



A Study on the Germination of Creativity Focusing on the Process of Creating New Physical Expressions of Contemporary Dancers

Natsumi Fujii[✉]

Department of Childcare, Kyushu Ryukoku Junior College, Saga, Japan¹, The Joint Graduate School (Ph.D. Program) in Science of School, Education Hyogo University of Teacher Education, Hyogo, Japan²
musiquedanse7@gmail.com

Abstract. In the field of art disciplines such as music and fine arts, fostering creativity is crucial. This study aimed to clarify how contemporary dancers generate new movements. To investigate the process by which contemporary dancers acquire new movements, interviews were conducted and analyzed using M-GTA. Next, we conducted field research regarding “moving with physical constraints” which was obtained through the interview. At first glance, it seems contradictory, but “moving with physical constraints” in contemporary dance lesson actually resulted in more free physical movements.

Keywords: Creativity · Physical movements · Contemporary dance

1. Research background and purpose

Creativity is a pivotal term in artistic disciplines, such as music and art. Unlike scientific fields, where solutions are predetermined and acquired through rote learning, Art cultivates the ability for each individual to develop their own unique "correct answer". Creative activities are well-suited to physical activities because humans express themselves using their bodies from the moment they are born. Furthermore, it is important to pay attention to physical movements in response to listening to music. In response to listening to music, for example, newborns repeatedly kick, suck, or grasp in reaction to sounds or music they hear, and when exposed to music that they find pleasurable, these reactions become more pronounced [1]. Many researchers have been reporting this for quite some time. These rhythm synchronization and response activities are believed to be learned through various developmental processes from before the school age, depending on factors such as age, music experience/training, and environment.

This study aims to reveal when and how new physical movements are created, focusing on contemporary dancers as the subjects. Contemporary dance is a genre characterized by an extremely high degree of freedom in expression. In contrast to classical ballet or jazz dance, which have pre-choreographed movements or predetermined forms, contemporary dance has no such forms or structures. Therefore, it is considered that there is a high possibility that what is felt from the music is directly reflected in the physical movements. Although the expression methods vary depending on the dancer, they share the common aspect of relying on a life-sized "self" living in the present moment, rather than techniques, virtues, or norms supported by European traditions [2]. Even though it is called dance, it is not limited to ordered movements synchronized with the beats of music that are often imagined, but incorporates many everyday movements such as walking and stopping. This study aims to clarify what contemporary dancers are conscious of when they moving, through interviews with dancers. In addition, the author intends to reveal the process of creating new physical movements in contemporary dance by taking dance lessons themselves.

2. Phase 1

This study aims to clarify what contemporary dancers are conscious of when they move while listening to music. In contemporary dance, physical movements can either be predetermined and choreographed, or improvised. This study focuses specifically on improvisation, and we will be conducting interviews to gather data.

2.1. Overview

Target: Expert A, a practitioner of contemporary dance.

Procedures: Conducting semi-structured interviews with Expert A on the topic of " Feelings while improvising ".

2.2. Method

We created a verbatim transcript and analyzed it using the Modified Grounded Theory Approach (M-GTA), which emphasizes context-based data and does not involve segmenting the data [3]. As contemporary dance lacks specific value criteria, we adopted this method, considering the context in which dancers perceive contemporary dance. An example of the analysis is presented in Table 1.

2.3. Results

As a result of the analysis, 16 concepts and 6 categories were generated as shown in Table 2.

Based on the mutual relationships between the generated concepts and categories, a diagram of the analysis results was constructed in Figure 1. The categories are denoted by [], the concepts are denoted by < >, and the actual remarks made by Expert A are enclosed in " " quotations.

Table 1. Analysis example

Concept	Do not think about physical movements
Definition	Try not to consciously think about the movements in improvisational performance.
Variation	<ul style="list-style-type: none"> • "Ah, I do not really think about it though." • "Yeah, I try not to think about it as much as possible." • "I just want to receive the sound purely and move accordingly, so I try not to think about what to do next." • "Right, try not to think about it." • "When I improvise, I feel like I do not have the mental capacity to imagine anything." • "I'm not thinking about anything. I'm not thinking about anything, haha." • "Yeah, I wonder what we're actually thinking. Well, we're not really thinking, right? Yeah, we're not thinking."
Theoretical note	When asked about their conscious experience while improvising, participants reported a lack of cognitive involvement in the execution of physical movements, which instead occurred unintentionally. Despite this, participants were found to be actively attempting to move without conscious intervention. Expert A articulated a desire to receive sound purely and to move accordingly, claiming that he had no spare attentional resources for monitoring her movements during improvisation. Similarly, another contemporary dancer revealed that he was most aware of the degree of bodily relaxation achieved while improvising, which may correspond to the same somatic sensation reported by Expert A.

Table 2. List of generated concepts and categories

Category	Concept	Definition
Consciousness during improvisation	Do not think about physical movements	Try not to consciously think about the movements in improvisational performance.
	Feel the ambiance	Perceive the spatial dimensions of the environment and promptly make decisions regarding one's line of sights and movements.
	Engage the audience	Engage the audience in the performance by strategically devising visual cues and movements in response to the perceived ambiance of the space.
Habit	Habitual movements	If you try not to think about the physical movements, habitual movements of dancers often appear in performances in improvisational performance.
	Habitual movements in response to music	Having specific habitual movements in response to specific music.
Expert A's views on contemporary dance	Expert A's awareness of issues	Expert A does not prefer to have habits when dancing
	Left behind	In a world where new movements are constantly being generated, dancers who rely solely on their habits when performing will inevitably be left behind.
Discovery of new physical movements	How to use the body	The use of the body in contemporary dance.
	Moving with a predetermined theme	Discovering new movements by deciding on a theme and moving accordingly in contemporary dance lessons.
	Moving with physical constraints	Discover novel movements through the imposition of constraints on bodily motion in contemporary dance lessons.

	Moving with awareness of the body's details	By being conscious of the finer details of the body that one would not normally notice, it is possible to discover new movements in contemporary dance lessons.
The role of music in dance lessons	Music that provides a standard beat	The role of music that provides a standard beat to help internalize complex movements within the body.
	Music for creating an atmosphere	Music that serves as an aid in eliciting new movements within the body.
Performance	Theme	The present perspective of individual Expert A 's views on contemporary dance. As contemporary dance does not adhere to a specific form, the movements of the dancers can vary even when listening to the same music. Furthermore, even the same dancer can exhibit different movements at different times.
	Habitual movements of Expert A	The current habitual movements of individual Expert A.
	Relationship between sound and physical movements	The act of perceiving the rhythm of the music being used and moving accordingly.

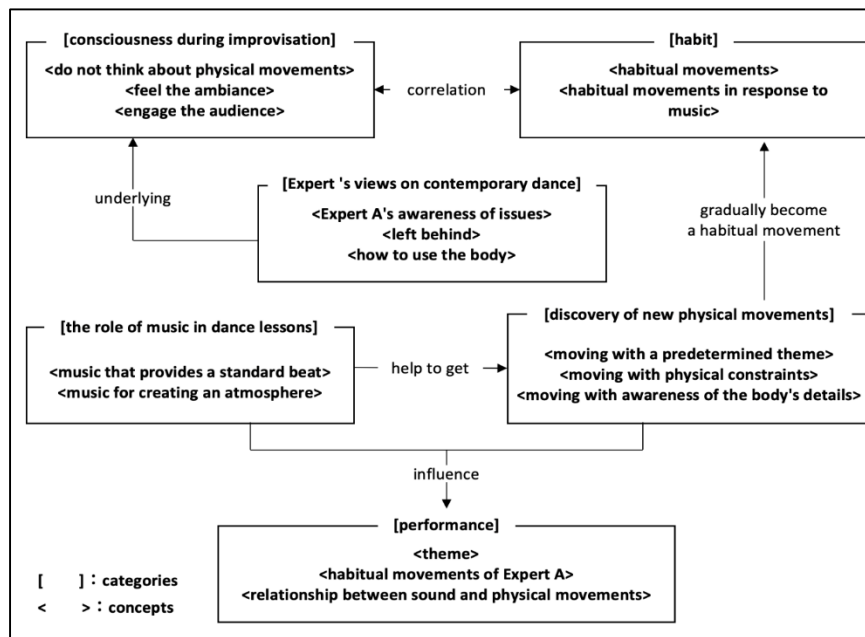


Figure 1. Analytical outcome diagram

Basically [consciousness during improvisation] means <do not think about physical movements>. The meaning that <do not think about physical movements> is, for example, unconsciously, you are executing a movement pattern akin to elevating your right hand in synchrony with the subsequent beat. Expert A strives to allow the music to be wholly manifested in her movements, thus endeavoring to refrain from cognitively processing the movements. Moreover, by abstaining from cognitive movements processing, heightened sensitivity can be <feel the ambiance>. If you can feel the atmosphere, it is possible to perceive the gaze of spectators situated on the right side, even while facing towards the left side of the stage during dance performances, for instance. Furthermore, if one does not perceive the gaze from the spectators on the right side, and concludes that their attention has not been captured, " Expert A has planned to shift her standing position towards the right side of the stage for <engage the audience>. Additionally, by positioning themselves in close proximity to the audience and moving while fixing on the space beyond them, they endeavor to immerse the spectators into their own realm. <do not think about physical movements> does not mean to completely refrain from thinking about all movements. Expert A does not consider the choreography of movements, but rather, as previously stated, she contemplates the relocation of dance and the adjustment of perspective in accordance with the audience's response, while simultaneously improvising. If we directly quote Expert A 's interview, she states, "I don't think much about the dance itself, but I do assess the situation around me." With respect to this matter, Expert A expresses that this capability to move is a product of improvisation and that it is precisely "the advantageous aspect of improvisation."

The above is possible because the dancers are dancing in their natural [habit] without thinking about the movements. There are two types of [habit]. One is <habitual movements>, and the other is <habitual movements in response to music>. <habitual movements> is a series of repeated movements that follow a pattern or algorithm. As the dancers do not deliberately manipulate their movements during improvisation, only particular patterns of movements in which the dancers excel manifest. Nevertheless, it is not to be inferred that the movements will be absolutely identical regardless of the musical piece being played. Each movement pattern is contingent upon the music. For example, there exist specific movements that correspond to particular note patterns and beats such as a rotation to the right for legato and movements emanating from the left elbow for descending notes. This is <habitual movements in response to music>. These patterned [habits] make it difficult for new movements to expand, and Expert A says that this is a "bad point of improvisation.". Of course, there is no definition in contemporary dance, so it is not necessarily a bad thing to have [habits].

When contemplating contemporary dance, it is crucial to consider the contemporary dance perspective of the dancers in question. In other words, [Expert A's views on contemporary dance] is important in this study. < Expert A 's awareness of issues > means that Expert A groping that < how to use the body >. Expert A said that "Interesting movements are created by using body parts that are usually not moved and forgotten. This is contemporary dance." So Expert A is consistently seeking novel physical movements. She also considers that she will be < left behind > if she herself does only the same movements while new movements of the body are created one after another around her." In order to get closer to the [Expert A 's views on contemporary dance], Expert A is trying to [discover new physical movements] in daily lessons. Specifically, < moving with a predetermined theme >, < moving with physical constraints >, and < moving with awareness of the body's details > are a method. < Moving with a predetermined theme > means depending on whether the theme is "rock" or "wave," the physical movements will vary, even if the same body part is employed. < Moving with physical constraints > is that for instance, designating a particular bodily segment as the initiatory point of movements. It prevents you from developing your own habits. < Moving with awareness of the body's details > is that concerning cognizant of the intricacies of the body that are ordinarily disregarded. For example, lie on the floor and move only the first joint of your fingertips. This activity will help you get to know your body better. [The role of music in dance lessons] has two types. There are < music that provides a standard beat > and < music for creating an atmosphere >. < Music that provides a standard beat > sets the reference beat and helps the body to anchor complex movements. Contemporary dancers repeatedly perform body movements that would not be possible in everyday life and establish the sensation of those movements in the body. When it develops, it becomes possible to move even complex movements without being conscious of it. Then, < music for creating an atmosphere > helps to bring out the potential of the dancer's physical movements. Compared to lessons in other dance genres, contemporary dance lessons have a high degree of freedom. When dancers are moving in improvisation, music can be potentially stimulating.

3. Phase 2

Contemporary dancers strive for freedom of movements, but there is an activity of "moving with constraints on the body" in Phase 1. At first glance, this may seem contradictory. To clarify this aspect, the author will take a contemporary dance lesson by themselves.

3.1 Overview

During a contemporary dance lesson, we engage in an activity related to < moving with physical constraints >. The task given by the instructor was to "touch various parts of your body and use those points as starting points to move. You can push or pull on those points. Start at one wall of the studio and move to the opposite wall". The state of the activity is presented in Figure 2.



Figure 2. State of the lesson of < moving with physical constraints >

3.2 Method

The analysis was based on Suwa's (2013) "Karada Meta Ninchi (body metacognition)" [4]. It is a "cognitive method for learning with the body." By creating your own original words that are rooted in your body, this program aims to acquire an understanding that is not second-hand and a body that can be put into practice. Non-traditional understanding refers to the state of truly understanding certain knowledge or information by using one's own body or by feeling and realizing it with one's own body. In order to achieve this, it is important to know the nature of one's own body and to find meaning in knowledge and information in accordance with one's own thinking style, personality, and life background. To put it the other way around, it can be said that the knowledge and information that you have found your own meaning to is the "chosen" knowledge and information.

In the "Karada Meta Ninchi (body metacognition)" method, we clarify which knowledge and information to choose by verbalizing the sensations we feel. Suwa summarizes the following six items as things that should be expressed in words.

1. What kind of things do you pay attention to that make up the external world?
2. What properties and relationships of things (so-called perceptual information) do you perceive?
3. How does your body (if you can recognize each body part separately) move?
4. What kind of experience (self-acceptance) do you have?
5. What meaning do you give and interpret to the information you perceive?
6. What kind of problem awareness, purpose, intention, and plan do you have?

Based on these objects that should be expressed in words, I have described the experience of the presenter when taking a contemporary dance class.

Table 3. Bodily sensations during < moving with physical constraints > based on "Karada Meta Ninchi (body metacognition)"

	1. What kind of things do you pay attention to that make up the external world?	2. What properties and relationships of things (so-called perceptual information) do you perceive?	3. How does your body (if you can recognize each body part separately) move?	4. What kind of experience (self-acceptance) do you have?	5. What meaning do you give and interpret to the information you perceive?	6. What kind of problem awareness, purpose, intention, and plan do you have?
1st stage	Looking at the body parts they touch	Recognizing the direction to go (= the wall on the other side)	Sometimes it moves from where the hand touches, sometimes it moves regardless of where it touches (such as stepping forward to go forward)	Always feel where the center of gravity is, forward (direction to go) or down	There is a strong sense that you must move forward, and there are times when you do not follow the limit of "moving from where you touch"	Intended to move forward There are times when it moves from a point that I haven't touched, and I'm reflecting on it
2nd stage	Looking at the body parts they touch *continue from previous stage	While recognizing the direction to go (= the wall on the other side), I am thinking about where my center of gravity is	The fact that it only moves from where the hand touches is preserved, but the width of movements is independent of the applied force	Always feel where the center of gravity is, forward (direction to go) or down *continue from previous stage	I know where my center of gravity is Thinking about which part to touch next	Aiming to move forward, thinking about where to touch next Conscious of moving only where I touch
3rd stage	Listening to the instructor's count	Conscious of the direction to go, but I am most conscious of not being late for the count of "One two, one two"	The width of movements is larger than in the second stage	A feeling of being constantly pushed or pulled from various directions without a fixed center of gravity	There are times when it moves greatly due to centrifugal force, not the force that you think and limit yourself	Keep up with the count Conscious not to touch only the same place

4th stage	Listening to the instructor's count *continue from previous stage	conscious of not being late for the count of "One one one"	The movements are finer and faster than in stage 3	A feeling of being constantly pushed or pulled from various directions without a fixed center of gravity *continue from previous stage	Thinking by myself, control is almost impossible feeling like you're being manipulated	Keep up with the count Conscious not to touch only the same place *continue from previous stage
5th stage	Have a comprehensive sense of the environment that makes up the outside world such as sounds and lighting Feeling like I'm part of it	Listening to the sound There is no visual information because he voluntarily closed his eyes halfway through	It is touching the part that is an extension of the previous movements, and it is moving very smoothly compared to the previous movements	A feeling of being constantly pushed or pulled from various directions without a fixed center of gravity *continue from previous stage	Movements are no longer restricted and you can focus on your body By making large movements, the sound is not left over, and the sense of matching with the music is high	Concentrate only on touching each part of the body according to the flow of sound I am not very conscious of the count or the direction to go

3.3. Result

Despite the perceived discomfort and limitation imposed on physical movements, it turned out that such constraints ultimately led to the emergence of novel movements with greater freedom of expression. There are several stages in the acquisition of this free expression. At first, the movements are awkward and jerky as the students try to complete the tasks assigned by the instructor while thinking about where to touch next. Next, the instructor specifies the timing of touch by counting "1212" and prompting the students to touch when saying "1". Then, the count is accelerated to "1111", which leaves no room for the students to think about the movements and leads to smooth and natural movements that do not resist the body.

A phenomenon that moves smoothly and naturally without thinking about the movements is creative. Incorporating contemporary dance lesson ideas into music classes will help foster children's creativity.

4. Discussion and Conclusion

As previously mentioned, arts subjects such as music and art foster creativity, unlike other subjects that focus on prepared answers. These subjects encourage students to generate new ideas and movements on their own. However, creativity cannot be born out of nothing. Ultimately, one can only generate movements from what they are good at. On the other hand, when slight constraints are imposed, it can prevent one from relying on what they are good at, leading to the creation of new movements.

Creativity is a vital skill that is required of humans in the age of the rise of AI. In the field of arts, unlike in other subjects, the focus should not be on how to arrive at a prepared answer, but rather on how to generate individual "correct answers". It is necessary to consider how to achieve this.

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