BDI-H | 3.13 (1.20) | 3.72 (1.19) | 3.73 (0.85) | 3.67 (1.05) |
| absorbed | BDI-L | 2.72 (1.10) | 3.28 (1.15) | 2.17 (0.76) | 3.06 (1.03) |
| | BDI-H | 3.00 (1.10) | 3.72 (1.10) | 2.80 (1.05) | 3.11 (1.15) |

note: (SD)

As the structure of the imagery experience changes with the emotional values of the imagery (Miyazaki and Hishitani, 2004), I did not perform factor analysis for the imagery experience items. I used an evaluation of each imagery experience as the dependent variable and performed three-way analysis of variance (ANOVA) for depression (BDI-H and -L) \times imagery vividness (QMI-H and -L) \times image (positive and negative).

With regard to vividness, the main effect of imagery vividness ($F(1,65) = 7.17, p < .001$) was significant, and the high-vividness group had a significantly higher score than the low-vividness group.

Similarly for the outline, the main effect of imagery vividness ($F(1,65) = 3.10, p < .10$) showed a significant trend, and the high-vividness group had a significantly higher score than the low-vividness group.

In terms of color, the secondary interaction ($F(1,65) = 3.92, p < .10$) showed a significant trend. The result of examining the simple interaction of vividness \times image for each depressive tendency showed that for the low-depression group, the interaction between vividness \times image ($F(1,65) = 4.33, p < .05$) was significant. A simple main effect test showed that for the low-vividness group, the positive image had a significantly higher score than the negative image ($F(1,65) = 10.47, p < .01$). The difference in images for the high-vividness group was not significant. In the high-depression group, no significant interaction or main effect was found. These results showed that those with a low depressive tendency and low vividness reported less color when recalling the negative image.

With regard to auditory, the interaction between depressive tendency \times vividness ($F(1,65) = 2.89, p < .10$) had a significant trend. I performed a simple main effect test of vividness for each depressive tendency and found that for the low-depression group, the high-vividness group scored significantly higher than the low-vividness group ($F(1,65) = 12.83, p < .01$). In addition, I examined the simple main effect of depressive tendency for each vividness group and found that for the low-vividness group, the high-depression group scored significantly higher than the low-depression group ($F(1,65) = 5.24, p < .05$). In contrast, for the high-vividness group, the low-depression group scored significantly higher than the high-depression group ($F(1,65) = 3.42, p < .10$). These results indicate that when the depressive tendency was low, those with high vividness experienced sounder imagery, and when vividness was low, those with a high depressive tendency experienced sounder imagery. Finally, when vividness was high, those with a low depressive tendency

experienced sounder imagery. In particular, when depression was low and vividness was high, the auditory imagery was recalled.

Concerning the cutaneous modality, in what is similar to the case of the auditory modality, the interaction between depressive tendency \times vividness ($F(1,65) = 3.22, p < .10$) reflected a significant trend. I performed a simple main effect test of vividness for each depressive tendency and found that for the low-depression group, the high-vividness group scored significantly higher than the low-vividness group ($F(1,65) = 31.80, p < .01$). I also performed a simple main effect test of depressive tendency for each vividness and found that for the low-vividness group, the high-depression group scored significantly higher than the low-depression group ($F(1,65) = 3.99, p < .10$), and for the high-vividness group, the low-depression group scored higher than the high-depression group ($F(1,65) = 11.45, p < .01$). These results indicate that when the depressive tendency was low, those with high vividness experienced more cutaneous imagery, and that when vividness was low, those with a high depressive tendency experienced more cutaneous imagery. Finally, when vividness was high, those with a low depressive tendency experienced more cutaneous imagery. This specifically shows that when depression was low and vividness was high, cutaneous imagery were recalled.

In terms of movement, the secondary interaction ($F(1,65) = 5.69, p < .05$) was significant. I examined the simple interaction of vividness \times image for each depressive tendency and found that in the high-depression group, the interaction between vividness \times image ($F(1,65) = 7.42, p < .01$) was significant. A simple main effect test showed that for the negative image the high-vividness group scored significantly higher than the low-vividness group ($F(1,65) = 10.69, p < .01$). For the positive image, no significant difference in vividness was found. For the low-vividness group, the positive image scored significantly higher than the negative image ($F(1,65) = 7.39, p < .01$). There was no difference between the images for the high-vividness group. For the low-depression group, no significant interaction or main effect was found. These results indicate that when recalling the negative image, those with a high depressive tendency and high vividness experienced stronger motor imagery, and when recalling the positive image, those with a high depressive tendency and low vividness experienced stronger motor imagery.

In terms of autonomy, the secondary interaction ($F(1,65) = 3.64, p < .10$) had a significant trend. I examined the simple interaction of vividness \times image for each depressive tendency and found that for the high-depression

group, the interaction between vividness \times image ($F(1,65) = 6.31, p < .05$) was significant. I performed a simple main effect test and found that for the high-vividness group, the score for the positive image was significantly higher than the negative image ($F(1,65) = 6.19, p < .05$). For the low-vividness group, there was no difference between the images. For the low-depression group, no significant interaction or main effect was found. These results indicate that those with a high depressive tendency and high vividness experienced declined autonomy for imagery in the negative image.

In terms of loosened cheeks (smiling), the interaction between depressive tendency \times image ($F(1,65) = 4.60, p < .05$) was significant. I performed a simple main effect test of the images for each depressive tendency and found that for the low-depression and high-depression groups, the positive image scored significantly higher than the negative image ($F(1,65) = 7.37, p < .01$; $F(1,65) = 33.02, p < .01$). In addition, I examined a simple main effect of depressive tendency for each image, and I found that in the positive image, the high-depression group scored significantly higher than the low-depression group ($F(1,65) = 5.03, p < .05$). These results indicate that when recalling the positive image, participants strongly felt loosened cheeks (smiling), which was particularly strong in those with a high depressive tendency.

In the case of tensed cheeks (straining), the secondary interaction ($F(1,65) = 3.14, p < .10$) had a significant trend. I examined the simple interaction between depressive tendency \times vividness for each image and found that for the negative image, the interaction between depressive tendency \times vividness ($F(1,65) = 3.97, p < .10$) had a significant trend. I performed a simple main effect test and found that for the high-vividness group, those with a high depressive tendency scored significantly higher ($F(1,65) = 4.06, p < .05$). Likewise, for the high-depression group, those with high vividness scored significantly higher ($F(1,65) = 4.18, p < .05$). No significant interaction or main effect was found for the positive image. These results indicate that participants with a high depressive tendency and high vividness strongly experienced tensed cheeks (strain) when recalling the negative image.

As for the body warmth modality, the interaction between vividness \times image ($F(1,65) = 4.97, p < .05$) was significant. I performed a simple main effect test of the images for each type of vividness and found that for the high-vividness group, the positive image scored significantly higher than the negative image ($F(1,65) = 13.80, p < .01$). I also performed a simple main effect test of vividness for each image and found that for the negative image,

the low-vividness group had a significantly higher trend than the high-vividness group ($F(1,65) = 3.02, p < .10$). These results show that in the positive image, those with high vividness experienced imagery of body warmth, whereas in the negative image, those with low vividness experienced imagery of body warmth.

Regarding body coolness, the main effect of the images ($F(1,65) = 62.12, p < .001$) was significant, with the negative image's effect being significantly higher than that of the positive one.

As for the sense of reality, the main effect of vividness ($F(1,65) = 4.21, p < .05$) was significant, where the high-vividness group scored significantly higher than the low-vividness group. The main effect of the scenes ($F(1,65) = 3.80, p < .10$) had a significant trend, where the negative image tended to score higher than the positive image.

In terms of feeling absorbed, the main effect of vividness ($F(1,65) = 8.20, p < .01$) was significant, where the high-vividness group scored significantly higher than the low-vividness group. The main effect of the images ($F(1,65) = 7.02, p < .05$) was significant, with the positive image significantly outscoring the negative one.

No significant interaction or main effect of details, olfactory, operability, responsiveness, or participation was found.

3. Discussion

I examined the relationship between imagery vividness and controllability and found a moderate-to-weak positive correlation between all the sensory modalities of imagery vividness with controllability. These results were consistent with the works by Tamura (2011, 2017). Specifically, the correlation between cutaneous and kinaesthetic with vividness and controllability was strong. The scale of controllability dealt with imagery associated with vehicles and driving; hence, it might have been more prone to association with cutaneous and kinaesthetic.

Imagery vividness in the range of organic sensations was linked with depressive tendency. In terms of the relationship between depressive tendency and imagery, it is known that when the depressive tendency is high, the vividness of visual imagery decreases (Tucker et al., 1981); however, in the present study, no significant negative correlation was found. On the other hand, there

was a relationship between vividness of organic sensation, but considering the use of the depression scale, with many items associated with physical symptoms, the experience of the physical symptoms of depression had an impact, thereby causing the link between vividness of organic sensation. No significant correlation was found between visual imagery controllability and depressive tendency.

I analyzed each imagery experience item in terms of the effect of imagery vividness and depressive tendency on imagery experience. The result showed that the main effect of imagery vividness was confirmed for vividness, outline, sense of reality, and feeling absorbed. For all of these, the high-vividness group scored higher than the low-vividness group. That is to say, regardless of the image experienced or the degree of depressive tendency, these items were easily influenced by individual differences in vividness, whereby higher imagery vividness resulted in a clearer and more realistic recollection of imagery, allowing for participants to be absorbed in the recollected imagery. These results indicate that those with a high depressive tendency could recall imagery with vividness and with a sense of reality for the negative image as long as the image's vividness was high.

There was a main effect of the images on body coolness, sense of reality, and feeling absorbed. For the negative image, participants strongly experienced coolness and a sense of reality, making it difficult to be absorbed in recollection. This is an item in which the impact of the emotional values of the imagery appeared strongly. Considering that the high-vividness group scored high while recalling the positive image in terms of body warmth and that the score for loosened cheeks (smiling) was high when recalling the positive image, it can be said that the image operated appropriately. In respect of loosened cheeks (smiling), it is worth noting that those with a high depressive tendency felt this strongly with the positive image.

Those with a low depressive tendency and high vividness scored high with auditory and cutaneous, indicating that if imagery vividness is high and depressive tendency is low, more sounds and tactile imagery could be experienced. In terms of color, those with a low depressive tendency and low vividness reported less color when recalling the negative image. In general, when there is more information included in the imagery, the imagery can be experienced more vividly. Therefore, auditory, cutaneous, and color imagery experiences may have impacts on imagery vividness and the sense of reality, and their connection with items where the main effect of imagery vividness

has been confirmed should be considered. However, even those with a low depressive tendency experienced auditory, cutaneous, and color differently on the basis of imagery vividness. I conclude that for auditory, cutaneous, and color—particularly the experience of imagery of auditory and cutaneous—experience is influenced by the interaction between depressive tendency and imagery vividness.

The results of items in which the secondary interaction was significant indicated that those with a high depressive tendency and high vividness strongly felt tensed cheeks (straining) when recalling the negative image, and although imagery autonomy also became low, physical movement imagery became strong. Those with a high depressive tendency and low vividness felt less physical movement when recalling the negative image.

When recalling the negative image in which the mood is consistent with depressive tendency, those with a high depressive tendency and high vividness strongly felt the sensation of tensed cheeks and physical movement. In contrast, those with a high depressive tendency but without high vividness experienced a stiffening of their bodies. The presentation of the negative image included scripts such as “inability to think,” “shaking hands,” and “frantic response.” Among those with a high depressive tendency, those with high vividness had an increased sensation of physical movement—answering frantically while shaking their bodies—in the imagery, and thus, those with low vividness had less sensation of physical movement. When the scripted sensation was captured as movement, those with a high depressive tendency and high vividness clearly recalled the negative image with physical movements. When I compared our results with the mood congruency effect of the imagery indicated by Martin and Williams (1990), not only did the consistency or inconsistency of mood tend to be associated with depressive tendency with recalled imagery but also individual differences in imagery vividness had an impact on imagery experience.

Items on which there was an impact of high depressive tendency included loosened cheeks (smiling), tensed cheeks (straining), physical movement, and autonomy of imagery. Among these, loosened cheeks (smiling), tensed cheeks (straining), and physical movement can be considered to be physical sensations, indicating the strength of the relationship between depressive tendency and imagery of physical sensation. This relationship is consistent with the result confirmed in the correlation analysis. Specifically, depressive tendency readily shows its characteristics through imagery of physical

sensations. The way these characteristics appear may be influenced by the degree of vividness that each person can achieve or the content of the recalled image.

If I consider the present results in terms of clinical practice, clients with a high depressive tendency and high imagery vividness may be making their depression worse by recalling negative images and memories vividly. On the other hand, when recalling positive images, the sensation of loosening the cheek (smiling) was more notable in those with a higher depressive tendency, which may indicate that it is possible to ease depression using physical sensations and their imagery. These points require additional examination and could become future topics of study.

Thus, the present results showed that the experience of imagery is influenced by the interaction of three factors: individual difference in imagery, different personality traits, and the content and emotional values of imagery. When using imagery in clinical settings, it is necessary to examine how individual differences in imagery recollection, individual personality traits, and associated emotions and the content and emotional values of the recollected imagery interact to create the imagery experience in clients. Furthermore, the question as to whether such imagery experiences could ease or treat problems and symptoms must be examined.

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