ETHEREAL ALCHEMY:

EXPLORING THE EMOTIONAL BALANCE

THROUGH BODY-MIND SYNERGY

By

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Abstract

As modern society becomes increasingly digitized, people often grapple with complex emotions, struggling to find a healthy outlet to express and release their feelings. This project proposes a holistic approach to well-being, emphasizing the synergy between body and mind. With the primary objective of offering an emotionally healing experience, the project aims to guide participants toward a state of emotional equilibrium through expressive body movements and interactive media experiences. The investigation explores the interconnected philosophy of body-mind monism in both Eastern and Western traditions, drawing parallels between *Traditional Chinese Taoism* and *Dance/Movement Therapy* (DMT)'s shared pursuit of balance. Through this body-mind interconnectedness, experimental analyses delve into the intricate relationship between motion and emotion using the *Laban Movement Analysis* (LMA) and Russell's *Circumplex Model of Affection* (CMA). Additionally, the study incorporates principles from positive technology, examines case studies of emotion visualization and experiences prompting inner reflection, and integrates insights from the process model of emotion regulation in psychology, aiming to identify effective media methods capable of influencing one's mental state. The expected project will be an emotional healing experience for the audience to find an emotional state of Balance through Expressive Body Movement and Interactive Visual Experience.

Keywords: Interactive Media Experience Design, Healing Experience, Dance/Movement Therapy, Taoism Philosophy, Positive Technology.

1. Introduction

In the current age of the internet, there is an ongoing trend of people seeking the assistance of the internet for emotional venting and the need for emotional relief. This caused the increasing prevalence of virtual products and a healing economy designed to facilitate emotional well-being. Offerings such as "Emotions for Sale," where one can purchase a "Good Luck Spray" or order a "Good Night SMS" for 1 Yuan or half a Yuan, have gained traction in online spaces. This trend of people reaching out to the virtual space and products for emotional healing shows a growing emphasis on mental well-being among the digital generation, highlighting their need for emotional expression and management.

However, it's crucial to acknowledge that these digital solutions offer only surface-level, temporary relief and are not comprehensive, long-term solutions for emotional well-being. Searching into the possible solutions for pursuing well-being, I recognized that in the traditional Chinese culture, holistic well-being encompasses both physical and mental health, yet there is a distinction between hospitals and psychological clinics in Western culture. Intrigued by this perspective, the study explores possible ways to assist individuals in pursuing holistic well-being through body-mind connectedness and seeking cultural connections. This involves an examination of cultural philosophies on the body-mind relationship in both Eastern and Western contexts, exploring related practices and their potential impact on emotional well-being.

2. Literature Review

There has been a long history of studies on the relationship between the body and the mind. Western thoughts have often approached this problem from a dualistic perspective. By either omitting one of them or analyzing them separately, this approach avoided the difficulty of explaining the complex interactions between the two entities. In the 18th century, German philosopher Christian Wolff first proposed the term monism to explain all phenomena with one unifying principle, saying that body and mind exist together as a single entity. In contemporary

philosophy and the scientific community, there is a predominant trend toward a form of monism, emphasizing the body-mind connection. There is a growing popularity of holistic medicine, exemplified by the Dance/Movement Therapy (DMT) started by Marian Chace and Body-Mind Centering (BMC) by Bonnie Bainbridge Cohen in the 20th century, using experiential and movement-based practice to enhance body awareness and promote not only physically, but mentally, emotionally, and spiritually well-being (Gordon, 1982).

These contemporary Western medical and practical theories resonate with the Traditional Chinese Medicine and Philosophy thoughts. Different from the history of Western philosophies, Chinese philosophy has long emphasized the inherent unity and conformity of the body and the mind. In the 6th century BCE, Tao Te Ching implied the togetherness of body and mind, and later on, Mozi defined the body-mind relationship that 'to be alive' implies a union of the physical body and sentience ((Lao & Walker, 2020; Mozi, 300BCE, as cited in Zhang, 2007). In addition to the philosophical thoughts, many medical practices in traditional Chinese Medicine also pursue a holistic system that includes acupuncture, dietary therapy, and exercises such as tai chi and qigong. It is based on the concept of balancing the flow of vital energy (气, qi) in the body to maintain health. This idea is exemplified by Chinese Traditional Taoism.

Originating from distinct cultural and historical backgrounds, Western Dance/Movement Therapy (DMT) and Chinese Traditional Taoism share a scientific and philosophical foundation in the interconnectedness of the body and mind, aiming to help people promote overall well-being encompassing body, mind, and spirit. They all incorporate movement and meditation practices as integral components of the healing process, which helps individuals to bridge the gap between their mental and physical experiences, gain a deeper understanding of their inner selves, and find a balance between the physical and the mental aspects of human existence. Despite their founded theories and practices, they also have a similar pursuit to the ultimate goal of the state of being. For Taoism, "Tao" (道, Dao), also means "technique" and "principle", and represents a harmonious state emphasizing the balanced togetherness of all substances — to get unified with nature and the cosmos as a harmonious equilibrium. As stated in the Tao Te Ching, the ultimate goal of Tao is "returning to the source" (Lao & Walker, 2020), meaning a balanced state of being, as well as a union and holistic interplay between the physical and the mental aspects of human existence. Similarly, the essence of dance and movement is "back to a state of

zero" (Tao, personal communication, Oct 12, 2023), which signifies returning to a neutral and balanced state. It suggests being like a blank canvas, emphasizing an open and receptive existence where one is free to explore and express without the influence of excess or imbalance. Both theories recognize that achieving a state of balance is integral to holistic well-being, aligning with the interconnectedness of body and mind. This shared emphasis on balance underscores a universal understanding of equilibrium as a foundational principle for attaining a harmonious and healthy existence.

Though similarly pursuing the state of balance through the interconnectedness of body and mind, there are some differences between the two philosophies. In Taoism, Qi (气, breath) is the interplay that carries the flow of energy connecting the mind and the entire body, while differently, DMT regards emotions as the interface between the body and mind, and saying that emotions are perceived as simultaneously somatic and psychic (Chodorow, 1995). Despite their different concepts — Qi in Taoism and emotions in DMT, these two perspectives are intrinsically linked. Chinese traditional medicine, as exemplified by Huangdi Neijing points out that "anger (is) the Qi movement surging upwards" as an example, highlighting how a specific emotion corresponds to distinct Qi movements within the body (Huang, 200BCE, as cited in Lee, 2017). This cyclical interaction between emotions and Qi exemplifies the close relationship between these concepts, further emphasizing the interconnectedness of the body and mind in both Taoism and DMT. For my project, initially focusing on solving the emotional issue of the people, I would focus on the emotional aspect of this interplay, and stress the emotional expression and feedback for the experience.

With emotion lying in the center of body and mind, and the object of guiding users towards a state of balance through the expression of emotions via body movement and new media technologies, the convergence of Profound Emotional Experience and Positive Technology theories becomes pivotal.

The concept of profound emotional experience is characterized by intense and vivid feelings of emotional engagement(Stange and Taylor, 2008). Kitson's observation shows that this experience is linked to the Set and Setting of participants, which means the mindset (set) and physical-social environment (setting) of the place where the interaction is happening (Kitson,

2020). In immersive experience design, such as virtual reality or immersive meditation practices, the establishment of Set and Setting involves a gradual mood transition to the media experience, and crafting a positive physical environment including elements like dim lights, nature sounds, and calming features. This approach resonates with Höök's concept of an "affective loop", where users are engaged both cognitively and physically to amplify the emotional impact of a technological product (Höök, n.d. as cited in Lee, 2022). She describes this loop as: 1. physical interaction for user's emotional expressions; 2. The system responds by generating affective expression; 3. The responses in turn affect the user (both mind and body) making the user respond and step-by-step feel more and more involved with the system (Höök, n.d. as cited in Lee, 2022). Both the "Set and Setting" theory and the idea of the "affective loop" highlight the interplay between the user's physical environment, mindset transition, and affective interactions in shaping profound emotional experience.

Within this interaction, Positive Technology plays a central role in facilitating a positive Profound Emotional Experience with its ultimate goal of creating opportunities for engagement and self-reflection. The core elements of Positive Technology are "emotional affordance" and "epistemic affordance", which illustrate emotional involvement and the trigger of inner reflection and transformation (Andrea, 2016). Examining the case study on inducing emotions of awe and elevation underscores the effectiveness of using nature or supernatural experiences in eliciting the desired emotional responses (Andrea, 2016). Additionally, the comparison of the two types of immersion: embodied immersion (simulating reality) and empathetic immersion (abstract metaphors), shows that abstract metaphors or unreal scenes are more effective in evoking a mental experience through imagination and empathy, allowing the users to feel more bodily presence and emotionally affected (Zhang, 2017). These insights indicated the effectiveness of creating an abstract nature-inspired or supernatural visual experience to create an emotionally resonant experience.

The above literature review studied the body-mind relationship from both Western and Eastern philosophies. This exploration extends into the medical realm, highlighting the effectiveness and practicality of leveraging the body-mind synergy to foster holistic well-being. Additionally, the Chinese Traditional Taoism and Dance/Movement Therapy are analyzed, providing a cultural background and establishing the core of emotional equilibrium for the project. Finally, the study

of creating a profound emotional experience through positive technology is conducted to better engage with the user's emotions. With these insights into philosophy, culture, and technology for the experience of emotional balance and holistic well-being, I aim to build a physical, immersive, and interactive experience that integrates user body movements with the design of a new media environment. Through user participation, this immersive experience aims to facilitate emotional expression, ultimately fostering a sense of balance and overall well-being.

3. Methodology

In the anticipated user experience, participants are encouraged to use their body movements to express their emotions and interact with the visual environment. Through the interaction, the users are expected to gain self-awareness and perceive a harmonious emotional state while gaining a deeper understanding of Taoist philosophy. With positive media technologies applied to enhance this physical body movement experience, the physical and digital spheres coexist and continually inform one another, taking the exploration of emotional well-being to new dimensions. According to Broadhurst, it is through delving into the interaction with digital movement data and the visualization of emotional states, that the audience can foster awareness of both physical and emotional facets (Broadhurst, 2009). To achieve my envisioned goal, my research question focuses on understanding how a media experience can effectively visualize and influence an individual's emotional state, and how to draw meaningful connections between the physical body motion with the spiritual emotion through digital data and media.

To address the research questions and bridge the theoretical insights with practical application, I employed case studies and experiments as my methodology. In the case studies, I examine some existing artworks related to meditation and emotional experiences, which helps me to understand how other artists approach experience design related to physiology and mental aspects. I then conducted a two-phase experiment to draw connections between motion and emotion. The experiment includes data collection and analysis of participants' body movements of several

specific emotions, and a survey asking participants their subjective interpretation of some deconstructed body movements. Combining quantitative and qualitative data, the experiment helps me to form a holistic understanding of how individuals perceive and engage with emotional expressions through movement, which contributes to designing the overall user experience and the overarching goal of achieving emotional balance.

My case study mainly focused on projects that address people's emotional and mental state. I found out that the related projects are mainly divided into two categories: 1. The installation responds to audience interactions that prompt the audience to reflect on their inner self; 2. The visualization of emotions using bio-sensors and brainwaves, including real-time visualization and producing a visualization after the experience.

Figure 1. Verstand, *ANIMA*, 2014   Figure 2. Sherwood, *Wooden Mandala*, 2022

The work *"ANIMA"* by artist Nick Verstand and the *"Wooden Mandala",* an interactive experience I observed and engaged in, served as examples for the first type of the work (Verstand, 2014; Sherwood, 2022). Both projects use a visually strong installation to respond to the space, movement, and actions of the audience, offering an exploration of the emotional connection between the user and the entity. Similarly, they both created a sense of mystery and primal, living organisms; *"ANIMA"* employed projected animation with texture and movement, whereas the *"Wooden Mandala"* utilized the sound and movement of the wooden pieces to communicate with the audience. Both artists focus on the interaction between individuals and the artifact prompts contemplation on inner and outer realities, encouraging viewers to reflect on their emotions and consciousness, and hope to transform them into a peaceful heart.
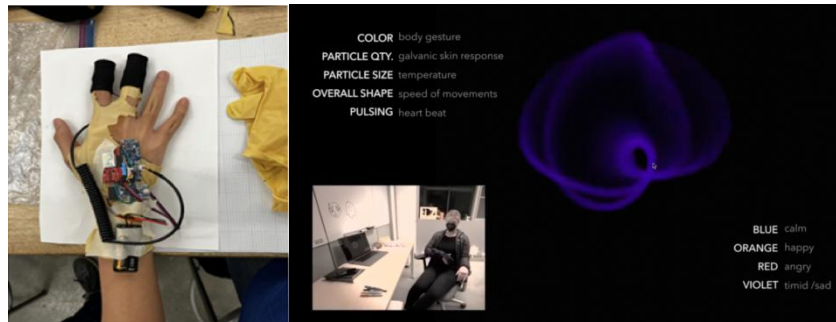
Figure 3 & Figure 4. Koo et al, *Immersive Emotions*, 2022

The second category of the work is exemplified by the project titled *"Immersive Emotions: Translating Emotions Into Visualization"*, which helps people to visualize and express their emotions (Koo et al, 2022). Exploring the correlation between the body and emotion, the project utilizes various bio-sensors as well as motion capture to detect user data, with each data point influencing a specific variable of the visualization. Compared with some other works like *"Eunoia"* that use several sensor factors to influence the general visualization, this project aims to present a clearer transformation of the user's emotional state (Park, 2016). However, from the body movement aspect, the project simplifies movements into hand and elbow postures, categorizing them into four emotions: happiness, calmness, anger, and sadness. This categorization of simplifying the richness of emotional expression feels like a compromise of accuracy and credibility. Overall, the project's continuous circular visualization and rhythmic patterns create a visually soothing and emotionally calming experience, emphasizing the intricate relationship between body movements and emotional states.

In addition to the case study, literature reviews of some movement and affection analysis models are conducted, and then tested in real-life situations through the experiment. Laban Movement Analysis (LMA) draws insights from anatomy, kinesiology, and psychology. It deciphers body movements to understand an individual's characteristics and emotional state, drawing connections between motion and emotion. Within LMA, movement is analyzed with four key dimensions: Body, Effort, Shape, and Space (Bartenieff et al, 2002). Among these, the Effort dimension provides a valuable framework for comprehending and interpreting emotions through an individual's movements. The Effort dimension is further broken down into four factors: Space, Weight, Time, and Flow, each of which has two opposite polarities (Bartenieff et al., 2002). With different combinations of these effort elements, it becomes possible to analyze distinct

psychological characteristics based on the features of an individual's movement. A following study by Lagerlöf demonstrates that emotions can be recognized through movements while extending the principles of Laban Movement Analysis. Their research focused on several basic emotions, including Anger, Fear, Grief, and Joy, and provided specific descriptions of their motion features (Camurri et al., 2003). In contrast, Russell's "Circumplex Model of Effect" mapped a broad spectrum of human emotions on a coordinate system, using axes of pleasure and arousal instead of focusing solely on a few basic emotions (Russell, 1980). A study dedicated to designing gestures for affective expression mapped the Effort characteristics in LMA to the "Circumplex Model of Effect" (Fagerberg et al., 2003). This approach enhances the analysis of the complex and diverse range of human emotions, moving beyond a limited set of basic emotions.
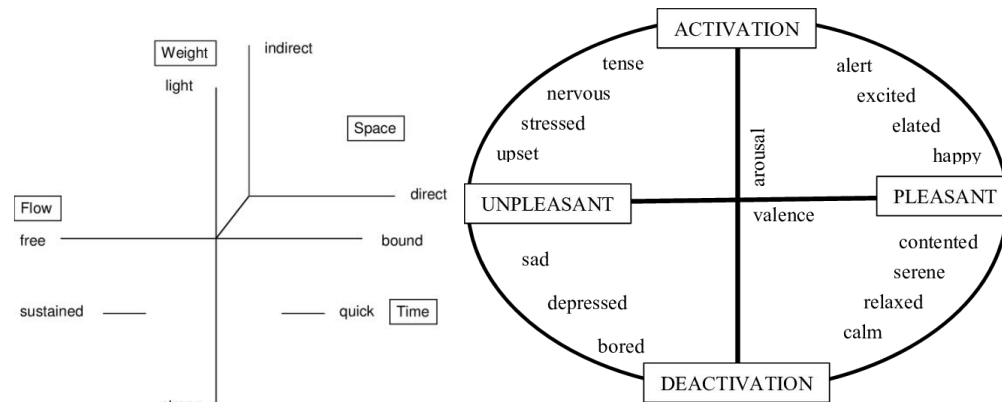

Figure 5. Bartenieff et al., Laban Effort Analysis 2002   Figure 6. Russell, Circumplex Model of Effect, 1980

With this theoretical framework, I tested it out in a real-life scenario with a two-phase experiment to validate the connections between motion and emotion. For the first phase, I researched ways to calculate the kinetic data and derive the emotional state of the user, and I designed a reverse experiment to investigate how different emotional states influence the factors of Laban Effort Analysis. Participants were given scenarios prompting specific emotions, and they expressed these emotions through a 5-second movement, captured by a Kinect sensor. The collected data underwent formulas to calculate into different Laban Effort factors (Samadani et al, 2013) and categorized the results into the two opposite polarities as the result of the analysis.

Aa Name	≡ Weight	≡ Time	≡ Flow	≡ Space	🔗 #peak
Anger	38.2605352884118	138.71781679229508	465.715098817545	4.833333333333333	
Excitement	80.06290789408767	235.69898081956663	534.2876074707488	5.333333333333333	
Happy	45.46122995619795	138.42697434182563	365.0090954206485	5.076923076923077	
Relaxation	29.189750432097654	104.44329172124424	276.39672322660266	6.0	
Tired	19.367706049723157	99.28826173486782	216.40986725643035	5.909090909090909	
Misery	17.81514009925141	107.5301146553214	210.56804106018652	4.846153846153846	

Anger Weight: 38.26 Time: 138.69 Space: 4.83 Flow: 465.71 — Light / Quick / Direct / Bound

Excitement Weight: 80.06 Time: 235.69 Space: 5.33 Flow: 534.28 — Strong / Quick / Flexible / Bound

Happy Weight: 45.46 Time: 138.42 Space: 5.07 Flow: 365.01 — Strong / Quick / Direct / Bound

Relaxation Weight: 29.18 Time: 104.44 Space: 6.0 Flow: 276.39 — Light / Sustained / Direct / Fluent

Tired Weight: 19.36 Time: 99.28 Space: 5.9 Flow: 216.41 — Light / Sustained / Direct / Fluent

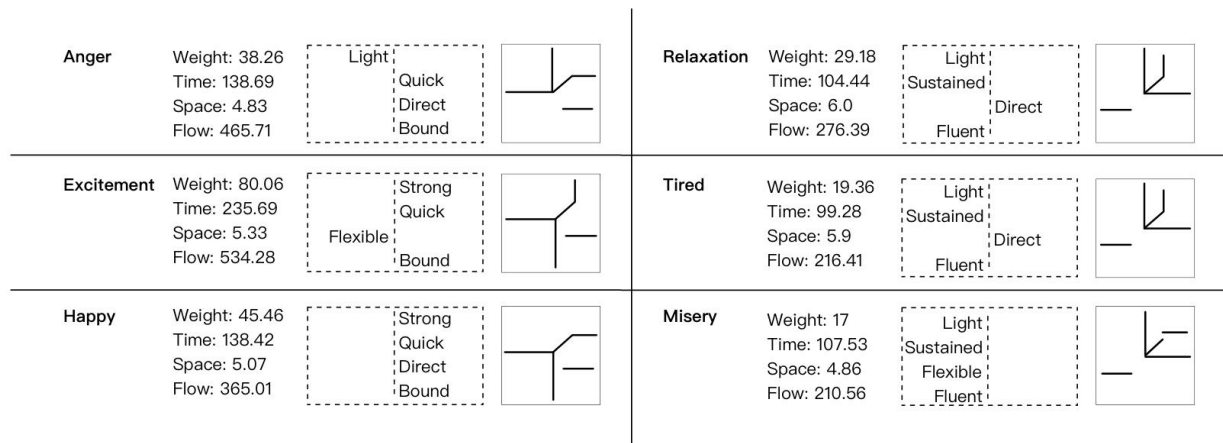**Misery** Weight: 17 Time: 107.53 Space: 4.86 Flow: 210.56 — Light / Sustained / Flexible / Fluent

Figure 7&Figure 8. Experimente data

As the result and analysis shown in the above chart, I compared my result with the existing research about extracting emotion from movement using Laban Effort factors (Lin & Shih, 2015; Tennent et al., 2018). The comparison validated my experimental methodology, with precise alignment on emotions of Anger, Excitement, Relaxation, and Misery, while the two other emotions I experimented with don't have existing research on them (Pleasure and Tired).

In the second phase of the experiment, a survey was conducted where participants were presented with language descriptions and visual representations of basic and deconstructed body movements. These descriptions included actions like bending the elbow and performing back-and-forth or upward-and-downward movements, accompanied by images for clarity. The participants were tasked with associating these movements with specific emotional states. While some participants expressed confusion during the questionnaire, citing difficulty in connecting movements with emotions, the results unveiled distinct connections for certain specific movements. Notably, movements where the arms were stretched were predominantly linked to pleasurable emotions (Excitement, Pleasure, and Relaxation), whereas actions involving a bent

elbow were more frequently associated with arousal-related emotions (Angry and Excitement). Other notable insights included the association of jumping with arousal, and the head emerging as a focal point for cues related to pleasure or displeasure. However, some body parts like the torso and legs, or some body postures like crossing arms were not explicitly tied to specific emotional tendencies by the participants, indicating diverse subjective interpretations among participants.

4. Discussion / Research Findings / Analysis

Through the case study, learning how other artists interpret and present emotional expression through biosensors and physical interactions, I'm planning to combine the two types of case studies above. On the one hand, I would visualize the emotions embedded in the user's body movement, and on the other hand, there will be meaningful interactions between the body movement with the visual effects to leverage the "epistemic affordance", and prompt the self-reflection of the users. The case study inspires me to build the abstract and nature/supernatural visual experience with embedded meaningful interactions drawn from the body movement data.

The result of the dual-phase quantitative experiment and qualitative survey helped me to shape a holistic understanding of how individuals engage and perceive emotional expressions through movement. Its alignment with existing studies shows a strong and valid connection between motion and emotion, implying that it is promising to extract emotion from body movement. Moreover, conducting the experiment and observing the participants acting with different emotional feelings highlights the diversity in individuals' expressions of emotions, showcasing variations in both the way emotions are expressed and their manifestations. The observed variations, coupled with the short duration and intentional nature of participants' performance of the movement in the experiment, suggest that capturing emotions through movement is promising but may pose challenges when individuals are not deliberately expressing their emotions.

The survey holds significance as it delves into the nuanced interpretation of body movements, demonstrating that some emotional connotations are universally interpreted in specific actions, while others exhibit variability due to personal traits and cognitions. This underscores the challenge of comprehending the emotional expression conveyed through body movements, given the inherent diversity in personalized interpretations and subjective expressions.

From this dual-phase experiment, I discovered promising connections between motion and emotion through the analysis of motion-tracking data. While my quantitative experiment demonstrates an effective approach to understanding the link between movement and emotion, I also recognize that the subjectivity of emotional expressions and the extent of emotion exhibitions, coupled with varied human interpretations and psychological cognition, make it difficult for machines to precisely identifying one's emotional state based solely on their movement. This realization led me to understand that both emotion and motion expression are inherently subjective feelings and experiences. This insight inspires me to design a subjective experience where users can freely choose the feelings they want to express and explore, deciding what they wish to feel, and where is the balanced point for them. Drawing from the process model of emotion regulation in psychology, the project seeks to help users identify, accept, feel, express, and explore their emotions, leading to a balanced point of emotional expression. Additionally, with the strong connections between the calculated Laban effort factors and emotional expressions highlighted in the experiment, these factors could be used as parameters to make the interaction more meaningful and aligned with the user's emotional experience.

5. Conclusion & Future Work

In conclusion, the literature review has examined the intricate relationship between the body and mind, and explores its applications in medical practices to promote holistic well-being. The cultural and philosophical studies have provided valuable insights into the core concepts of

finding a balanced state, forming the foundation for the project. The investigation into positive technology and case studies has underscored the importance of designing experiences inspired by abstract elements to enhance emotional and epistemic affordance in experience design. Moreover, establishing a strong connection between the Laban Effort Factors and emotions highlights the potential for creating meaningful interactions that engage both the physical and mental aspects of the audience. The insights into the subjectivity of emotional and movement expression also contribute to making the experience more subjective and user-centered.
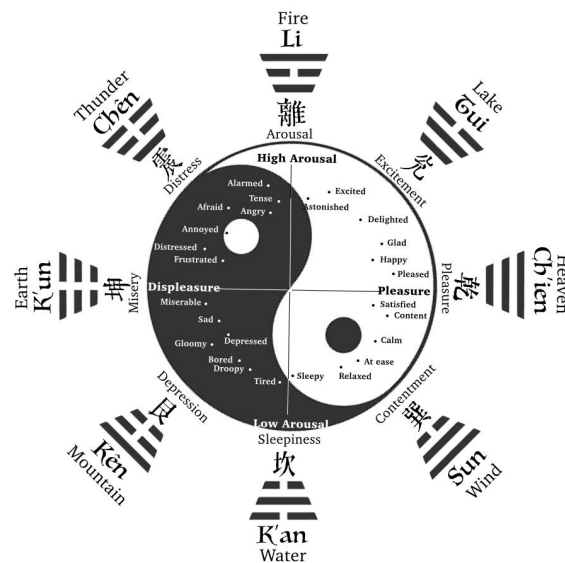
Figure 9: Mapping Bagua with *"Circumplex Model of Affection"*

Inspired by Taoism's philosophy of Bagua, specifically the Eight Trigrams representing different natures of existence, has led to mapping these trigrams with the *Circumplex Model of Affection*. This approach connects different natural systems with emotions, laying the groundwork for designing the visual experience of the project. The proposed project envisions a therapeutic movement experience guided by interactive visualizations inspired by the Eight Trigrams in Taoism philosophy. This aims to facilitate emotional expression and exploration through body movement, ultimately guiding users to find a state of emotional balance.

However, it's essential to acknowledge the inherent limitations. Aiming to enhance the emotional well-being of the audience, long-term intervention of the psychological state could be challenging because it usually requires sustained efforts over a long period. With a short

experience, only short-term influence could be made to improve one's mental state. Consequently, while prospecting to help my users achieve emotional well-being in the long term, I will target the current state of emotional balance, and attain the long-term goal by encouraging the audience to persist in the long term. Recognizing this limitation, the project aims to help people to feel a balanced state of being, promote their understanding of holistic well-being, and spark awareness and motivate users to actively pursue and maintain emotional balance in their long-term well-being journey.

In the next stage of development, I will start exploring with technologies of Kinect for motion tracking, as well as Three.js and projection mapping for visualization. This phase is pivotal in translating the conceptual framework into a tangible, immersive experience, and testing out the project's effectiveness in promoting emotional well-being and holistic balance.

Appendix

1. [Experiement#1 Plan](#)
2. [Experiment#1 Documentation Video](#)
3. [Experiment#1 Raw Data](#)
4. [Experiment#1 Data Calculation Code](#)
5. Calculated Data: [Anger](#), [Excitement](#), [Happy](#), [Tired](#), [Misery](#), [Relaxation](#)
6. [Experiement#2 Questionnaire](#)
7. [Experiement#2 Result](#)

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