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Listening to my Body: Interoception through Gaga Movement Language

Lynette Fisher
University of Florida

Faculty Mentor: Joan Frosch, School of Theatre and Dance

Abstract

As an embodied species, the basis of human emotion lies within the physiological body. The internal state of the body, determined by activity from the viscera, must be perceived by the bidirectional communication between the mind and the body through a process known as interoception. As an emerging area of research, interoception suggests that the perception and awareness of internal organ function contributes to empathy and emotional regulation. Improving interoceptive awareness presents clinical opportunities in the treatment of diagnoses that involve emotional dysregulation such as anxiety and depression. Due to the introspective nature of Gaga movement language, a movement style within the field of dance, Gaga classes can provide potential therapeutic mechanisms for improving interoceptive awareness. Dance practices intrinsically utilize interoception by using the body as an outward expression of inward sensations. However Gaga classes, offered for both dancers and non-dancers, elicit movement from an attention to the body's internal physiology. Viewed from an analytical perspective and enhanced by a personal account, Gaga language and its particular emphasis on deep listening to the body can facilitate interoceptive awareness and expand the current literature on interoception in emotional regulation.

Keywords: interoception, interoceptive awareness, Gaga movement language, dance

Introduction

Emotion is the foundation of the human experience. The happiness felt holding a baby, the sadness over losing a loved one, or the fear looking down from the top of a skyscraper all begin with cues from the body. The body is constantly speaking to us through signals that the mind interprets as emotion. If we learn to listen closely, we may notice that the hormones traveling in our blood give us the euphoric feeling of falling in love, a racing heart tells us that we are scared, and the hollow feeling in our gut indicates that we are sensing loss.

The nuanced perception of the internal bodily state is known as interoception. Interoception involves the bidirectional communication between the mind and the body to subconsciously assess and make meaning of the body's visceral activity. The mind summates and appraises internal signals such as pain, temperature, heartbeat, and blood flow to produce emotional

experience (Craig, 2009). Interoception is linked to self-identity, time perception, decision-making, and most importantly, emotional regulation.

Emotional regulation through interoception occurs because the body must interpret signals and produce appropriate behavioral responses. A lack of interoception is linked to emotional dysregulation and psychological disorders such as anxiety and depression (Price & Hooven, 2018). While much interoception occurs subconsciously, an emerging area of research seeks to uncover the clinical uses of conscious interoceptive awareness. However, current literature acknowledges the lack of available mechanisms to study and increase interoception (Price & Hooven, 2018). Although there are some known techniques such as Cynthia Price's Mindful Awareness in Body-Oriented Therapy, the existing body of research has yet to fully explore the potential of specific methods in dance practices to enhance interoception.

Dance intrinsically requires interoception because the body functions as the outward expression of inward sensations. Studies show that dancers actually have increased interoception compared to controls (Christensen et al., 2017). One particular subculture of dance that explicitly emphasizes listening to the body is Ohad Naharin's Gaga movement language. Accessible to both dancers and non-dancers, Gaga classes encourage the exploration of movement initiating from inside the body. Unlike many dance forms, Gaga movement language discourages the use of a mirror to check the outer form of the dancer. Rather, Gaga classes seek to promote a deep listening to internal sensations. Thus, Gaga movement language may be a valuable vehicle offered by the field of dance to improve and study interoceptive awareness.

Listening to the Body through Interoception

According to the Schachter-Singer theory of emotion, bodily cues are the basis for emotional experience (Schachter & Singer, 1962). The emphasis on the body in the production of emotion has gained scientific support within the last century, pointing to the importance of interoception in the human experience (Craig, 2003). Interoception is the perception of internal sensations from the body related to organ function (Craig, 2003). It involves the bi-directional communication between the body's somatic markers and the mind's interpretation to produce emotional responses (Herbert & Pallatos, 2012; Price & Hooven, 2018). While it is often a subconscious process, interoceptive awareness is the conscious portion of interoception that allows cognitive appraisal of the somatic state (Price and Hooven, 2018).

Recent studies show that interoception allows not only personal perception of emotions, but also the interpretation of others' emotions (Fukushima et al., 2011). One theory proposes that the brain represents other people's experiences in terms of self-experiences through the notion of embodied empathy (Decety & Sommerville, 2003). To test whether empathy requires interoception, a 2011 study conducted by Fukushima, Teresawa, and Umeda compared heartbeat-evoked potential (HEP) scores in subjects engaged in empathetic activity to those that were not engaged in empathetic activity. The researchers found HEP scores by averaging electroencephalography waveforms corresponding to the R-peaks; R peaks reflect cortical areas such as the insula that are involved in interoceptive processing. HEP scores correlated to empathy scores, demonstrating that cardiac monitoring in the brain is involved in processing the affective state of others and linking interoception to empathy (Fukushima et al., 2011).

An area of the brain known as the insula contains interoceptive representation of the body's physiological condition as determined by activity of the viscera (Craig, 2009). The insula interprets the internal state of the body through the summation of stimuli such as activity form the autonomic nervous system, heart rate, respiratory rate, thirst, pain, itch, temperature, immunological responses, hormonal balances, and movement in the digestive tract. The insula considers all of the processes that occur in the body and in turn, we experience cognitive emotion (Craig, 2009).

Brain imaging of the insula allows the tracking of human activity that utilizes interoception (Craig, 2009). The insula shows activity during movement and while listening to music, suggesting that interoception is associated with kinesthetic awareness and perception of rhythms. As an embodied species, the insula activates in order to conceptualize the idea of self, which relies on our ability to recognize and appraise our internal bodily state. The insula is also involved in time perception, attention, decision making, and emotional regulation (Craig, 2009).

Interoception as the Key to Emotional Regulation

Emotional regulation depends on the accurate assessment of the body's internal state to develop an appropriate emotional response (Price & Hooven, 2018). Emotional responses allow us to adapt to our changing environments in a manner that supports a healthy, homeostatic balance. Proper regulation promotes wellbeing, social connection, and a coherent relation to the self (Herbert & Pollatos, 2012). On the contrary, emotional dysregulation involves maladaptive

emotional responses. Intense and persistent dysregulation is linked to psychological disorders such as anxiety, depression, aggressive disorders, PTSD, alexithymia, and eating disorders (Herbert & Pollatos, 2012; Price & Hooven, 2018).

Stress exacerbates emotional dysregulation. Prolonged periods of stress make the body's stress response system become less responsive (Price & Hooven, 2018). Studies conducted by Schulz and Vogele in 2015 suggest that stress alters the intensity of internal sensations as well as the body's interoceptive ability to respond to stress. However, strong interoceptive awareness allows individuals to preemptively prepare at the onset of stressful events (Price & Hooven, 2018). Therefore, building interoceptive awareness presents clinical opportunities to build emotional awareness and re-shape emotional responses.

Despite the therapeutic potential of increasing interoceptive awareness in certain psychological disorders, methods for teaching interoceptive awareness are not well established (Price & Hooven, 2018). One currently used method proven effective is Mindful Awareness in Body-Oriented Therapy (MABT) developed by Cynthia Price in the1980's. The approach begins by teaching clients *body literacy*, a reflective listening to the body while learning to verbally articulate internal experiences. The next step in MABT brings attention to inner sensations by feeling the movement of breath travel through the body, softening of muscular tissue, and bringing awareness to localized areas of the internal body (Price & Hooven, 2018). The techniques used in MABT parallel common techniques used in dance practices. Therefore, the field of dance can offer another vehicle for teaching interoceptive awareness.

Dance and Interoception

Dance requires inward elicitation of emotional states and the immediate projection of those states onto the moving body. Dance therefore intrinsically builds kinesthetic and, potentially, interoceptive awareness. Using the heartbeat tracking method, a recent study demonstrates that professional ballet dancers have increased interoceptive accuracy compared to controls (Christensen et al., 2017). The heartbeat tracking method consists of participants counting their own heartbeat over fixed time periods without checking their physical pulse (Ainley et al., 2012). The difference in the participant's estimated values and the actual values recorded by an electrocardiogram functions as the index of interoceptive accuracy. Utilizing this method, the study found that years of experience have a positive correlation with interoceptive awareness. There was a statistically significant difference ($p<0.032$) between average interoceptive accuracy

scores of dancers with a mean of 23 years of experience and dancers with a mean 14.1 years (Christensen et al., 2017).

Like ballet, most dance forms such as modern, West African, hip hop, ballroom, and Latin dance require an understanding of one's own body and subconsciously build interoception as a byproduct. Beyond the scope of dance, athletes in general seem to have increased interoceptive accuracy (Faull et al., 2018). However, unlike other dance and athletic forms, Ohad Naharin's Gaga movement language explicitly brings awareness to internal sensations. While many dance forms encourage using mirrors in rehearsals or have the goal of achieving aesthetic movement for performative purposes, Gaga movement language serves solely as a personal movement workshop. Classes invite improvised movement with the goal of individualized exploration of one's body. Rather than focusing on outward appearance, Gaga movement classes center on the foundation of interoceptive awareness: listening to the body.

Gaga Movement Language and Interoception

Israeli choreographer Ohad Naharin started the development of Gaga movement language when he became artistic director of Batsheva Dance Company in 1990 (Vasileva, 2016). Rooted in his curiosity for movement, Naharin developed Gaga classes to enhance company training, facilitate mutual support within the group, and serve as a form of mental and physical recovery (Vasileva, 2016). According to the Gaga movement language official company website, the classes were originally meant as a supplementary movement laboratory for the company members, but they became open to the public in 2001 (Gaga Movement Language). Gaga classes take on two tracks: Gaga/dancers and Gaga/people. In both tracks, Gaga movement grounds itself in encouraging an openness to "listen" to internal sensations the dancer creates in the body. In Gaga classes, dancers generate movement though an awareness of the messages and needs of the body.

Gaga/people classes are about one-hour in length and open to anyone 16 years of age and up (Gaga Movement Language). Since they require no prior dance experience, Gaga/people classes are accessible to everyone regardless of physical proficiency. The official company website states:

Gaga/people classes offer a framework for users to connect to their bodies and imaginations, experience physical sensations, improve their flexibility and stamina, exercise their agility and

explosive power, and enjoy the pleasure of movement in a welcoming, accepting atmosphere. (Gaga Movement Language)

Similarly, Gaga/dancer classes function under the same principles but differ in that they utilize vocabulary and forms derived from ballet. An hour to an hour-and-fifteen minutes in length, the classes aim to deepen dancer's awareness and unlock new movement possibilities (Gaga Movement Language).

During a personally conducted interview with certified Gaga instructor Maree McMalia, McMalia said that instructors have a lot of freedom in how to run each class while staying within the work instructions set by Naharin. McMalia guides the direction of her classes by sensing the unspoken feedback, energy, and needs of the people in the room. Although each instructor offers a unique perspective, each class follows the specific work instructions outlined by the Gaga website. For example, Gaga classes facilitate continuous movement in order to maintain some degree of physical activity throughout the duration of class. The restorative nature of Gaga classes encourages participants to take care of their body's limitations and restrictions. Instructors layer verbal directives to create a multidimensional palette of information in which to move from. Participants should dance barefoot and remain silent unless otherwise encouraged to vocalize. Moving with open eyes invites inspiration from other movers in the room. Most importantly, classes focus on listening to the body.

The somatic exploration that Gaga classes invite increases somatic awareness, proprioception, knowledge of the body's volume and capabilities, and interoceptive awareness. The capacity in which Gaga classes bring attention to the internal state relies on verbal instructions and fluctuations in physical effort. These two mechanisms encourage inner listening to the body in a manner that makes Gaga movement language the optimal tool for learning interoceptive awareness.

Gaga Vocabulary: Sensationally Sensory

Gaga classes progress through verbal prompts of the teacher. The vocabulary used does not dictate strict bodily positions such as arabesques, but rather it invites open interpretation from participants (Katan, 2016). Directives often utilize a rich vocabulary imbued with sensory imagery and anatomical terminology such as "move as if you are floating," or "feel the rope of the arms." The instructions invite movement exploration by providing a framework for individual improvisational choices. Words such as molecules, blood, bone, muscle, flesh, and

organs turn attention inward to the body's physical structure. Verbal cues call attention to the distance between body parts, the friction of the skin on the bones, and the varying densities of tissues. Instructors encourage and remind participants to be available to listen to their bodies through the constant guidance of the words in, into, and inward (Vasileva, 2016). The commonly used phrase, "notice the traveling stuff inside," brings awareness to the internal signals that are integral to interoception.

Gaga classes also bring attention to localized areas of the body that may go unappreciated in daily life. By instructions that encourage the movement of the flesh between the thighs or behind the knee, participants notice the entire body from inside-out. As part of listening to the body, participants should bring attention to areas of tension. Knowing the problem areas of the body and giving direct attention to those areas allows people to be in tune to the body's feedback and to engage in a restorative somatic experience. Gaga classes provoke a connection between the mind and the body that encourages reflection of somatic processes and movement forms (Katan, 2016).

Gaga Effort: Peaks and Valleys

Interoception functions to interpret bodily conditions, therefore, it is important to build interoceptive awareness through the elicitation of various internal states. McMalia says Gaga classes utilize peaks and valleys in effort. Elicitation of valleys can occur through "feeling floating sensations" or by feeling calmness in the body. From valleys, gradual increases in physical exertion lead to peaks in effort. One way of accomplishing maximum effort consists of the class counting backwards from ten in unison. Community encouragement amps the level of personal bodily effort, and a brief pause in movement directly follows maximum efforts. In the physical silence, participants can feel the echo of movement throughout their bodies. Standing with wide arms, they can feel the sensation of the excited body through the blood flowing rapidly and the heart pounding strongly. Noticing these physiological changes allows participants to truly listen to their bodies.

Physical exertion activates the same processes involved in the activation of the sympathetic nervous system. Gradual increases in effort allow participants to become aware of how their body responds to various levels of stress. The interoceptive awareness reached while taking class familiarizes the mind and body to a range of sensations from calmness to stress. The mind can

then better interpret and understand the stress signals during times of trauma through increased interoceptive awareness (Price & Hooven, 2018).

A Self-Reflection of Gaga Movement Classes

Gaga classes usually occur live. However, during the circumstances of Covid-19, Gaga instructors temporarily livestreamed classes through the online platform of Zoom. Certified Gaga instructors livestream eight classes daily from New York and Tel Aviv. In the midst of a stay at home order in a global crisis, Gaga classes provide an escape from the stress of isolation. Even through an online platform rather than in-person participation, dancing with over 600 other online participants imbues a sense of community and unison.

The author of this paper participated in a series of livestreamed Gaga classes in order to better support the research. In response to the classes, the author provides a self-reflection:

Partaking in livestreamed Gaga/people and Gaga/dancer classes facilitated my personal exploration of interoceptive awareness and it allowed me to familiarize myself with the language used by instructors. Even after 18 years of dance training, the unique nature of Gaga classes promoted discoveries of nuances in my movement qualities and pathways. I deepened my understanding of the connectivity and continuity in my own body that makes moving one body part influence movement in the whole body. For example, when the instructor gave the directive, "Shake the pelvis and allow the limbs to respond," I discovered the cause and effect of the pelvis initiating movement that radiates momentum up the trunk, through the length of the arm, and out through the fingertips.

Gaga classes' unique emphasis on internal focus allowed me to notice physiological sensations in which few other classes have brought attention. Although many dance classes deliver the same level of exhaustion, few classes instruct dancers to notice the sensations of fatigue. In Gaga classes, however, I stood with wide-arms and felt the force of my heart pumping blood throughout my body and the expansion of my lungs with every restorative breath. From feeling the internal intensities of exertion to the calmness of relaxation, my experience with Gaga movement classes not only improved my movement range and maturity, but also my awareness of my own internal body, its needs, and its capabilities.

As demonstrated through the author's personal reflection, Gaga movement classes provide opportunities of self-discovery. The improvisational basis of Gaga movement allows the

development of interoceptive awareness on a personal level that can impact anyone regardless of technical proficiency.

Conclusion

As an embodied species, the basis of human emotion lies within the physical body. The internal state of the body, including activity from the viscera, must be assessed through a process known as interoception in order to experience emotion. The insula's role in interoception facilitates the perception of somatic signals such as satiety and pain that eventually result in emotional and behavioral responses. In addition to the generation of emotion, interoception also operates in many other cognitive processes such as time perception, decision making, and kinesthetic awareness.

The concept of self and the ability to empathize rely on the interoceptive ability to recognize one's own physiological state and the physiological states of others. Likewise, emotional regulation relies on the accurate assessment of the internal state and the production of appropriate emotional responses. Persistent emotional dysregulation is linked to deficits in interoception and can lead to a variety of psychological diagnoses. Learning interoceptive awareness can therefore be used in clinical settings to ameliorate the emotional dysregulation involved in diagnoses such as anxiety, depression, PTSD, and eating disorders.

Although some known therapies exist, such as Cynthia Price's MABT, current literature recognizes the deficit in effective methods for teaching interoceptive awareness (Price & Hooven, 2018). Price's effective therapeutic technique utilizes many aspects that are common in dance practices, including enhancing the awareness of breath and the ability to articulate somatic states. Unsurprisingly, studies show that dancers have increased interoceptive awareness compared to controls (Christensen et al., 2017). This discovery not only concretizes the therapeutic potential of dance, but also indicates a critical next step: the discussion of styles of dance which may provide the most benefits in building interoceptive awareness.

Ohad Naharin's Gaga movement language presents a vehicle for interoceptive therapy. By developing two streams of instruction— Gaga/people and Gaga/dancers—Naharin rendered Gaga classes accessible not only to dancers but also to the interested non-dancer. The verbal language used in both sets of Gaga classes is characterized by rich imagery that encourages

awareness of the internal body. Peaks and valleys in effort allow the body to discover ranges in physiological states in a manner that primes the body to preemptively respond to stress.

Gaga movement language can bridge the gap between the knowledge and ability to assess interoception for therapeutic purposes. This paper, which could be considered a critical first step, is qualitative and rooted in the authenticity of personal embodied experience. However, the lack of quantitative data limits the study. Therefore, further investigation must be undertaken to determine how many classes are necessary, among other factors, and to what degree Gaga classes may definitively improve interoceptive awareness. The body speaks through the language of internal sensations and Gaga classes may be the movement language that gives the opportunity to listen.

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