



# Creativity and Expressive Arts, Performance, Physicality and Wellness: a Conversation with Dr. Paula Thomson and Dr. Victoria Jaque

Melissa Warr<sup>1</sup> · Danah Henriksen<sup>1</sup> · Punya Mishra<sup>1</sup> · The Deep-Play Research Group

© Association for Educational Communications & Technology 2019

The artist takes the body with her.

— Maurice Merleau-Ponty

You may be interpreting somebody's concept, but it won't come alive unless the performer endows it with their creative capacities. And the whole process of putting on a production, all of the problem solving, all of the adaptations, they're all inherently creative process. They involve a creative experience.

— Paula Thomson

## Introduction

We have interviewed many creativity scholars through this series, covering a wide range of disciplines—from neuroscience to music, from design to business. In our last column, we introduced Dr. Kerry Chappell, who combines dance with psychology and creativity in education. In this piece we share an interview with another dancer and psychologist, Dr. Paula Thomson, and an exercise scientist, Dr. Victoria Jaque.

Paula Thomson is Professor and dance coordinator in the Department of Kinesiology, California State University, Northridge. In addition to her experience as a dancer and choreographer for several Canadian opera, dance, and theater

---

✉ Danah Henriksen  
Danah.Henriksen@asu.edu

Melissa Warr  
mcwarr@asu.edu

Punya Mishra  
punya.mishra@asu.edu

<sup>1</sup> Mary Lou Fulton Teachers' College, Arizona State University, Tempe, AZ, USA

companies, she holds a doctorate degree in psychology from the American Behavioral Studies Institute and is a licensed Clinical Psychologist and certified Sport Psychologist. Her psychology work centers on attachment, psychophysiology, and traumatic and dissociative stress disorders.

Dr. Vicki Jaque is also a professor in the CSU-Northridge Kinesiology Department. Dr. Jaque holds a PhD in exercise science, co-directs (with Dr. Thomson) the exercise and psychophysiology laboratory, and is the coordinator for the graduate programs in kinesiology and assistive technologies. In addition to her collaborative work around creativity with Dr. Thomson, she studies bone mass development and its response to physical and psychological trauma.

Dr. Thomson approaches creativity from a transdisciplinary perspective, bringing together her expertise in dance, creativity, and psychology. Dr. Jaque brings her expertise to the mix in that she is not only an accomplished researcher, she also has experience with dance and figure skating. When the two met, they connected instantly and began collaboratively researching connections across the mind, the body, and creative experience.

Our conversation with Drs. Thomson and Jaque spanned a wide range of topics, from individual creativity and flow, to research methods and the importance of school art programs. Some of these topics we have discussed previously in this series. However, unique to this interview was the discussion of the physical embodiment of creativity, pathologies related to creativity and creative cultures, and the healing capacities of creativity—all of which were distinctive in aiming to bring together a psychological with a physical view of creativity, wellness, and the arts.

## Creativity and the Physical Body

Drs. Thomson and Jaque emphasize how creativity is physically embodied in individuals. This emphasis may arise from

the type of creativity they focus on. They have primarily studied what they call “interpreters” of creativity—such as dancers, musicians, and athletes that perform work that has been initiated by other “generators”:

[Interpreters] took what had been brought into being by generators, and fit it to a new use, adjusting and modifying it along the way, and in so doing, connected ideas and concepts that may not necessarily have originally been conceived to fit together. (Thomson et al. 2009, p. 73)

Although some may claim that the creative power behind a musical or dance performance is the choreographer or composer, Thomson and Jaque do not agree. They note that creativity is not solely located within the origin or originator of an idea or composition, but also in the interpretation of it. Thomson explained, “You may be interpreting somebody’s concept, but it won’t come alive unless the performer endows it with their creative capacities. And the whole process of putting on a production, all of the problem solving, all of the adaptations, they’re all inherently creative processes. They involve a creative experience, which is a fundamental aspect to our research.”

This is where the concept of embodied thinking and creativity tie in to the idea of artistic performance. It is clear that dancers, musicians, singers, and athletes embody creativity—for them, creativity emerges as an act of interpretation through their bodies. However, Drs. Thomson and Jaque believe that the body is involved in all types of creativity. For instance, even generators or creators of mental activities and idea-centered creations must move: e.g. mathematicians do not sit still when they do their work. This means that the body, including physiologic processes, becomes integral to the creative experience.

The concept of flow and the opportunity to experience flow within creative action is also essential to a creative experience. Flow is ultimately a perceptual experience of deep immersion and total absorption by those who are engaged within the action. As Thomson and Jaque (2016) explained, “Flow refers to a state of focused absorption in a pleasurable activity. Action and awareness merge, and the perception of time expands or compresses” (p. 345).

Csikszentmihalyi (1990) described flow as an “optimal experience,” or one in which:

A sense that one’s skills are adequate to cope with the challenges at hand, in a goal-directed, rule-bound action system that provides clear clues as to how well one is performing. Concentration is so intense that there is no attention left over to think about anything irrelevant, or to worry about problems. Self-consciousness disappears, and the sense of time becomes distorted. An activity that produces such experiences is so gratifying that

people are willing to do it for its own sake, with little concern for what they will get out of it, even when it is difficult, or dangerous. (p. 71)

In short, it is a kind of a state of complete immersion in an activity. While a person may be in a flow state through rigorous physical activity like sports, it can also occur during less physically exertive tasks like writing. It is a mental state in which a person becomes fully involved in an activity for its own sake. Time feels like it flies by, and actions, movements, and thoughts flow in a kind of inevitability (e.g. improvisational jazz). Because of the deep mental involvement, flow states tend to involve using skills to a significant capacity, placing the experiencer on the edge of their possibilities. Notably, flow states are significant to Thomson and Jaque’s work in that they often occur in areas like athletics, dance, and other performing arts.

Flow is such a distinct experience that Thomson claimed it is a “tangible” form of creativity: “you know when when it is or isn’t there.” Flow is also intimately tied to wellbeing and happiness, and as Csikszentmihalyi (1990) noted, flow-like experiences are when we are the happiest and when life is most fulfilling. Because flow is easy to recognize and is a core part of the creative experience, much of Drs. Thomson and Jaque’s research focuses on the experience of flow—particularly how our physical bodies act during flow. They have measured physical reactions of flow state in dancers, athletes, etc., noting how the autonomic nervous system reacts in various states, and what this might mean for creativity.

To understand the nature of their research, one may need a brief overview of the autonomic nervous system. The autonomic nervous system controls our body’s internal organs. This includes regulating heart rate, respiratory rate, and digestion. This nervous system includes two main parts: the sympathetic and parasympathetic nervous systems. The sympathetic nervous system is often considered the “fight-or-flight,” system, while parasympathetic has been described as “feed-and-breed” or “rest-and-digest.” Accordingly, the sympathetic nervous system can act quickly in response to threat, increasing blood flow to organs needed for physical activity, such as the heart, lungs, and skeletal muscles. This counteracts the para-sympathetic system’s dampening, homeostatic functions, though the relationship between the systems is more complex than described here.

Although some research suggests the parasympathetic nervous system is more dominant during creative experiences, Thomson and Jaque’s initial research suggests the opposite might be true: the parasympathetic system seems to step off while the sympathetic system takes over. However, the creative experience is unique because although the sympathetic system may be dominant, and the individual may feel anxious at the start of a creative

experience, they often become less anxious during a deep creative experience. As Dr. Jaque explained:

We do see that there seems to be some sort of optimal activation of the sympathetic nervous system, or the withdrawal of the parasympathetic branch, that enables people to have that sort of optimal flow experience during performance.

They referenced Charles Morgan III's research on experiences with special forces sharpshooters that suggests the body releases an anxiolytic neuropeptide to dampen the anxiety response in optimal experiences (Morgan 3rd et al. 2002, 2003). This suggests the heightened awareness, vividness, and positive feelings of a flow experience may come from the combination of an active sympathetic nervous system and dampened anxiety response.

Importantly, this also presents an interesting arena of connection between creativity, flow states, and wellness overall. When an individual is absorbed by a flow state, the brain's default mode network essentially goes offline. In neuroscience, the default mode network is a wide-ranging brain network of regions that interact in highly correlated ways which are distinct from other networks in the brain. The default mode network is most active when a person is thinking about themselves or others, remembering the past, or planning for the future. While such thought processes are useful for memory and cognition, they also contribute to a significant amount of negative thought patterns associated with anxiety, stress, or other negative affective states. Research has shown that, similar to what happens in meditation, pleasurable activities that produce flow states can temporarily take our brain's default mode network offline. In this, our sense of ego or identity drops away, so that we can fully immerse in experience (Brewer et al. 2011). Thus, the state of a person's experience is deeply engaged and aware, but free from neurosis, anxiety, fear or other negative states (Danckert and Merrifield 2018).

Dr. Charles Limb has also observed this phenomenon through his research on jazz musicians. By tracking brain flow with functional MRI, he observed that in creative states the part of the frontal lobe responsible for self-monitoring shuts off, while another part turns on. Limb suggested this allows the performer to experience and freely follow creative impulses (Warr et al. 2018).

Given the degree to which flow states are associated with engagement in creative work—particularly in the arts or physical performance, the experience of flow could be beneficial for working through states of negative affect or neuroses that all humans experience (Vessel et al. 2013). By taking the default mode offline temporarily and allowing a sense of ego to drop away so that experience itself becomes richer, they may also offer potential for wellness and healing.

## Creativity and Healing

Although our bodies, and our creative experiences, can be affected by trauma, creative experiences can also help us heal. Some of Drs. Thomson and Jaque's research demonstrates that traumatic experiences do not seem to affect creative potential. This has prompted further interest in how creative individuals are able to work through trauma, as they note, "We're really curious about how these dancers are able to perform, or how these people are able to create, especially in the face of high exposure to traumatic events and adversity as well as clinical levels of psychopathology, factors that others might consider barriers."

For example, in a study of creative artists, athletes, and a healthy control group, Thomson and Jaque (2016) found that those with higher levels of childhood adversity continued to show high levels of *autotelic* experiences—experiences or activities that we engage in for their own sake. Csikszentmihalyi (1990) described autotelic individuals as those who create flow experiences out of difficult situations. Such people are proactive in overcoming hardships and exhibit more playfulness in their everyday lives. Thomson and Jaque hypothesized that individuals with high levels of adversity value flow experiences more highly than others. They noted that some researchers have found a correlation between mental toughness and flow (Crust and Swann 2013). This may be because flow experiences can increase resilience and self-efficacy (Asakawa 2010; Mosing et al. 2012), which are important traits for those with adverse childhood experiences.

Creative experiences can also serve to heal communities. Thomson described practices some found in Haiti after severe floods. She described how before cleaning up the community, the people there would come together to sing and dance. Then they would do some work cleaning and rebuilding, and then come back and do more singing and dancing, and so on. While some thought that this pattern was an avoidance of the situation, Thomson believes this is actually a powerful instance of coming together as a community, building communal cohesion, and healing together. When singers perform with a choir, they produce more oxytocin by sharing the vocal sound, and through this shared sound and movement they build more community. The creative experience may play a role in healing after trauma.

These researchers pointed out that some cultures allow for more recognition of the healing powers of such approaches than others. For instance certain Eastern cultures such as China have long recognized the healing potential of movement or bodily expression in practices such as Tai Chi. However, she also notes that in general, the "expressive arts are often pushed over to the fringe." Yet through increased interest, awareness, and evidenced-based inquiry, she believes that "the arts and expressive modalities may start moving a bit more into the center of what matters to humans"—perhaps

expressly because of this healing power, which is much needed in our complex and challenging society.

This also brings forth concern about the fact that the expressive arts are increasingly being cut within schooling, given the push for high-stakes testing and content standards. Thomson expressed this cutting of arts curriculum as an issue of concern both for student wellbeing as well as academic performance:

Our students would not achieve without it (the arts). We are in a state university so we have a lot of 1st generation kids who are not wealthy. Some of them have learned how to dance from YouTube or out on the streets. Now they're in university and they're getting a chance to choreograph. They're in Los Angeles because they'd like to be in the industry, but if they weren't doing that they would be miserable. We can't cut the arts from the schools.

This brings up the importance of creative experience for wellness. When we consider what students need from education, the common default is to content knowledge or traditional curriculum. Yet a survey on adverse childhood experiences by the U.S. National Survey of Children's Health showed that nearly half of all children have experienced at least one or more types of serious childhood trauma (NSCH 2011–2012). Most young people regularly experience social or emotional challenges, from everyday anxieties or concerns to more serious emotional issues or traumatic events. They rely on schools for help in developing the ability to cope—and thus for all the reasons we have noted and which are embedded in Drs. Thomson and Jaque's work—these opportunities for expression, creativity and artistic or physical flow engagement, become crucial.

## Creativity and Psychopathology

Another theme that surfaced during our interview with Drs. Thomson and Jaque centered on the relationship between pathology and creativity. They discussed the pathologies of creative individuals on two levels, those being the creative individual and the culture of performance arts. It is their unique combination of interdisciplinary experiences that allows for their particular perspectives on these topics. Dr. Jaque noted how this shared research interest in psychopathology arose:

We started out looking at the autonomic nervous system which is our physiology component of this. But we quickly put that aside and really did a deep dive into what's going on in the performing artist's autonomic nervous systems and how that relates to psychopathology, the creative

process, and so on. We did this shift into this really harmonious area of research that we enjoy doing collaboratively.

Dr. Thomson is not only an accomplished dancer, choreographer, and creativity researcher. She is also a licensed psychologist, and her research explores the relationship between creativity and psychopathology. Of particular interest to her are the dissociative experiences that creative people sometimes have, and the difference between dissociation that is part of the creative experience, and pathological dissociation.

Dissociation occurs when there is a lack of integration between experiences and information. From a clinical view, the Diagnostic and Statistical Manual of Mental Disorders defines dissociation as “a disruption in the usually integrated functions of consciousness, memory, identity, emotion, perception, body representation, motor control, and behavior” (5th ed.; DSM-5, American Psychiatric Association 2013). Dissociation presents itself in different ways, but the experience can include amnesia, daydreaming, narrowing of consciousness, absorption, and identity diffusion. When individuals experience traumatic experiences, dissociation can become a defensive response, protecting the individual from events they cannot fully process at the time. Some continue to experience dissociative states after the danger has passed, affecting their day-to-day interactions. Maladaptive dissociation may be rigid or inflexible (Thomson et al. 2009). Creative dissociation, on the other hand, could be characterized as more adaptable and fluid. This “normative” dissociation may become a part of the creative experience, even promoting creativity. Thomson et al. (2009) suggested that “Dissociative resourcing can specifically serve the creative process, where information and experience may not be normally or usually associated or integrated, but nonetheless systematically integrated into the creative process” (p. 74).

Therein lies a relationship between dissociation and flow: flow-like experiences, where the individual is engrossed in an activity and experiences phenomena such as an increased sensory perception and a fluid sense of time, could be considered dissociation. When in a flow state, the creative person experiences reality differently. Creative dissociation can also be part of imagination and fantasy, such as how some writers interact with the characters they create. Writers might describe their characters as speaking back to them or guiding the story. In social creative activities, such as performing dance or music with a group, identity might shift away from the individual.

Dr. Thomson's background in both psychology and creativity gives her the ability to understand the difference between creative, or “normative” dissociation, and pathological dissociation. Understanding this difference provides insight into how creativity might be used to treat individuals with

dissociative and anxiety disorders such as post-traumatic stress disorder (PTSD).

Drs. Thomson and Jaque have found a higher concentration of PTSD in creative individuals than in the general population (Thomson and Jaque 2015, 2016). Although the reasons behind this are unclear, Dr. Thomson surmised these individuals might be drawn to creative activities because they value the creative experience more, along with the previously noted potential for healing associated with creativity, flow states and creative output. Engaging in creativity might also buffer some of their trauma-related symptoms.

Although creativity might help individuals with adverse experiences cope, sometimes participation in the performing arts can also expose individuals to excessive stress. The traditional culture of conservatories or performance arts tend to propagate shaming practices. Dr. Thomson explained:

This stuff goes deep—I think a lot of the hierarchy in the performing arts may replicate early attachment experiences. If you go to any of the conservatories—at York University I was part of a conservatory program—you audition people, and only a small number get accepted, but all the rest, hundreds, who loved the field, had to do another general program. Then those top ones who are accepted are evaluated every semester and if they start to falter, they are at risk of being kicked out. By the graduating year there's only a few that have completed the program. Becoming a psychologist you see that the people who are faltering are often the people who are coming in with more trauma or more dissociation or more attachment problems. They're more insecure so they less likely to flourish in a threatening environment.

In addition to the excessive pressure, some artistic training occurs in isolated settings or environments—fertile ground for potential emotional, physical, and/or sexual abuse. Much of the abuse is not reported because victims don't want to be expelled from the program. Dr. Thomson explained, “Many in the performing arts have worked with a maestro and choreographer or director who is abusive, and you suck it up because you want the job.”

The combination of vulnerable performing artists, including a large proportion of which have a history of childhood trauma, along with a cloistered and stress-filled culture can limit the creative training of many individuals. These creative individuals can also be more susceptible to shame, and high-shaming environments increase anxiety. This anxiety may inhibit some of the creativity—because if anxiety is magnified, people struggle to move from the anxious beginnings of a performance to the exhilarating flow state.

Dr. Thomson thus aims to create a safe space, one that is accepting and committed to all the students, that allows these individuals to thrive. She described, “We said ‘We're accepting you, and we're going to train you for three years. We're not going to kick you out. We're dedicated to training you.’ And people started doing a whole lot better.”

## Conclusion

Within the work of Dr. Thomson and Dr. Jaque, we find views on creativity that are uniquely important to consider within our often chaotic, challenging, fast-paced, and stressful world. Their work spans psychology, physiology and the performing arts, frequently recalling the human-centered reasons for creative engagement and its importance for wellness, healing, and human expression. Creativity is often discussed in instrumental ways, as a kind of critical problem-solving approach for the twenty-first century. In this series we have sometimes noted this rationale, which has validity. But it is just as critical to recognize the value in creative experience and action as something that is integral to our humanness, and to our sense of purpose, wellness, and ability to thrive in the world.

This also becomes an important area for education. As schools increasingly focuses on certain kinds of achievement alone, they may inadvertently ignore the emotional needs of their students, especially those at risk. Clearly, content will always be important, but when it is embedded in policy or curricula that strip away opportunities for expression and creativity, it fails to address students as whole people with social and emotional aspects.

Beyond its relevance to schooling, Drs. Thomson and Jaque's work signals the need to pay attention to the nature of creative experience more generally, both in academic research and in our own lives and thinking. Creativity is deeply connected to flow experience, which is a kind of optimal way of being connected to happiness and wellbeing (Csikszentmihalyi 1990), as well as to healing. Creativity also relates to what it means to be human—to express and create the world around us. In a world that often pushes us from task-to-task or leaves us reeling from the distractions of technology, news, and culture—there may be no better reason for creative engagement than in providing a safe and harmonious space to connect with our humanity.

**Acknowledgements** The Deep-Play Research group is a loose collective of faculty and graduate students at Arizona State University, California State University, and Michigan State University. Participants include: Danah Henriksen, Sarah Keenan-Lechel, Rohit Mehta, Punya Mishra, Carmen Richardson & Melissa Warr.

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

## References

- American Psychiatric Association. (2013). Dissociative disorders. In *Diagnostic and Statistical Manual of Mental Disorders* (5<sup>th</sup> ed.). Washington: Author. <https://doi.org/10.1176/appi.books.9780890425596.dsm08>.
- Asakawa, K. (2010). Flow experience, culture, and well-being: How do autotelic Japanese college students feel, behave, and think in their daily lives? *Journal of Happiness*, 11(2), 205–233. <https://doi.org/10.1007/s10902-008-9152-3>.
- Brewer, J. A., Worhunsky, P. D., Gray, J. R., Tang, Y. Y., Weber, J., & Kober, H. (2011). Meditation experience is associated with differences in default mode network activity and connectivity. *Proceedings of the National Academy of Sciences*, 108(50), 20254–20259.
- Crust, L., & Swann, C. (2013). The relationship between mental toughness and dispositional flow. *European Journal of Sport Science*, 13(2), 215–220. <https://doi.org/10.1080/17461391.2011.635698>.
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York: Harper Collins.
- Danckert, J., & Merrifield, C. (2018). Boredom, sustained attention and the default mode network. *Experimental Brain Research*, 236(9), 2507–2518.
- Morgan, C. A., 3rd, Rasmusson, A. M., Wang, S., Hoyt, G., Hauger, R. L., & Hazlett, G. (2002). Neuropeptide-Y, cortisol, and subjective distress in humans exposed to acute stress: Replication and extension of previous report. *Biological Psychiatry*, 52(2), 136–142.
- Morgan, C. A., 3rd, Rasmusson, A. M., Winters, B., Hauger, R. L., Morgan, J., Hazlett, G., & Southwick, S. (2003). Trauma exposure rather than posttraumatic stress disorder is associated with reduced baseline plasma neuropeptide-Y levels. *Biological Psychiatry*, 54, 1087–1091. [https://doi.org/10.1016/S0006-3223\(03\)00433-5](https://doi.org/10.1016/S0006-3223(03)00433-5).
- Mosing, M. A., Pedersen, N. L., Cesarini, D., Johannesson, M., Magnusson, P. K. E., Nakamura, J., et al. (2012). Genetic and environmental influences on the relationship between flow proneness, locus of control and behavioral inhibition. *PLoS One*, 7(11), e47958. <https://doi.org/10.1371/journal.pone.0047958>.
- National Survey of Children's Health. (2011/2012). Data query from the Child and Adolescent Health Measurement Initiative, Data Resource Center for Child and Adolescent Health website. Retrieved from [www.childhealthdata.org](http://www.childhealthdata.org). Accessed 7 Jan 2019.
- Thomson, P., & Jaque, S. V. (2015). Posttraumatic stress disorder and psychopathology in dancers. *Medical Problems in Performing Arts*, 30(3), 157–162.
- Thomson, P., & Jaque, S. V. (2016). Visiting the muses: Creativity, coping and PTSD in talented dancers and athletes. *American Journal of Play*, 8(3), 363–378.
- Thomson, P., Keehn, E. B., & Gumpel, T. P. (2009). Generators and interpreters in a performing arts population: Dissociation, trauma, fantasy proneness, and affective states. *Creativity Research Journal*.
- Vessel, E. A., Starr, G. G., & Rubin, N. (2013). Art reaches within: Aesthetic experience, the self and the default mode network. *Frontiers in Neuroscience*, 7, 258.
- Warr, M., Henriksen, D., & Mishra, P. (2018). Creativity and flow in surgery, music, and cooking: An interview with neuroscientist Charles limb. *TechTrends*, 62(2), 137–142. <https://doi.org/10.1007/s11528-018-0251-3>.