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„Ask the Body: Utilizing Dance to Investigate the Effects of Nonverbal Communication of Emotion Experience“

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“So ask the body. It alone knows all you know and it imports little enough of what is known to what we call our minds and hearts...Where is the rule which truly tries? What is done there by what is said?”

- C.H. Sisson, 1984

In honor of my many mothers.

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Introduction

What would the human experience be without emotions? Not a state of apathy, rather, the complete elimination of emotions. I cannot answer this question, nor can I honestly say I desire there to be an answer. Nevertheless, I must ask. Emotions are a quintessential proponent of human exist, yet remain elusive, contradictory, and oftentimes ineffable. Deciding whether to have a second slice of red velvet cake or the decision to quit medical school and enroll in art school, every micro/macro decision one makes in his or her life is influenced by one's emotions one way or another - decisions which are then enacted through movement.

Thus, what would the human experience be without movement? Human movement ventures beyond the pragmatics of survival. Humans move their bodies to express internal states of emotion - an inchoate human experience known as the phenomenon of dance. Globally, humans are moving and grooving their bodies without full comprehension of why they feel the urge to do so. When a baby dances for the first time, she cannot conceive of the why, yet is fully committed to the dance. Humans move their bodies as an experience of themselves. Many choreographers and dancers view dance as a manifestation of one's own consciousness (McGregor, 2012). This phenomenon occurs intrinsically - when the individual is compelled to allow the states within to manifest through the body and into the environment. The influence of the internal on the external has and perhaps will always be the inquiry of brain sciences. Beginning with philosophers postulating about man's inner-workings, specifically emotions, we now have centuries of debates and theories regarding areas of phenomenology and the formulation of ideas such as qualia (Jackson, 1982). Psychology has attempted to demarcate the "what" and "how" of emotions, attributing qualities and classifications (e.g. emotions vs. feelings) based on the observation of behavioral patterns (Ekman, 1974; Plutchik 1980; Frijda, 2002). Neuroscientists have joined the conversation with empirical evidence attempting to link the physiological with the theoretical and behavioral findings about the body and the brain such as the neurological findings of coupled firing of neurons in one's body while viewing another body engage in some form of action (Rizzolatti, 2004).

Contemporary work such as that within the field of cognitive science is currently attempting to marry these and other fields to create comprehensive notions regarding the brain, the body, and ultimately, the human. Yes, scientists recognize that movement is the enactment of internal states. Nevertheless, movement remains a forgotten modality. With

much grounding previously established from the field of empirical aesthetics, this research practices the act of interdisciplinarity by using the body, specifically within the real-world context of dance, as an epistemic approach to further understand the paradigms of emotion as well as nonverbal communication. Uniquely, this thesis approaches knowledge acquisition through the use of the dancing body rather than spoken language, placing the field of artistic practices into the field of scientific practices in order to capitalize on the potential affordances of intertwining the innovative and serendipitous nature of art with the demarcations and explanadas of science. If we can utilize the body to ground perceptions about the external environment, why not use the body to ground perceptions about internal states, such as emotion states? (Noe, 2004).

In this project, we are asking: how effective is dance movement as an apparatus utilized to nonverbally communicate emotion experience. This question begs to know the extent to which an answer can be formulated and to what extent is this relay of emotions accurate. We ask two research questions to support these interests: Can the receiver feel the intended emotions being conveyed from the sender? Can the receiver guess which emotions they are supposed to be feeling?

We hypothesize nonverbal communication, in the context of dance, to be an effective approach in the conveyance of emotion. We test this with two choreographic approaches: one in which the choreographers do not have any explicit forms of verbalized communication with the dancers regarding the emotion intention of the dance and another in which they do. Each group of dancers were asked to share their emotion experiences through the form of questionnaires and interviews. Then those two group of dancers perform the choreographed dance piece for an audience. The audience was then asked to share their emotion experience in the form of questionnaires, as well.

"Our consciousness frequently does not extend to what is going on in our bodies; our consciousness is enacted by what we do with our bodies" (Noe, 2004, pg. 31). The conscious experience and communication of one's emotions can be explored through the explicit actions or movements of the dancing body. With the changes and the voluntary affordances of movement, consequently develops a new evaluative system for various cognitive processes. We chose the nonverbal choreographic approach within the context of dance because the triadic exchange from choreographer, to dancer, to audience is a rare schema in which the body alone is used as a vehicle of expression and thought with little to no use of verbalized language. This thesis makes use of this distinct tripole, as a fertile and advantageous context for behavioral analysis of emotion sharing and nonverbal

communication. With the collaboration and participation of choreographers, dancers, and audience members this thesis offers nuanced contributions to the fields of science and art, both individually and collectively.

Literature Review

Emotions

Defining Emotions

"A definition of emotion can only be a product of theory; it thus can be reached only at the end of the investigation" (Frijda, 1986, p. 1). Therefore, the used definition of emotion will be regarded as a working definition that will be explicated during the investigation of the phenomenon. Nonetheless, Frijda states that there are three key components that should comprise a working definition of emotion: changes in action readiness, physiological changes, and changes in subject-related evaluative experiences.

Action Readiness. Changes in action readiness is not merely an execution of behavior but also the preparedness to achieve a specific result, usually an emotion state (Frijda, 1986). An emotion state is achieved through an executed expressive behavior. Some expressive behavior is defined as active, during which the activational expression of behavior has intentional directedness and responsiveness. For example, usually the expression of fear can be seen in the form of some sort of retreating behavior such as backing away. Other expressive behavior is defined as inhibitory, during which the inhibitional expression of behavior has intentional directedness and non-responsiveness for example an apathetic state usually has little to no response regardless of the stimuli may be (Frijda, 1986). Nonetheless, action readiness mainly pertains to external the engagement of body; yet, what is occurring within the body?

Physiological Changes. Inevitably, the physiological changes in the body are a major proponent of the characteristics of an emotion. When she hears that a loved one was killed in a car accident the autonomic responses of a change in heart rate, respiration rate etc. may occur. However, even autonomic responses are not bound to occur in conjunction with a given emotion. Plutchik and Ax showed that some people might encounter an emotion provoking stimuli and have no response or a response in the opposite direction (Plutchik & Ax, 1967). Perhaps, there is no single physiological response linked to a specific emotion, rather there are patterns of response. Depending on the cultural implications that influence a person`s situated perspective, their autonomic response, or patterns of response will very, and

result in variation in behavioral responses (Frijda, 1986). Instead, perhaps one can find clarity within the act of introspection or self-evaluation.

Subject-Related Evaluation. This third and final component of the term emotion is connected to the notion of awareness, specifically evaluation as the assessment of the significance of an event as it relates to the subject. Frijda refers to this as the significance of an emotion. The significance of an emotion, Frijda states, is comprised of three distinct sources: self-significance (does/how does this pertain to me?), external consequences (what are the consequences of my actions?), and social significance (how do my actions fit into the context of society?) (Frijda, 1986). The combination of these three aspects influence how we experience the significance of an emotion.

Emotions and Experience

Significance of Experience. . A concomitant of concepts from Foucault and Dewey describes experience to be understood as neither true nor false, but most importantly, contingent upon the response of the subject to the inputs from the environment (O'Leary, 2008).

"Until a man has expressed his emotion, he does not yet know what emotion it is. The act of expressing it is therefore an exploration of his own emotions" (Collingwood, 1939, p. 284). When a dancer is moving, she undergoes an experience while cultivating the experiences itself. When analyzed in the context of movement, which already affords viscerality, the occurrence of experience is further embedded into the one undergoing the experience. Dewey claims that experience occurs in peaks and troughs, of in intensity but remains singular to one episodic event. Despite its numerous constituents, including self-reflection as postulated by Frijda, an experience is a unitary entity (Dewey, 2005).

Emotion Experience. Emotion experience, a term used in this thesis are a two-part phenomenon. The first order phenomenology of the emotion and the second order awareness directed at the self or the world. These two distinctions encompassing the emotion experience are the skeleton which separate Lambie and Marcel's theories from the foundational work of Frijda and others. One is not able to know about their own phenomenology without some form of awareness, and whatever it is that one is aware of has some type of phenomenology (Lambie & Marcel, 2002).

One being aware that one is aware makes it difficult to distinguish one's emotion experience itself from the awareness of the emotion experience (the second order emotion experience). However, first order phenomenology is constituted not by "a stage of processing

or of representation but rather is a kind of content with a structured articulation" (Lambie & Marcel, 2002, p. 247). The structure is articulated based on the evaluative descriptions (ED) and action attitudes (AA) taken from the appraisal of the situation.

First order phenomenology could be labeled as non-logical or less likely to have the ability to be conceptualized. Nonetheless, for example during a dance one may describe a lift of the arm as fast or slow; however, there is no propositional aspects to account for the movement. There is no verb to describe the attitude or the aspect or mood associated with such moves, rather the second order awareness would account for this.

Second order awareness is characterized as mode of focal attention, directedness to the self or the world, based on ED or AA. Second order awareness is further broken down into two parts: non-propositional awareness and propositional awareness. Non-propositional awareness is self-focused or world focused. When self-focused, one will be aware of bodily sensations and physiological changes (Lambie & Marcel, 2002). Propositional awareness is characterized as emotion thoughts. Like non-propositional awareness, these emotion thoughts are directed toward the self or the world. Interestingly, however, when directed toward the self those emotion thoughts can amplify one's emotion experience depending on the intensity of the mode of attention. Admittedly, this draws the distinction between the undergoing and the doing into almost inextricable territories. Nonetheless, in order for the experiences to be comprehensively recalled and shared they have to be demarcated to some degree during one's account of said experience. What happens if those demarcations manifest in the form of movement?

Emotions and Behavior

Do the emotions govern the movement or does the movement influence the emotions? Leeper and Arnold argued in favor of behaviors motivating power, constructiveness and adaptivity of emotion (Leeper, 1948; Arnold, 1960). "One of the cues for awareness of action is proprioceptive feedback from one's movements. Instead of considering such proprioceptive feedback as a basis for self-attribution, it may be part of emotional experience and even to constitute the major component of such experience" (Frijda, 1986, p. 233). This feedback loop occurs within an individual yet also between individuals, manifesting as the act of sharing emotions.

Shared Emotions

The phenomenon of shared emotions addresses the notion that one expresses her affective state (verbally or nonverbally) and the other perceives this expression (Michael, 2011). This expression of one's affective state can occur both consciously and unintentionally - what matters is that another perceives a message of affect. For the context of this thesis (movement and emotions), we utilized the conceptions rendered by both Michael and Salmela and Nagatsu (coordination and motivations) (Michael, 2011; Salmela & Nagatsu, 2016).

One major component that contributes to shared emotions within the concepts of joint action is that of prediction. As mentioned in the previous emotion sections, action tendencies instantiate emotions and aid as well as influence one's ability to detect emotions (Michael, 2011). Additionally, emotion expression aid in the joint action enabled by shared emotions. Emotion expression is major way of assessing and monitoring the emotion state of another (Michael, 2011).

Evaluative content is a major attribute of share emotions within the concept of the motivation of joint action. Salmela & Nagatsu, suggest that the evaluative content component is essential to an effective exchange of emotions - the "degree of sharedness of concerns determines the degree of sharedness of emotions" (Salmela & Nagatsu, 2016, p. 9) Additionally, affective experience acts as a feedback mechanism in which if a person perceives that their shared concerns are regarded with positive (approach) or negative (avoid) affect, their likelihood of maintaining that interaction will be influenced respectively. This thesis attempts to place this complex human behavior within the context of dance to determine what affordances can be found within non-verbalized emotion sharing.

Communication

Verbal Communication

Grice postulated that in order to identify what one says, one has to move through three steps. Identify x. X could infer the speaker, the subject of the sentence, or the object, whichever. Next, one has to be vigilant of the timing of the utterance. Time contextualizes the meaning of what is spoken and is an essential component in stages of deciphering what is and what is not relevant to the conversation. Finally, one has to utilize steps one and two to infer meaning to the phrase. This inference is brought about by conventions embedded in cultural contexts. These are the basic elements, supposedly supplying conversations with meaningful modes of comprehension and exchange (Grice, 1975).

Grice's Cooperative Principle is an essential component in the comprehension of meaning during conversational exchanges. Despite these principles' common use within the spoken language, as these are constituents of communication, they are also, useful within the context of nonverbal forms of communication. The principles are placed into four categories: Quantity, Quality, Relation, and Manner. Quantity, relates to the amount of information provided by the speaker. Quality is described as the attempt to "try to make your contribution one that is true" (Grice, 1975, p. 46). Relation is concerned with the relevance of what is spoken. Manner is less about what is said, but rather how it is said. The most important factor in the operation of these principles: the maxim of quality is satisfied first, else the remaining three maxims cannot be evaluated (Grice, 1975).

Nonverbal Communication

Nonverbal communication refers to the forms of communication that utilize action and expression to communicate feelings and emotions rather than using spoken language (Hans & Hans, 2015). There are three main elements that comprise nonverbal communication: kinesics, haptic, and proxemics. Kinesics refers to the movement of the arms, legs, head, and overall body. Usually kinesics are used in the forms of gestures, eye contact, and facial expression (Guerrero et al., 1999). Gestures are classified into three categories: adaptive (self-touch), emblems (e.g. thumbs up), illustrator (gesticulation in conversations) (Hans & Hans, 2015). Nevertheless, for the context of this thesis, movements are distinctly different from gestures and should be considered separately.

Haptics are a rather powerful element in nonverbal communication. Touch is an essential part of natural human development, specifically human social development with an array of emotions and intentions that words alone could never fulfill (Hans & Hans, 2015).

Proxemics pertains to the how the space and distance contribute to the communication process. When in social settings proxemics is a rather important element in a person's perceptions and a person's willingness to avoid attract something or someone in the environment (Guerrero et al., 1999). These three pillars of nonverbal communication are just the foundations of what contributes to the relay of messages. It is important to note that these three attributes are further abstracted and nearly always contradicted in the context of dance (Peick, 2005). Thus for this particular thesis, these are considered when observing the dancers, however they oftentimes remain inapplicable.

Nonverbal Communication within a Dance Context

What would an effective nonverbal movement conversation look like? Similar to a spoken conversation this form of communication requires that all parties involved have a shared goal of communicating to one another and if that goal is the same, this mode of communication is not only a conversation but a cooperative one (Grice, 1975).

Kinesics are a major contributor in the context of dance and nonverbal communication. The use of eye contact within the context of dance is common and oftentimes relied upon as the final and most pivotal part of conveying the message of the dance. During eye contact, there is a direct exchange between listener and speaker (Hans & Hans, 2015). Dancer's often use eye contact to engage the audience and to determine their perceptions of the dance. Facial expressions are an inevitable component of this particular dance context as well. The face works in conjunction with the body to support and/or contradict the sender's message.

Haptics are yet another contradictory element of nonverbal communication in the context of dance. This is because touch is usually uncommon in casual social situation, yet this barrier becomes lifted in the context of dance. Touching becomes a normative and additional way in which dancers explore their means of communication to one another - creating a bridge to shared significance between the sender and the receiver (Peick, 2005).

Proxemics in the context of dance are another contributing factor to nonverbal communication. Specifically, distance speaks voluminously concerning separateness and accessibility in the context of dancer to audience relations (Peick, 2005). In the context of this thesis, the stage was created "in-the-round" fostering a situation in which the audience is in an unusually close proximity to the dancers on stage. In the context of emotions, this was done purposefully to allow the closeness in proximity of the space to be transposed into the relationship between the dancer and the audience - enabling vulnerability and relatability from each side (Peick, 2005).

Semiotics: Meaning-Making in Dance

The three elements of nonverbal communication cohesively work together to give the sender and the receiver clear and accurate messages, as much as possible. Meaning is formulate from all three of these elements with each one usually complementing the other. Using Grice's four maxims in combination with the nonverbal tools of communication, one can begin to decipher some of the key aspects in the sense making of any given message. Manner: when applied to the three context, the way in which someone conveys a message

with the kinesics, with or without haptics, and the fluctuations of proximity all work together to influence the message sent to the receiver. Dance manipulates this specific maxim, because it does not follow specific grammatical rules, nor can it ever be completely attributed to a single definitive message. Especially, post-modern contemporary dance with its intentionality in manipulating the basic elements of nonverbal communication in efforts to create irony and abstraction from common themes found in the dance context (Hay, 2000).

Dance

Movement as a Constituent of Thought

Unlike other artist mediums such as painting and playing an instrument, moving the body for the intention of dancing is an immediate if not inextricable feedback loop between the object of art and the subject of artistic expression. The art does not leave the artist; the artist himself becomes the art. Describing emotions is to generalize. Expressing emotions is to individualize (Collingwood, 1939).

The body is an intrinsic component in the expression and conveyance of one emotion through gestures, facial expression etc. (Ekman & Friesen, 1974). Allport & Vernon even postulated, "every movement may contain both expressive information as well as purposive information" (Wallbott, 1998, p. 881). Movement represents much more than the kinesthetic layer that the mind perceives. The shapes and the sensual nature of the movement can transcend our honest, yet, unavailing attempts to conventionalize the representations of meaning that are embodied in the movement (Bradstetter & Klein, 2013). This thesis attempts to acknowledge and begin to explore the meaning of movement in relation to emotions, as a starting basis for significance and consensual agreeance.

Movement Processing

Kilner describes movement representation in four levels: the motor level, the kinematic level, the goal level, the intentional level. Kilner considers these four levels to exist non independently, and thus acts because of the other. The physical levels, motor and kinematic have a direct link to the metaphysical levels, goals and intentions. Despite their interactive dependencies, there exist a clear hierarchy, in which the intentions level act as the top down-bottom up (motor level) governance. Those intentions are a result of emotion and emotion states yet, (in the context of dance) those emotions, embedded within the intention level, can only be inferred through perceived kinematics of the movement. Thus, the

interaction between movement and emotions has an intrinsic and perhaps causal relationship (Kilner, 2011). However, how does one decipher emotional features in movement?

In this study, the dancers' movements were not the evaluated variable, but rather their emotions. Therefore, visual modality is the first mode of processing used when perceiving movement. Nevertheless, the embodiment aspect of the artistic expressivity of dance is key. When a Laban Movement Analysis (LMA) expert assesses movement qualities, she uses her body to perceive the meaning structure of the movement. " In using her own body to see the movements she is exposing the link between feeling the movement through her own bodily ability and seeing the movement as it resides in another´s body" (Mentis & Johansson, 2013, p. 3380). One reenacts the movement to embody the feelings of the other in order to formulate some accurate explanation of the movement quality and its meaning. Thus, the choreographers contour and rearranged their bodies to mirror the dancers' improvised movements in order to direct and navigate the dancers to specific emotions. The quality of the movement was assessed based on elements such as the positions of the body in relation to itself, others, the inhabited space, the dynamics of the movement, and the sequences of the movement. These elements were not chosen exclusively, but can be seen as quite common to a basic visual processing mechanism in the context of dance (Foster, 1986; Orgs, 2015).

During this communicative situation, initial intentions and emotions exchanges are made and move from one body: from the choreographer, to be reinterpreted into the mind and body of another, the dancer. The dancer then acts as the transmitter utilizing his or her movements with carefully placed syntactic and semantic tactics as the message to be received by the observer/audience. The final vector is formed when the audience attempts to connect the receptive message back to the original generative message created by the choreographer; Orgs visualizes this exchange in the form of a flow chart (recreated in *Appendix A*). Thus, completing the triadic exchange enables the possibility of shared emotions; though, this is by no means always the goal of the choreographer (Orgs, 2015).

Choreographic Techniques

The choreographic process can be collaborative, (between choreographer and dance), singular (based on the choreographers movements), or based on the movements created by the dancer. For example, modern choreographer, Wayne McGregor, collaborates with his dancers during the creation process by tasking the dancers with images or certain themes or concepts, and then allows the dancers to freely explore and develop their own movements to form a phrase or score in reference to the task (McGregor, 2012). Choreography is the

enactment of theory - movements are the physical manifestation of ideas and/or elicit the unconventional channels for original thought and conceptualization (Bradstetter & Klein, 2013). Within this process, the artistic message is not necessarily identifiable nor is this a necessary component in the choreographic process (Orgs, 2015). Allowing movement perturbations develop from what was once stifling (perhaps unclear emotion intentions in the movement) acts as an opportunity of exploration that otherwise would not have been discovered if the challenge never arises (Leach, 2014). During this experimentation, the choreographic process integrates elements from the contact improvisation style and uses them as the catalysts for the physical realization and freedoms of the piece (Leach, 2017).

Within this context, despite the freedom of movement creation, the dancers remain responsible for embodying and transmitting the emotions and intentions themselves and of the choreographer. "The dancers is both the carrier and the source of the movement message" (Orgs, 2015, p. 7). Interestingly, before the dancer attempts to convey movement messages to an audience the dancer has to manufacture an effective feedback loop between themselves and the choreographer. Working with the choreographer is the only time the dancer is given to receive critic of their own intrinsic intentions and proceed to alter those intentions based on the desire of another.

Dance as a Behavioral Approach

Since the 1970's, the approaches to dance research shifted to include a more semiotic dimension, with studies asking questions such as "What is dance?" and what is the meaning of dance in relation to movement (Giurchescu & Torp, 1991). Before this, there existed a split between the European approach of choreology, focusing on an analytic description of movement, and the American anthropological approach, focused on the social-cultural significances of dance. Now more than ever, these two co-exist along with the semiotic dimension with the advent of what is called contemporary dance. This allows for a fully comprehensive scope of the dynamics of movement, the human relationships, and the significance of the two in the conveyance of meaning and purpose (Giurchescu & Torp, 1991).

This thesis research has been executed with numerous documentation approaches such as the direct observational approach, coupled with technical records with the depth added into the integration of participation-observation and self-experience reporting (Giurchescu & Torp, 1991). This study took advantage of current technologies by integrating full video recording of the choreographic processes and of each interview. One of the most

widely used procedures to record self-observation is through controlled stimulus exposure and standardized questionnaires and rating scales etc. (Frijda, 1986, p. 178). For the purposes of this experiment, the procedure of questionnaires with rating scales and open-ended responses and interviews were used as an attempt to assess the emotions experienced during the choreographic process.

Methods

This project included two main parts in which we looked at the efficacies of emotion sharing within the triadic exchanges from choreographer to dancer to audience. In study 1, we considered the first level of exchange from choreographer to dancer and the efficacies of emotional communication. To test this we used two different test groups, one group with a nonverbal choreographic approach and another with a verbal choreographic approach. In study 2, we then tested how well both groups of dancers could transmit emotions to a mostly lay audience. Both studies are described below and sequentially in the results. This is followed by a general discussion for both studies together.

Participants

The overall project used two professional choreographers, one of which is the author of this thesis. The choreographers (one male and one female) both have a background in contemporary as well hip hop dance and created the structure of the choreography for the studies below.

Study 1 recruited eight professional dancers (M: 24; SD: 3.79; ages 20-30; 3 male) from contemporary, ballet, hip-hop, and ballroom backgrounds. All were healthy and able-bodied. One dancer's data from group 1 and 2 were discarded due to their inability to fully participate in the study. Group 1 and 2 both have a final sample of three dancers per group. The dancers were further split into two groups: Group 1 had three dancers (M: 27; SD: 3.51; ages 23-30; 1 male). Group 2 had three dancers (M: 21; SD: 1.53; ages 20-23; 2 males). Also for group two only two (Day 4 & 5) of the three (Day 4-6) days were recorded due to the dancers unavailability to fully answer questions on the third day. Thus, the data will only represent the two days (Day 4 & 5) for both groups in order to have viable comparison. Study 2 made use of audience members. There were 26 responses collected however only 12 responses were usable and thus analyzed.

Study 1—choreographer-dancer emotion transmission: General overview and procedure

For this experiment, professional contemporary dancers were recruited through an open call for dancers from any style to audition for the experiment and performance. There were six dancers chosen: three for each of the two conditions. The two choreographers then created a choreographic structure for a three-part piece. Each part of the piece focused on a specific emotion: part 1: pride, part 2: fear, part 3: catharsis. The experiment took place in a normative dance environment, a dance study during which the dancers and choreographers had a private space with no distractions or disruptions as shown in *Figure 1*. The experiment was conducted over the span six hours a day for six consecutive days. This could further be broken into two sections: Section A (Days 1-3): Encoding, Section B (Days 4-6): Refinement. The first three consecutive days were for encoding the movement and the corresponding emotional intent. At the end of each of these first three days, the dancers filled out a survey addressing our main research questions (*See Appendix D*). Days four through five were for refining the movement and re-training the dancers, in order to better memorize the structure of the piece as well as codify the emotion intentions of their movements. Each day schedules were posted throughout the studio, to inform the dancers of the order of tasks (e.g. warm-up: 9-9:30, part 1: 13-14 hr., lunch break: 12noon etc. (*See Appendix C*).

The nonverbal group (Group 1) received no verbalized forms of communication from the choreographers and the dancers, nor between the dancers regarding the piece and its specific emotion intention. The dancers were completely blind to the specific emotions of each part of the piece. The verbal group (Group 2) received verbalized forms of communication from the choreographers and there was inter-dancer communication. However, the specific emotions for each part of the piece remained unknown for Group 2 as well. Group 2 underwent a typical choreographic experience during which they were given verbal feedback and able to ask questions of the choreographer and his or her intentions. The complete six-hour choreographic process for each group was filmed each day in order to document the interactions between the choreographers and the dancers. The choreographers created a specific movement lexicon in order to convey basic choreographic commands to the dancers such as: repeat, start from the top, add on, starting from etc. (*See Appendix C*). These were demonstrated as a form of sign language in order for the dancers to progress throughout the piece with basic instructions.

The Nonverbal Choreographic Process: Group 1

The choreographic process did not consist of fixed choreography for each part, following the common improvisational rhetoric of contemporary choreography (Hay, 2000). Instead the choreographers placed the dancers in varying spatial arrangements amongst each other (e.g. one dancer is in a back left corner of the room while another might be in the center of the room) and played the musical composition and simply watched as the dancers moved through the space. Nevertheless, this did differ according to each part. For part one the choreographers, placed the dancers in their initial spatial arrangements, the beginning position for the start of the piece. As the dancers transitioned to part two the choreographers, again, directed the dancers to specific spatial position in the room and this was repeated for part three.

This choreographic process is reminiscent of William Forsythe and Wayne McGregor in which the choreographer does not bring pre-created movement into the studio, for the dancer to mimic, but rather, the choreographer, creates as the dancer moves. Utilizing the dancers' movements as the canvas and the pen, simultaneously as shown in *Figure 2*. The choreographers reenacted the dancers' movements in order to expose their own bodies to the potential feelings that resided in the dancers' movements as shown in *Figure 2*.The choreographers then proceeded to guided and direct those movements to their desired emotion intentions for the piece (McGregor, 2012).

The Encoding portion, days 1 through 3, the dancers focused on one part of the piece each day: day 1, part 1 and so on. For each part, the choreographers, first, introduced the emotional intent of the respective section with their own movements For example when introducing part two, fear, the choreographers, took the movement motifs that each dancer had established for themselves and restructured the dynamics of the movement to embody specific emotion intentions. This choreographic tactic was used for each dancer during each part of the dance. As previously mentioned, at the end of the Encoding portion of the experiment (days 1-3), the dancers were not primed with the introduction of any potential emotions when answering the post questionnaires. Rather the dancers were given the opportunity to freely and openly respond to the free response questions (*See Appendix D*)

Days 4 through 6, the dancers performed the entire piece from start to finish. The choreographers then began to work with the dancers one on one, codifying specific movements that the dancers chose--beginning to compose and sculpt the structure of the piece. During this time choreographer began the refining phase of the choreographic process: codifying, cleaning, repeating specific sections for clarity. Beginning with the end of Day 4

the dancers were given an additional questionnaire with a list of fifteen emotions (*See Appendix D*). Of those fifteen, only three were the correct emotions corresponding to the three parts of the piece. This questionnaire allowed the choreographers to evaluate whether or not the dancers were able to decipher the correct emotion and if so how much they themselves felt said emotion. At the end of day 4, the dancers were interviewed as a group and individually, in order to gain feedback of their complete experience of the piece and the choreographic process.

After the end of all six days, the choreographers took the questionnaires as well as, video recorded their conclusions and thoughts about the day's manifestations, challenges, and potential improvements for the following days.

The Verbal Choreographic Process: Group 2

The dancers in-group 2 were similarly not told the three specific emotions they were supposed to embody for the piece. However, group 2 received full verbal communication. This was in the form of metaphors, explicit feedback as shown in *Figure 3*. They received the same initial open response questionnaire (*See Appendix D*) during the Encoding day and the additional questionnaire during the Refinement days (*See Appendix D*). They were also interviewed as a group and individually on day 4 after the entire piece was finished. After the end of each day the choreographers took the questionnaires as well as, video recorded their conclusion, thoughts and comparisons between the choreographic process between group 1 and group 2 (Hay, 2000).

During section A, similar to group 1, group 2 focused on each part corresponding to each day: day 1, part 1 etc. Unlike group 1, the choreographers verbally talked the dancers through the choreographic process for each part. The dancers received directions as they moved and asked the choreographers questions throughout the creation process. As the dancers moved through each part of the piece the dancers were given many critiques and other verbalized forms of feedback similar to a typical choreographic process. At the end of each day, the dancers were given an open response questionnaire in which they were able to freely comment on their emotion experiences without being primed with specific emotions. This questionnaire was given to each dancer on all three days see (*See Appendix D*).

Similar to group 1, section B, of the experiment focused on the codification of the piece, attempting to create a clear beginning and ending of the choreographic score. On days 4-6, the dancers in group 2 worked through the piece from start to finish. Each iteration, the dancers were given verbalized feedback and given the opportunity to ask more specific

questions, as the dancers attempted to lucidly find meaning in the piece. Similar to group 1, at the end of day 4 the dancers were given an additional fifteen emotion questionnaire. At the end of day 4, the dancers were interviewed as a group and individually, in order to gain feedback of their complete experience of the piece and the choreographic process. After the end of all six days, the choreographers similarly took the questionnaires as well as video recorded their conclusions and thoughts about the day's developments.

Procedure

On Day 1, the dancers were given consent forms for their participation in the experiment and for their permission to be documented via film (*See Appendix B*). The dancers were read a specific script of instructions informing them about the nonverbal or verbal conditions of the choreographic process (*See Appendix C*). Each group was given a Positive and Negative Affect Schedule (PANAS) (Watson et al., 1988) test at the beginning of each day (before dancing) and at the end of each day (after dancing) (Watson et al., 1988) (*See Appendix D*). After the end day, each group was asked to fill out the same questionnaire with the following parts:

Open-ended assessment: Days one through three, the dancers were asked for open-ended responses regarding their experience with each corresponding choreographic approach (*See Appendix D*) for these specific sections A questionnaires. There were asked questions regarding their familiarity with such a choreographic process, the understanding of the choreographers and what they believed the dance to be about.

Felt emotions: Days four through six, the dancers were also given a 7-point Likert-scale questionnaire in which they were asked to rate the degree to which they felt 15 different emotions (three of which included the target emotions, pride, fear, and catharsis) on a scale from not at all (1) to extremely (7) (Grice, 1975; Orgs, 2015) (Figure 4). The dancers were also asked to rate their general emotional arousal, positive and negative, on a 7-point-Likert-scale from not at all (1) to extremely (7) (Gerger et al., 2012). This was repeated for each part (Figure 4).

Guessed choreographer emotion transmission intentions: The dancers were then asked to circle the emotions they believed they were supposed to feel using the same list. They were free to choose as many or no answers at all. It was also made clear that they did not have to have actually felt the emotion—it was only desired that their answer reflect what the artist intention was. Finally, they were asked to place a star next to the emotion they believed the observer would feel when watching the dance being performed for these specific

section B questionnaires (*See Appendix D*). Finally, each dancer participated in an empathy questionnaire, the Questionnaire of Affective and Cognitive Empathy (QCAE) at the end of the six-day experiment (Reniers, et al., 2011).

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Figure1. Rehearsal Space for Both Group 1 & 2.

Figure 1. shows the rehearsal space where the experiment was held. Here the choreographers and dancers created the dance piece.

Figure 2. Group 1 Rehearsal Day 3

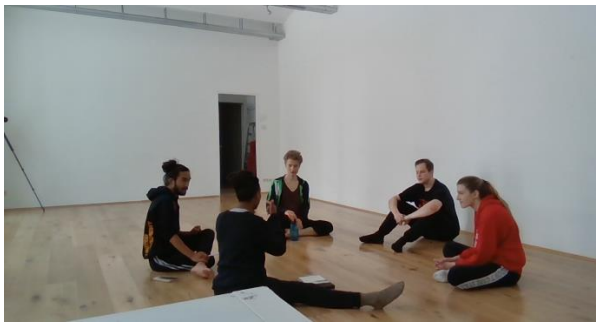

Figure 3. Group 2 Rehearsal Day 3

Figures 2 & 3. show the choreographic process for group 1 and group 2, during which there was nonverbal communication only for group 1 and verbal communication for group 2.

During part 2 of the dance I felt...

	Not at all			Neither			Extremely
Elated joy	☐	☐	☐	☐	☐	☐	☐
Happiness	☐	☐	☐	☐	☐	☐	☐
Sadness	☐	☐	☐	☐	☐	☐	☐
Despair	☐	☐	☐	☐	☐	☐	☐
Fear	☐	☐	☐	☐	☐	☐	☐
Terror	☐	☐	☐	☐	☐	☐	☐
Cold anger	☐	☐	☐	☐	☐	☐	☐
Hot anger	☐	☐	☐	☐	☐	☐	☐
Catharsis	☐	☐	☐	☐	☐	☐	☐
Disgust	☐	☐	☐	☐	☐	☐	☐
Contempt	☐	☐	☐	☐	☐	☐	☐
Shame	☐	☐	☐	☐	☐	☐	☐
Guilt	☐	☐	☐	☐	☐	☐	☐
Pride	☐	☐	☐	☐	☐	☐	☐
Boredom	☐	☐	☐	☐	☐	☐	☐

In general, I felt...

	Not at all			*Neither*			*Extremely*
Emotionally (aroused)	☐	☐	☐	☐	☐	☐	☐
Positive emotion	☐	☐	☐	☐	☐	☐	☐
Negative emotion	☐	☐	☐	☐	☐	☐	☐

Figure 4. Dancers Emotion Survey

Figures 4. shows the survey both group 1 and group 3 during the Section B: Encoding days. The dancers rated their felt emotions on a 7-point Likert scale.

Study 2—dancer-audience emotion transmission: General overview and procedure

Following the training and testing of both dancer groups above, both groups had the opportunity to perform the complete dance for an audience. Each group had at least one additional week between their experiment and the performance. During performance week, the dancers had approximately two days of rehearsal during which the two groups were placed together, on stage, to perform their pieces that originated from the varying choreographic approaches. The audience was recruited via social media, flyers, newsletters and word of mouth. Each audience member was given a colored piece of paper corresponding to the color each group of dancers were wearing brown for group 1 and green for group 2.

Before the performance of ***DEIXIS***, the two choreographers gave the audience specific instructions: the audience was asked to focus on the group corresponding to the piece of colored paper they were given *(*Figure 5). The audience was also informed that there were three parts to the piece corresponding to three specific emotions. The performance was held in a 'real world' performance space with lighting and full audio equipment with a stage that was made "in-the-round," thus the audience was asked to sit around the dancers, allowing them to be closer in order to more critically assess the dancer's emotion intentions (Figures 6-8*)*.

Following the dance performance, the audience was directed to an online survey or a paper handout and asked to use this to answer questions and share thoughts and experiences. The survey consisted of the same structure of questions that were given to the dancers above. The audience was asked which emotions they felt and to what extent they felt them. They were also ask which emotions they believed they were supposed to feel and what they thought the dancers were actually feeling. There were also asked open response questions, regarding the meaning of the piece, etc. etc. (*See Appendix D*). The audience was given approximately twenty minutes to answer the questions after viewing the piece.

After answering the questionnaire, the audience was given thirty minutes to talk with the choreographers and the dancers in a panel discussion, enabling open and directed questions regarding the piece, the choreographers' intentions, and the dancers' experiences. The forum for the panel discussion was open-ended and the audience was allowed to ask the choreographers and dancers whatever they liked. However, the choreographers did not answer questions regarding the three specific emotions that they were intended to feel. This panel discussion was recorded.

Figure 5. Choreographers Give Instructions

Figure 6. ***DEIXIS*** Performance: Group 1 & 2

Figure 5. shows the choreographers giving instructions to the audience at the ***DEIXIS*** performance.

Figure 6. shows dancers Group 1 and Group 2 during the ***DEIXIS*** performance.

Figure 7. Group 1 ***DEIXIS*** Performance.

Figure 8. Group 2 ***DEIXIS*** Performance

Figure 7 & 8. The dancers from group 1 and group 2 interacting during the ***DEIXIS*** performance.

Results

The results section is split into two sections: Study 1 and Study 2. Study 1 includes the results from the Nonverbal group, the verbal group of dancers, and the comparison of the two. Study 2 includes results from the Audience.

Because of the small sample, especially in the dancer investigation of Study 1, as well as the exploratory nature of the experiment, we treat this data largely as descriptive. Nonetheless, the following results reflect the outcome of descriptive statistics, repeated measure ANOVA tests, Chi-Squared test and Fisher's Exact test, as well as interviews and open response from both dance and audience groups. The dancers and audience members answered the questionnaire with seriousness with no indication of aberrant responses. For the dancers, the results of the PANAS test given before and after each day of the experiment also showed that both group 1 and group 2 scored generally the same, with no outliers (see Appendix D). Thus, all was kept for analyses.

Study 1

Group 1: Nonverbal Choreographic Training

The results for the nonverbal choreographic training group (group 1) will be presenting in the following order: Repeated Measures ANOVA and General Emotion response (research question 1), Fisher's Exact Test (research question 2) with D-prime scores, Interviews and Open response answers.

Research Question 1: *Can the dancers feel the intended emotions relayed from the choreographers?*

The descriptive statistics of the response to the emotion felt on a 7-point Likert scale (one = not at all, and seven = extremely) for all participants of group 1 (nonverbal) (Table 1). The table shows the average mean values for each of the 15 emotions asked in the questionnaire, divided into each of the three dance parts. The target emotions (Pride, Fear, and Catharsis), intended to be communicated or felt within each part are indicated in parentheses and in bold. As can be seen, the reported felt emotions did tend to differ between the dance parts. More importantly, the intended emotions appeared to have relatively higher mean values corresponding to their respective parts.

This difference became even more apparent when comparing the target emotion for each part against the means of all other reported emotions, further dividing between the two

days (Figure 9). Visual inspection suggests again that the dancers reported feeling the intended emotions more than the non-intended emotions.

To further consider the felt emotions, the dancers answered a general arousal and valence questions on a 7pt-Likert scale (one = not at all, and seven = extremely) as well. This was done to verify that the dancer's felt emotions could be properly categorized into the expected valence categories according to each part. In general, the dancers' answers corresponded in complement to each intended emotion of each part and the arousal levels remained relatively consistent for all three parts between both days.

To analyze the visual trend displayed in *Figure 9*. and research question one**,** a repeated measures ANOVA was performed. This compared the emotion intention (2, calculated as means of the reported intended vs non-intended emotions) x Day (2) X Dance Part (3) (Table 2). This revealed a significant main effect for emotion (intended vs non-intended) *(*p < .05*), suggesting that the dancers felt the intended emotions more strongly than the non-intended across all dance parts and days. On the other hand, no significant effects were found for day or parts, as well as for any interactions. This suggested that, as can be seen in the *Figure 9*, dancers both did not improve between days (presumably due to an already high felt emotional response), nor did their ability to feel the intended emotion depend on the specific emotion variety.

Table 1

Mean and Standard Deviation for the Nonverbal Choreographic (Group 1)

Emotion	**Part 1 (Pride)**		**Part 2 (Fear)**		**Part 3 (Catharsis)**	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*
***Pride**	**4.833**	**2.041**	1.333	0.471	2.500	2.073
***Fear**	3.167	2.714	**4.667**	**2.055**	1.1667	0.408
***Catharsis**	4.500	2.429	4.667	2.867	**5.000**	**2.530**
Elated joy	6.617	0.752	2.400	1.497	4.833	2.041

Happiness	5.500	0.548	3.600	2.154	6.167	0.753
Sadness	2.667	2.251	3.833	1.863	3.000	1.897
Despair	3.833	2.858	2.333	1.247	1.833	1.329
Terror	2.500	1.761	3.500	2.693	1.000	0.000
Cold Anger	2.500	2.345	3.000	2.828	1.500	1.224
Hot Anger	2.800	2.490	1.500	1.112	2.000	2.449
Disgust	1.333	0.516	1.833	1.863	1.000	0.000
Contempt	1.833	1.690	2.000	1.414	1.833	1.329
Shame	1.167	0.408	1.167	0.372	1.000	0.000
Guilt	1.667	1.632	2.400	1.959	1.667	1.211
Boredom	1.000	0.000	1.000	0.000	1.500	1.225

***Intended emotions**

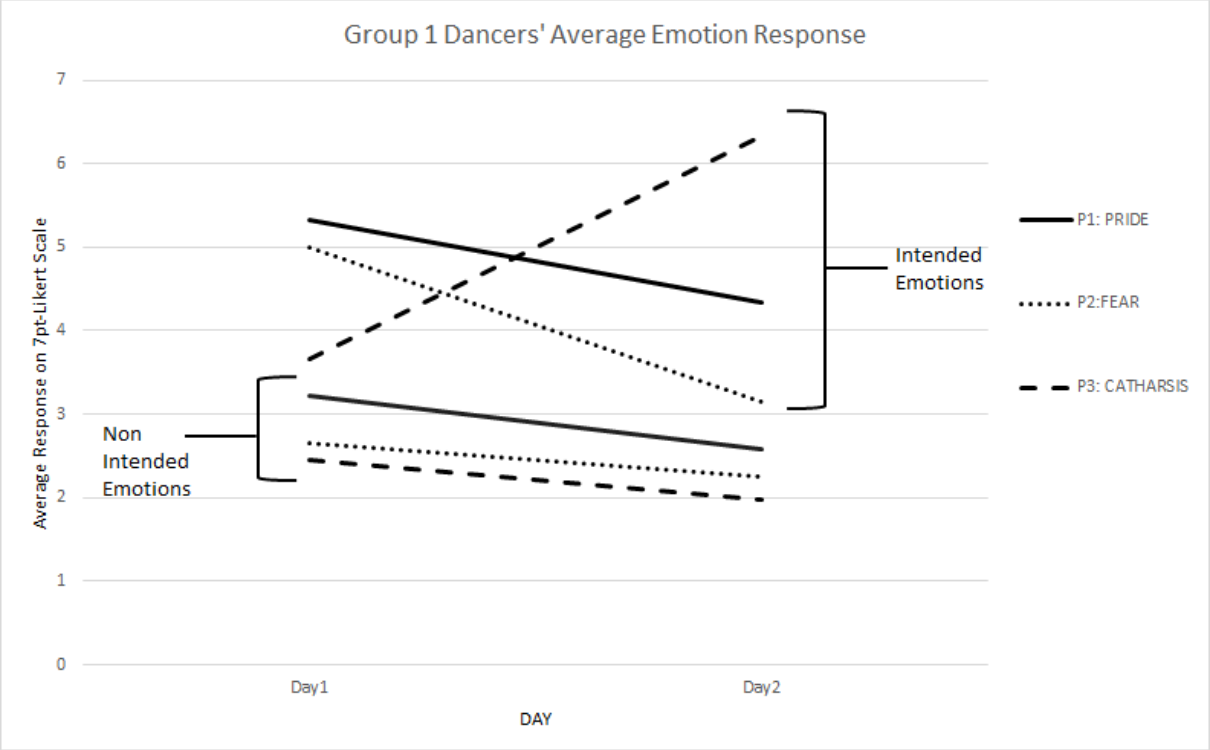

Figure 9. Group 1. Average Emotion Response

Figure 9. shows the averaged emotion response for each dancer in the nonverbal group. Visual inspection shows that the dancers felt the intended emotions more than the non-intended emotions.

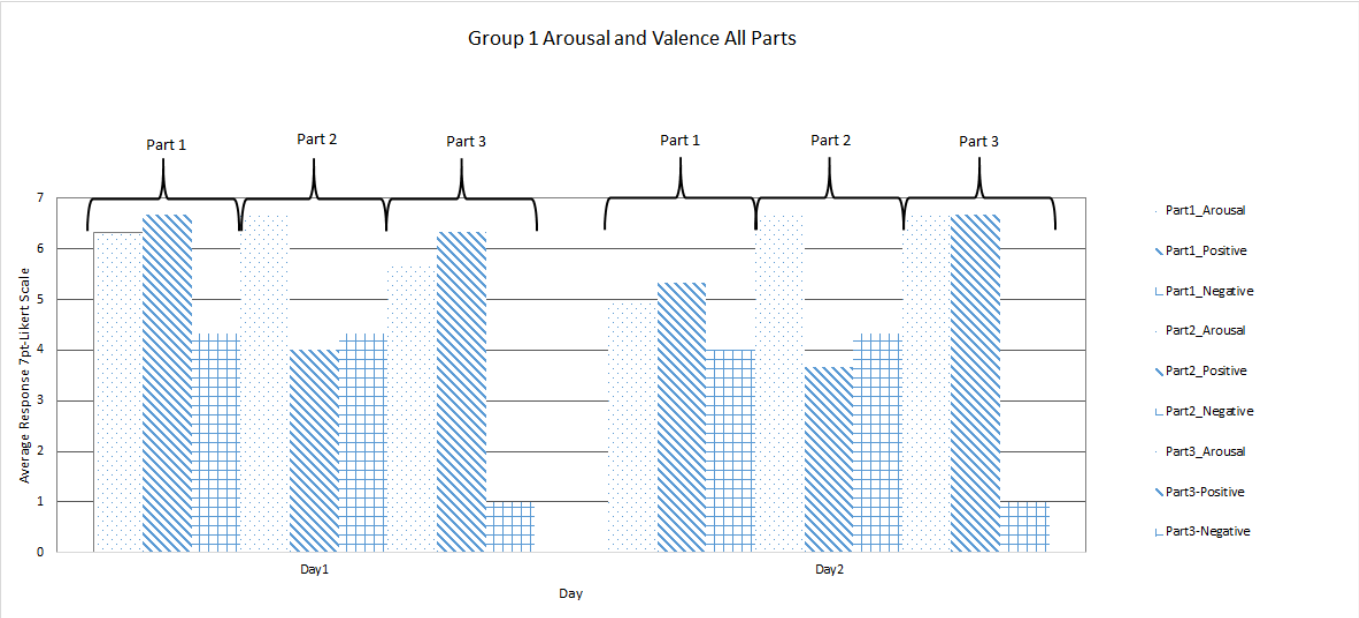

Figure 10. Group 1. General Arousal and Valence All Parts

Figure 10. shows the averaged general arousal levels for each dancer in the nonverbal group. Visual inspection shows that the dancers felt the positive and negative emotions more or less in correspondence to the target emotion of each part (i.e. in part 2 (fear) the dancers generally reported feeling negative more than positive). Notably, the arousal levels remained consistently high through each part. This suggest that the felt emotions did not have a differing arousal level.

Table 2

ANOVA Results within subject effects Group 1

Categories	**df**	**F**	**Sig.**	**Partial Eta-Squared**
Day	1	.102	.780	.049
Part	2	.036	.965	.018
Emotion: Intended vs. Non Intended	1	23.857	*.039	.923
Day x Part	2	2.882	.168	.590
Day x Emotion	1	1.589	.217	.613
Part x Emotion	2	.562	.828	.090
Day x Part x Emotion	2	2.984	.374	.389

Research Question 2: *Can the dancers guess which specific emotions they are supposed to feel?*

Moving to the second main research question, the dancers were then asked to circle the emotions they believed they were supposed to feel using the same list. They were free to choose as many or no answers at all. The dancers' guesses for each emotion and each part, regarding whether it was intended or not were scored into four categories of correct hit, correct rejection, and false positive and missed selection (Table 3).

In addition, the groups mean *d´* scores at the bottom right (Table 3). We used this measure to calculate the sensitivity index (*d´)* for each part. This accounts for the dancers discriminability specifically, the differences in the dancers' tendencies to use *yes* or *no* answers when selecting which emotion they believed to be the correct emotion. If there are *d´* values over zero this indicates that the dancers possessed signal detection and could decipher the sensitivity versus the noise when answers yes or no. A *d´* value of zero would indicate non-sensitivity and a *d´* below zero suggest a sensitivity in signal detection but in the opposite direction of the correct answer. The decision criterion value *C* is also shown, which measures the dancers' response bias of answering with "no" vs "yes" responses (Table 3).

The combined successful guessing rate (correct positives and correct rejections), between the span of two days: Day 1 has a correct guess rate of 0.83. Day 2 has a percentage response of approximately 0.91 (Figure 11).

To test the accuracy of this guessing rate question: which emotions the dancers believed the choreographers intended for them to feel, a Fisher's Exact test (selected instead of a Chi square due to the small sample size) was performed. The Fisher's Exact test revealed a significance value of 0.999. This suggest that there is no difference between the dancer's yes and no responses for the three parts. The *d´* results are all above zero for each part which suggest that the dancers were able to decipher the signal sensitivity from the noise when answers yes or no. The *C* results are less than zero, which suggest that the dancers tend to answer with more yes responses than no, with no significant difference occurring between the parts.

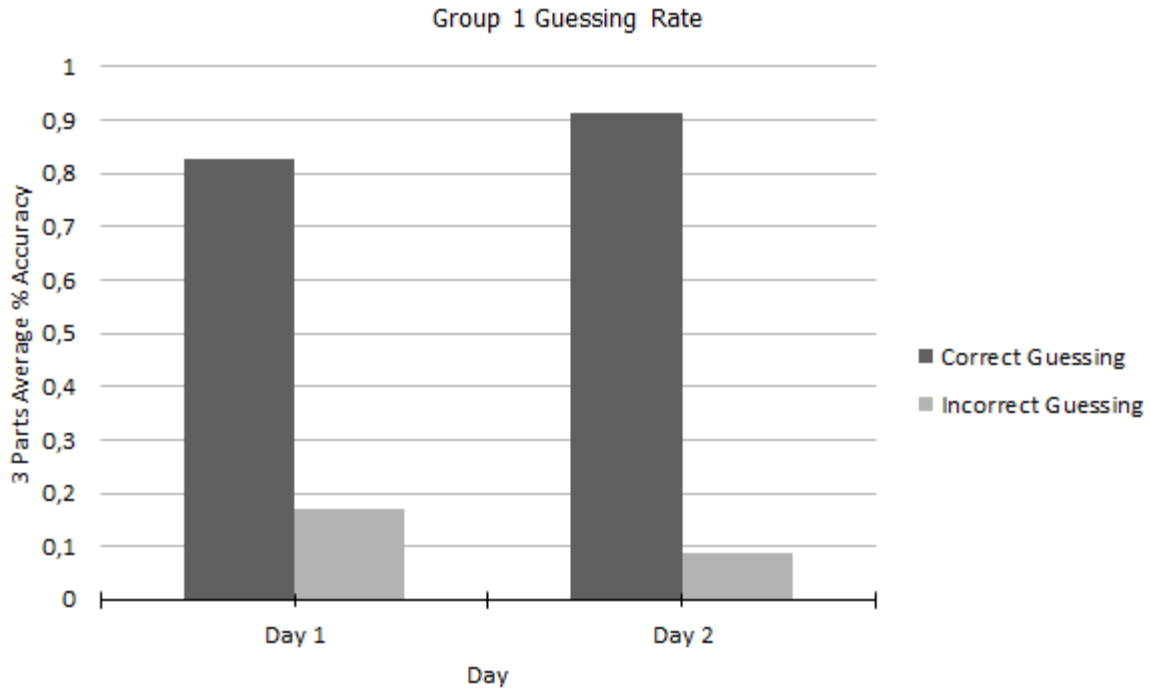

Figure 11. Group 1. Guessing Rate

Figure 11. shows the percent-guessing rate for group 1 over the span of two days. The dancers had much higher scores for correct guessing than incorrect guessing.

Table 3

Guessing Rate for Each Part for Intended and Non Intended Emotions for Group 1

		Hits (Correct answer, Responsed)		***Correct Rejects*** (Incorrect answer, No Response)		***False Alarm*** (Incorrect answer, Respond)		***Missed*** (Correct answer, No response)				
Part	**# of Correct emotions**	**Total**	**%**	**Total**	**%**	**Total**	**%**	**Total**	**%**	**Correct Guess Yes/No**	***Mean d'***	***Mean C***
Part 1 (Pride)	1	3	23.1%	62	95.4%	3	4.62%	10	76.7%	.72%	1.663	0.249
Part 2 (Fear)	1	1	11.1%	69	93.2%	5	6.76%	8	88.9%	.77%	1.819	0.171
Part 3 (Catharsis)	1	2	66.7%	73	94.8%	4	5.19%	1	33.3%	.83%	2.600	0.345

Interviews and Open Response Questions: Group 1

The follow section shows excerpts for the nonverbal dancers' personal experiences of the choreographic experience and further qualitative information that corresponds to the reported data regarding emotion responses. During the interviews, the dancers were asked to tell the choreographers about their personal experiences of a nonverbal choreographic process. Dancers are labeled A-C for confidentiality.

Dancer A responses:

What do you think of the nonverbal Choreographic process?

"*Through the movement, through all this process we had, there was a lot of space and time for you to get into sensations and in finding body quality and body material and how to express those."*

Open response:

"Already a lot of the other dancers have changes in just these five days and it's because we don't talk about it--you can't talk about how it might feel."

Dancer B responses:

What do you think of the nonverbal Choreographic process?

"Since we don't have the possibility to ask unnecessary questions, we don't."

Open response:

"You can't do it wrong because it's your movement."

Dancer C responses:

What do you think of the nonverbal Choreographic process?

"If we just stick to choreography, then it is not so real."

Open response:

"I am trying to figure out who I am, know my body and feel my body."

Group 2: Verbal Choreographic Training

The results for the verbal choreographic training group (group 2) will be presented in the following order: Repeated Measures ANOVA and General Emotion response (research

question 1), Fisher's Exact Test (research question 2) with D-prime scores, and Interviews and Open response answers.

Research Question 1: *Can the dancers feel the intended emotions relayed from the choreographers?*

The descriptive statistics of the response to the emotion felt on a 7 point Likert scale (one = not at all, and seven = extremely) for all participants of group 2 (verbal) show in (Table 4). Like for group 1, the table shows the average mean values for each of the 15 emotions asked in the questionnaire, divided into each of the three dance parts. The target emotions (Pride, Fear, and Catharsis), intended to be communicated or felt within each part are indicated in parentheses and in bold. Once again, the reported felt emotions did differ between the dance parts. Most notably, the intended emotions appeared to have relatively higher mean values corresponding to their respective parts.

Once again, the mean emotion response for the target emotion was higher than all the other reported emotions corresponding to each part, divided between the 2 days (Figure 12). Visual inspection suggests, that like the dancers from nonverbal (group 1), the dancers from the verbal (group 2) reported feeling the intended emotions more than the non-intended emotions.

Same as group 1, group 2 dancers answered a general arousal and valence questions on a 7pt-Likert scale (one = not at all, and seven = extremely) as well. Once again, this was done to verify that the group 2 dancers' felt emotions could be properly categorized into the expected valence categories according to each part. In general, the group 2 dancers' answers corresponded in complement to each intended emotion of each part and the arousal levels remained relatively consistent for all three parts between both days.

Once more, to analyze the visual trend displayed in *Figure 12*. and research question 1**,** a repeated measure ANOVA was performed. This compared the emotion intention (2, calculated as means of the reported intended vs non-intended emotions) x Day (2) X Dance Part (3) (Table 5). This revealed a no significant main effects between any of the levels. No significant effects were found for day or parts, as well as for any interactions. This suggested that group 2 dancers both did not improve between days, nor did their ability to feel the intended emotion depend on the specific emotion variety, nor did they find there to be a difference between feeling the intended emotions versus the non-intended emotions.

Table 4

Mean and Standard Deviation for the Nonverbal Choreographic (Group 2)

Emotion	**Part 1 (Pride)**		**Part 2 (Fear)**		**Part 3 (Catharsis)**	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*
***Pride**	**4.000**	**2.757**	1.667	1.033	2.333	2.066
***Fear**	2.333	1.751	**4.333**	**2.251**	1.833	1.602
***Catharsis**	4.000	2.757	1.833	1.602	**6.833**	**0.401**
Elated joy	4.000	2.530	2.000	1.549	3.333	1.633
Happiness	4.000	1.095	2.000	1.265	4.833	2.640
Sadness	2.500	1.378	4.000	1.549	2.333	1.366
Despair	3.000	1.549	5.667	1.862	1.833	1.602
Terror	1.833	1.169	5.833	1.472	1.167	0.408
Cold Anger	2.167	1.169	5.333	1.966	1.333	0.816
Hot Anger	2.000	1.673	4.667	1.633	1.333	0.816
Disgust	1.000	0.000	2.500	2.501	1.667	1.211
Contempt	2.167	1.833	3.000	2.191	3.333	2.732
Shame	2.667	1.862	2.167	1.602	1.000	0.000
Guilt	1.500	0.836	1.667	1.033	1.000	0.000
Boredom	1.667	1.211	1.167	0.408	1.000	0.000

***Intended emotions**

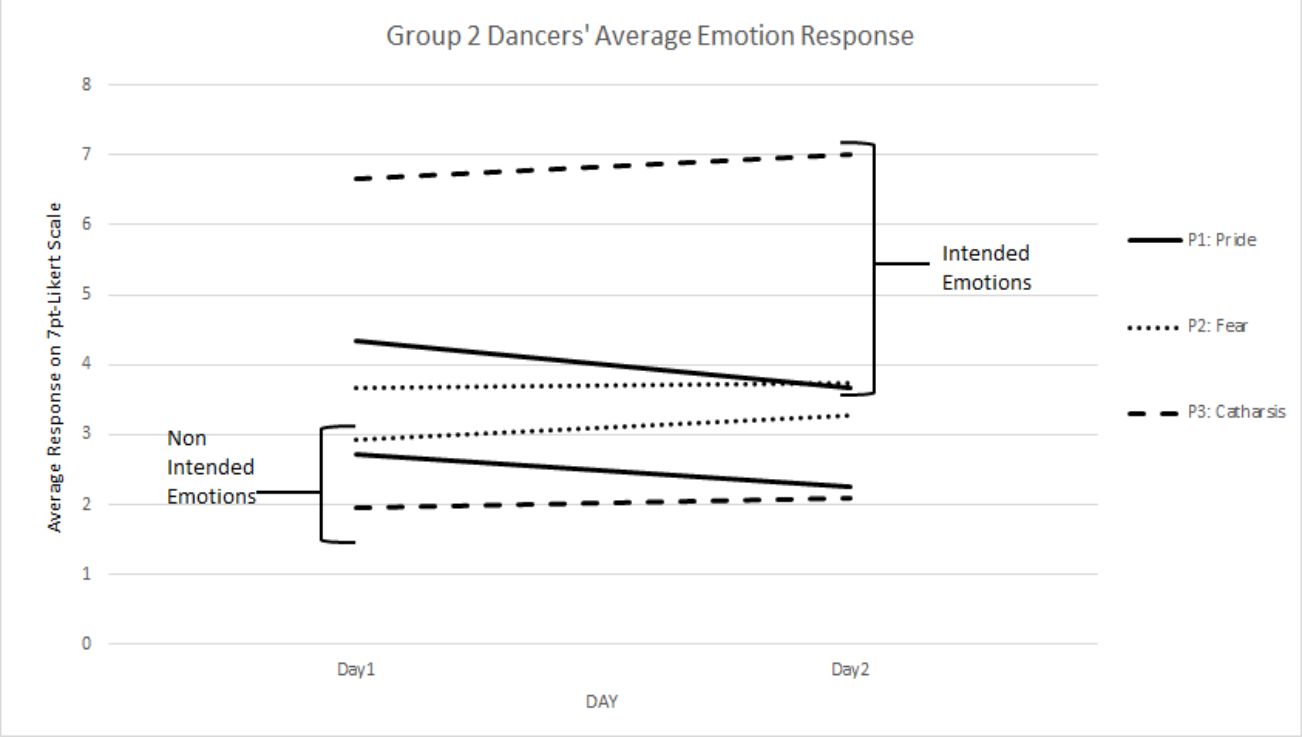

Figure 12. Group 2. Average Emotion Response

Figure 12. shows the averaged emotion response of each part for in the verbal dance group. Visual inspection shows that, like the nonverbal group, the verbal dance group felt the intended emotions more than the non-intended emotions.

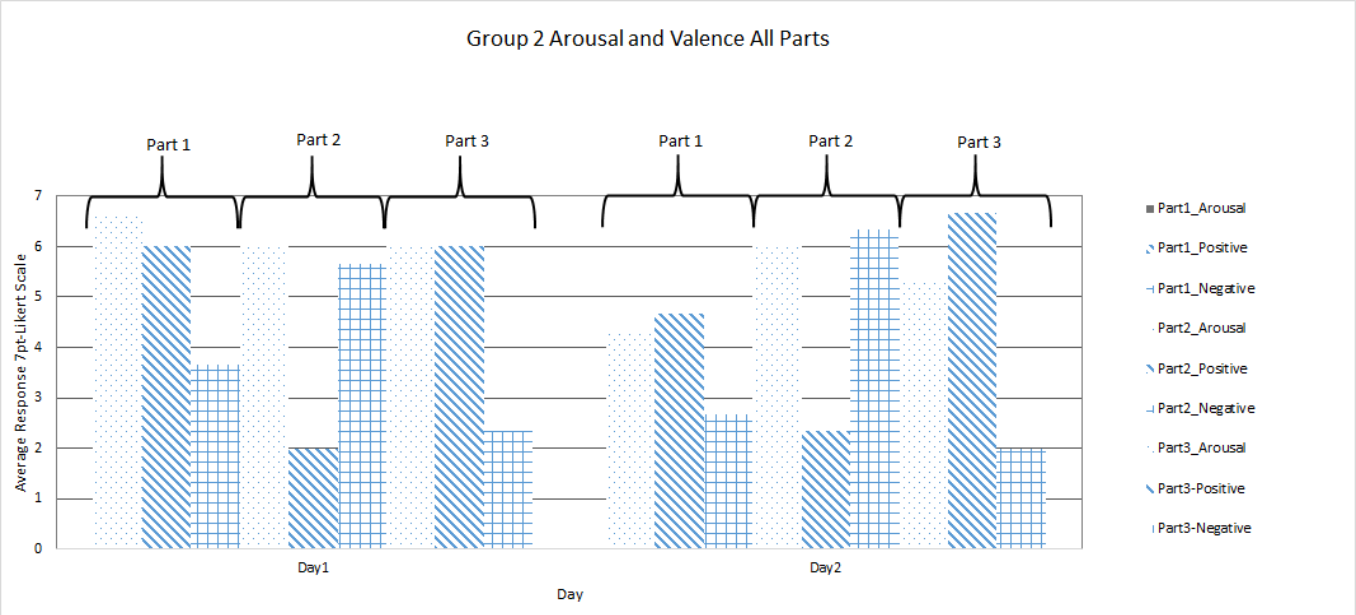

Figure 13. Group 2. General Arousal and Valence All Parts

Figure 13. shows the averaged general arousal levels for each dancer in the verbal group. Visual inspection shows that the dancers felt the positive and negative emotions more or less in correspondence to the target emotion of each part (i.e. in part 2 (fear) the dancers generally reported feeling negative more than positive). Notably, like the nonverbal group, the verbal group's arousal levels remained consistently high through each part. This suggest that the felt emotions did not have a differing arousal level.

Table 5

ANOVA Results within subject effects for Group 2

Categories	**df**	**F**	**Sig.**	**Partial Eta-Squared**
Day	1	.149	.737	.069
Part	2	.961	.456	.324
Emotion: Intended vs. Non Intended	1	6.677	.123	.770

Day x Part	2	2.729	.179	.577
Day x Emotion	1	1.719	.320	.462
Part x Emotion	2	2.818	.172	.585
Day x Part x Emotion	2	6.925	.116	.776

Research Question 2: *Can the dancers guess which specific emotions they are supposed to feel?*

Moving to the second main research question: the group 2 dancers' guesses for each emotion and each part, regarding whether it was intended or not were scored into four categories of correct hit, correct rejection, false positive and missed selection (Table 6).

The table also shows the groups mean sensitivity index (d´) scores decision criterion value (*C*) at the bottom right (Table 6). The use of these are explained in the group 1 section above thus will not be repeated.

Figure 14. shows the combined successful guessing rate (correct positives and correct rejections), between the span of two days. Once again, to test the accuracy of the guessing rate question: which emotions the dancers believed the choreographers intended for them to feel, a Fisher's exact test (selected instead of a Chi-Square test due to the small sample size) was performed. The Fisher's exact test revealed a significance value of 0.999. This suggest that there is no difference between the dancer's yes and no responses for the three parts. The *d´* results are all above zero for each part which suggest that the dancers were able to decipher the signal sensitivity from the noise when answers yes or no. The *C* results are less than zero, which suggest that the dancers tend to answer with more yes responses than no, with no significant difference occurring between the parts.

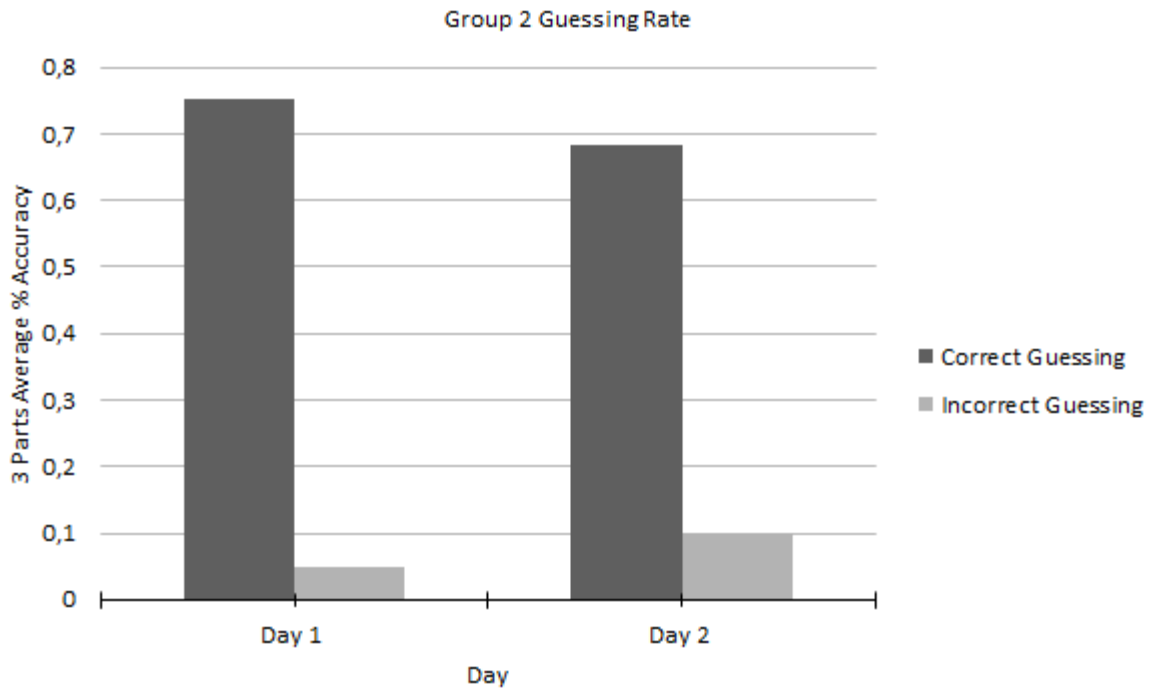

Figure 14. Group 2. Guessing Rate

Figure 14. shows that Day 1 has a correct guess rate of 0.75. Day 2 has a percentage response of approximately 0.68.

Table 6

Guessing Rate for Each Part for Intended and Non-Intended Emotions Group 2

		Hits (Correct answer, Responsed)		***Correct Rejects*** (Incorrect answer, No Response)		***False Alarm*** (Incorrect answer, Respond)		***Missed*** (Correct answer, No response)				
Part	**# of Correct emotions**	**Total**	**%**	**Total**	**%**	**Total**	**%**	**Total**	**%**	**Correct Guess Yes/No**	***Mean d'***	***Mean C***
Part 1 (Pride)	1	2	50%	73	94.8%	4	5.19%	2	50%	.83%	2.509	0.300
Part 2 (Fear)	1	3	12%	55	94.8%	3	5.17%	22	88%	.64%	.9712	0.127
Part 3 (Catharsis)	1	2	50%	73	94.8%	4	5.19%	2	50%	.81%	2.432	0.338

Interviews and Open Response Questions: Group 2

Once again, the following section shows excerpts for the nonverbal dancers' personal experiences of the choreographic experience and further qualitative information that corresponds to the reported data regarding emotion responses. During the interviews, the dancers were asked to tell the choreographers about their personal experiences of a nonverbal choreographic process. Dancers are labeled A-C for confidentiality.

Dancer A responses:

What do you think of the nonverbal Choreographic process?

"First it's hard to know what was meant, but when I am dancing and moving it makes sense."

Open response:

"I rewrote my story"

Dancer B responses:

What do you think of the nonverbal Choreographic process?

"It takes a lot of focus and energy to embody this feeling though movement."

Open response:

"My experience changed fundamentally through the dance."

Dancer C responses:

What do you think of the nonverbal Choreographic process?

"I could go deep into a place of peacefulness and freedom and exploring and finally finding myself at the end and letting the unnecessary go away and letting the energy flow through myself and t the same time I felt one with everyone."

Open response:

"I really feel calmer outside of the rehearsals and can control my mind better."

Group 1 & 2 Comparisons

Now we combine the nonverbal (group 1) and the verbal (group 2) to assess the two main research questions. The section wil1 be presented in the following order: descriptive statistics, repeated measure ANOVA tests, Fisher's Exact Test.

Research Question 1: *Can the dancers feel the intended emotions relayed from the choreographers?*

The descriptive statistics of the response to the emotion felt on a 7 point Likert scale (one = not at all, and seven = extremely) for all participants of group 1 (nonverbal) and group 2 (Table 7). The target emotions (Pride, Fear, and Catharsis), intended to be communicated or felt within each part are indicated in parentheses and also in bold. As can be seen, the reported felt emotions did tend to differ between the dance parts. More importantly, the intended emotions appeared to have relatively higher mean values corresponding to their respective parts.

This more clear with the dancers' average response being separated between the intended emotions and the non-intended emotions for the nonverbal group and the verbal group (Figure 15). As previously presented, there was no interactions between the Day and Part there for the data was collapsed to represent the Emotion Type only. The visual trends show that both groups felt the intended emotions much more than the non-intended emotions (as shown in the previous sections) (Figure 15). However, the verbal group felt the intended emotions slightly more; nevertheless, the nonverbal group follows the same visual trend as the verbal group. This suggest that the two choreographic processes have similar effects on the dancer's ability to share and perceive emotions.

To assess this visual trend (the differences between the nonverbal and verbal group) a repeated measures ANOVA was performed. Since the Day and Part levels showed no interaction effects we collapse the data in order to compare two levels: the emotion intention (2, calculated as means of the reported intended vs non-intended emotions) x the choreographic (2) groups (nonverbal and verbal for the Choreographic Group (Table 8). There was no interaction effects between the two choreographic groups, no the two groups and the emotion type. However there is a main effect for the emotion type (*$p < .05$). This suggest that there is a difference between the dancers' response for intended emotions and non-intended emotions for both groups.

Table 7

Mean and Standard Deviation for the Nonverbal and Verbal (Group 1 and Group 2)

Emotion	**Part 1 (Pride)**		**Part 2 (Fear)**		**Part 3 (Catharsis)**	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*
***Pride**	**4.417**	**2.353**	1.500	0.798	2.417	1.975
***Fear**	2.750	2.220	**4.500**	**2.335**	1.500	1.1677
***Catharsis**	4.250	2.491	3.500	2.701	**5.916**	**1.975**
Elated joy	5.083	2.108	2.182	1.537	4.083	1.929
Happiness	4.750	1.138	2.727	1.954	5.500	1.977
Sadness	2.583	1.782	3.917	1.730	2.667	1.614
Despair	3.417	2.234	4.000	2.335	1.833	1.403
Terror	2.167	1.467	4.667	2.534	1.083	0.289
Cold Anger	2.333	1.775	4.167	2.758	1.417	0.997
Hot Anger	2.364	2.014	3.083	2.151	1.667	1.775
Disgust	1.167	0.389	2.167	2.209	1.333	0.888
Contempt	2.000	1.478	2.500	1.883	2.583	2.193
Shame	1.917	1.505	1.667	1.231	1.000	0.000
Guilt	1.583	1.240	2.000	1.612	1.333	0.888
Boredom	1.333	0.888	1.083	0.289	1.500	0.866

***Intended emotions**

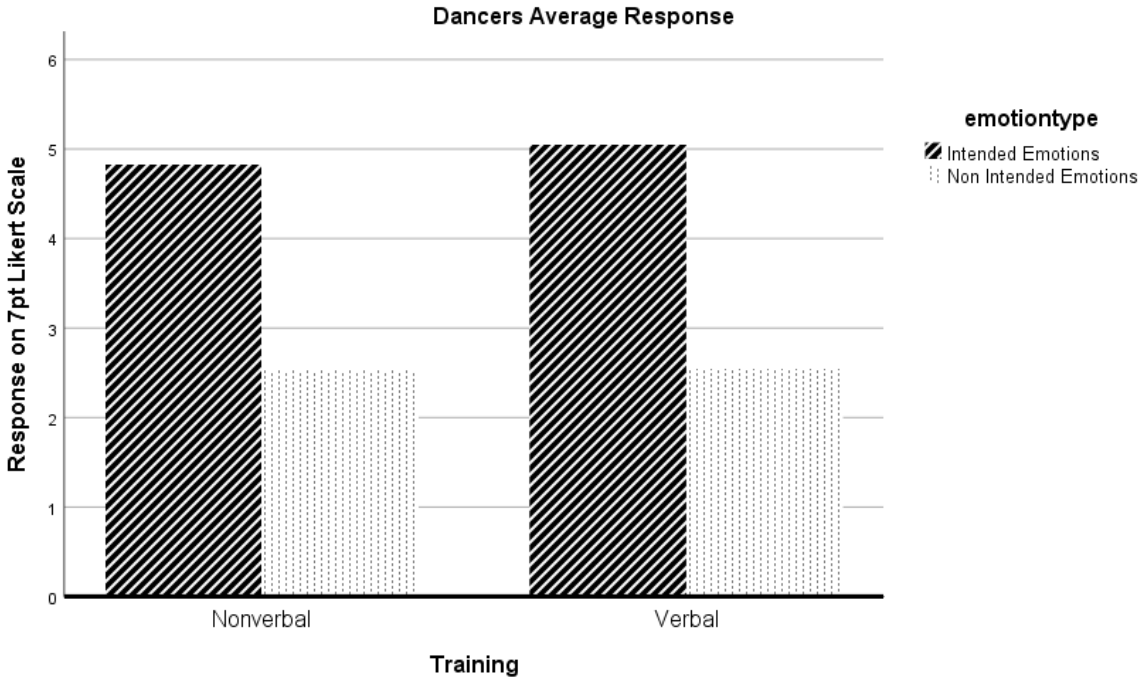

Figure 15. Group 1 & 2. Felt emotion Response

Figure 15. shows that both the nonverbal and verbal groups felt the intended emotions more than the non-intended emotions.

Table 8

ANOVA Results within subject effects Group 1 and Group 2

Categories	df	F	Sig.	Partial Eta-Squared
Choreographic Group	1	.071	.804	.017
Emotion: Intended vs Non Intended	1	19.89	***.011**	.833

Choreographic Group x Emotion	1	.035	.860	.009

Research Question 2: *Can the dancers guess which specific emotions they are supposed to feel?*

The four categories of correct hit, correct rejection, false positive and missed selection with regarding to the dancers' guessing rate are shown below (Table 9). The groups mean sensitivity index (*d´*) scores and decision criterion value (*C*) are at the bottom right (Table 9). The use of these are explained in the group 1 section above thus will not be repeated.

Once again, to test the accuracy of the guessing rate question. A Fisher's exact test was performed (again, instead of a Chi-Square test, because there were less than five participants per group). The Fishers test was used to assess the significance of association between the nonverbal and verbal groups when guessing which emotions they were supposed to feel. The Fisher's exact test revealed a significance value of 0.999. This suggest that there was no significant difference between the two choreographic groups and their yes or no response for the three parts.

The *d´* results are all above zero for each part, which suggest that both groups of dancers were able to decipher the signal sensitivity from the noise when answering yes or no. The *C* results are less than zero, which suggest that the dancers tend to answer with more yes responses than no, with no significant difference occurring between the parts (Table 9).

Table 9

Guessing Rate for Each Part for Intended and Non-Intended for both Group 1 and 2

		Hits (Correct answer, Responsed)		***Correct Rejects*** (Incorrect answer, No Response)		***False Alarm*** (Incorrect answer, Respond)		***Missed*** (Correct answer, No response)				
Part	**# of Correct emotions**	**Total**	**%**	**Total**	**%**	**Total**	**%**	**Total**	**%**	**Correct Guess Yes/No**	***Mean d'***	***Mean C***
Part 1 (Pride)	1	5	29.4%	135	95.1%	7	4.93%	12	70.6%	.77%	2.294	0.408
Part 2 (Fear)	1	4	11.8%	124	93.9%	8	6.06%	30	88.2%	.71%	1.360	0.127
Part 3 (Catharsis)	1	8	57.1%	140	96.6%	5	3.44%	6	42.9%	.82%	2.470	0.320

Study 2

Audience

We asked the audience to answer questions about one of the two group they randomly assigned to focus on during the performance. From these responses, we were able to assess both research question 1 and research question 2. There were 26 participants but only 12 responses were usable. From those 12, 7 audience members focused on the nonverbal group and five focused on the verbal group.

Research Question 1: *Can the audience feel the intended emotions relayed from the dancers?*

The results for the audience will be presenting in the following order: ANOVA (research question 1), Chi-Squared Test (research question 2) with D-prime scores, Interviews and Open response answers.

The descriptive statistics of the response to the emotion felt on a 7 point Likert scale (one = not at all, and seven = extremely) for all audience participants are shown below (Table 10). Once more, table shows the average mean values for each of the 14 emotions asked in the questionnaire, divided into each of the three dance parts. The target were emotions (Pride, Fear, and Catharsis). As the table shows, the reported felt emotions did tend to differ between the dance parts. More importantly, the intended emotions appeared to have varying values

corresponding to their respective parts and were not always higher means than the non-intended emotions (Table 10).

When comparing the target emotion for each part against the means of all other reported emotions seen in Figure# the differences become more obvious. With visual inspection, we can see that the audience reported feeling the intended emotions more than the non-intended emotions for both groups, more so for parts 2 and 3 more than part 1.

. To analyze the visual trend displayed in *Figure 16*. and research question 1**,** a MANOVA was performed. This compared the two audience groups Audience Group (nonverbal and verbal dance groups) (2) and their emotion intention (calculated as means of the reported intended vs non-intended emotions) (2) x Dance Part (3) (Table11). The MANOVA revealed no main effectives for any of the levels. This suggest that there is no difference between the audiences's felt emotions from either the nonverbal group or the verbal group, nor any difference between the parts.

Table 10

Mean and Standard Deviation for the Audience

Emotion	**Part 1 (Pride)**		**Part 2 (Fear)**		**Part 3 (Catharsis)**	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*
***Pride**	**2.083**	**1.730**	1.083	1.676	1.667	2.349
***Fear**	2.250	2.179	**3.333**	**2.270**	0.667	0.888
***Catharsis**	2.417	2.467	1.833	1.946	**2.583**	**2.314**
Elated joy	3.167	2.038	1.250	1.422	4.000	2.374
Happiness	3.000	2.132	1.250	1.357	4.417	2.109
Sadness	2.750	1.658	3.917	2.067	2.333	2.146
Despair	2.417	2.021	3.500	2.067	1.167	1.527

Terror	1.333	1.875	2.500	2.316	0.667	1.155
Cold Anger	1.167	1.586	1.833	2.406	0.250	0.452
Hot Anger	1.250	2.050	0.583	0.900	0.250	0.452
Disgust	0.833	0.937	0.917	1.084	0.333	0.492
**Surprise	2.417	2.539	1.167	1.403	1.750	2.340
Shame	0.916	1.164	1.000	1.349	0.500	0.674
Boredom	1.667	2.309	0.833	1.403	0.917	1.832

***Intended emotions**

****Surprise replaced Contempt and Guilt were removed from the questionnaire due to desire to minimize language confusion and the need to narrow the emotions list to more applicable emotions (Ekman & Friesen, 1974).**

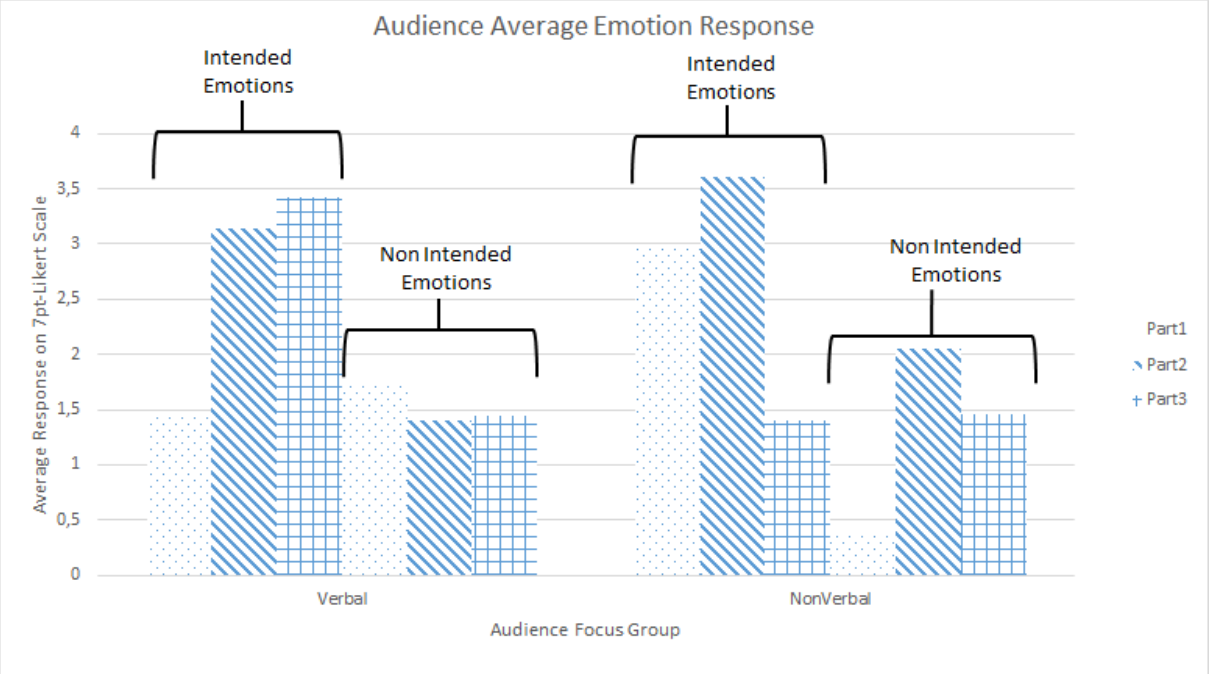

Figure 16. Audience. Average Emotion Response

Figure 16. shows that both the nonverbal and verbal audience groups felt the intended emotions more than the non-intended emotions for majority of the parts of the dance.

Table 11

MANOVA Results within subject effects for the Audience

Categories	**df**	**F**	**Sig.**	**Partial Eta-Squared**
Part	1	1.801	.140	.107
Intended Emotions	5	1.367	.265	.186
Non Intended	5	.979	.447	.140
Audience Group	2	1.441	.253	.090
Part x Intended Emotion	2	1.040	.366	.065
Part x Non Intended	2	1.175	.323	.073
Audience Group x Intended Emotions	1	.000	1.000	.000
Audience Group x Non Intended	1	1.928	.175	.060
Part x Audience Group x Intended Emotions	2	2.310	.117	.133
Part x Audience Group x Non Intended	2	.360	.635	.030

Research Question 2: *Can the audience guess which specific emotions they are supposed to feel?*

To answer research question 2 we begin by looking at the combined successful guessing rate (correct positives and correct rejections), between the two audience groups (Figure 17). This figure shows that there are more correct guesses averages than incorrect guesses, which visually suggest that the audience was able to guess emotions they were supposed to feel.

The four categories of correct hit, correct rejection, false positive, and missed selection with regarding to the dancer guessing rate as well as the groups mean sensitivity index (d') scores decision criterion value (C) at the bottom right are shown below (Table 12). The use of these are explained in the group 1 section above thus will not be repeated (see Group 1 section).

Once again, to test the accuracy of the guessing rate question. A Chi-Square test was used. The Chi-Square test was used to assess the significance of association between the nonverbal and verbal groups when guessing which emotions they were supposed to feel. The Chi-Squared test revealed a significance value of 0.157. This suggest that there was no significant difference between the two choreographic groups and their yes or no response for the three parts (Table 12).

Similar to the results from the two choreographic groups, the d' results are all above zero for each part, which suggest that both audience groups were able to decipher the signal sensitivity from the noise when answering yes or no. The C results are less than zero for part 2 (fear) which suggest that the audience tend to answer with more yes responses than no. The C results are equal to zero for parts 1 (pride) and 3 (catharsis) which suggest that there was a neutrality in both audiences decision, no bias toward yes or no type responses (Table 12).

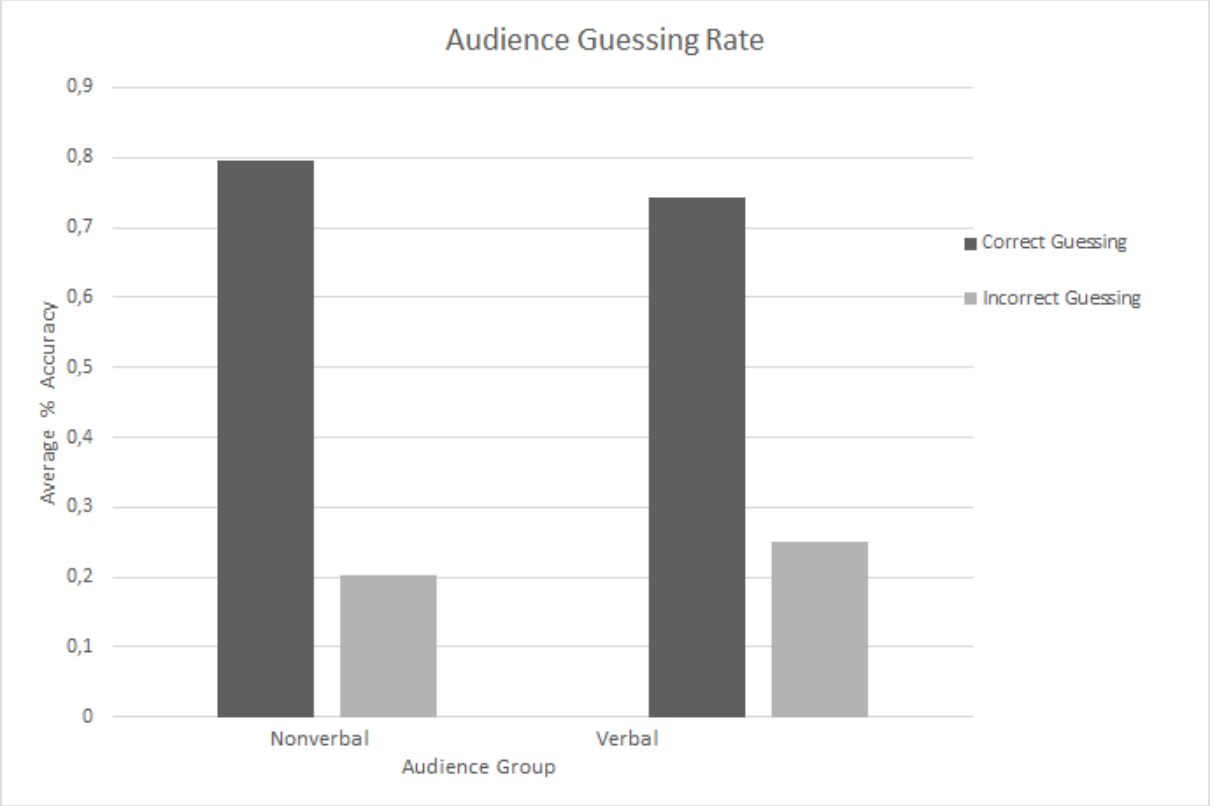

Figure 17. Audience. Guessing Rate

*Figure 17.*shows the guessing rate for both the nonverbal audience group and the verbal group for the intended emotions versus the non-intended emotions. Both groups guessed correctly more than incorrectly.

Table 12

Guessing Rate for Each Part for Intended and Non-Intended Emotions the Audience Groups 1 & 2.

		Hits (Correct answer, Responsed)		***Correct Rejects*** (Incorrect answer, No Response)		***False Alarm*** (Incorrect answer, Respond)		***Missed*** (Correct answer, No response)				
Part	**# of Correct emotions**	**Total**	**%**	**Total**	**%**	**Total**	**%**	**Total**	**%**	**Correct Guess Yes/No**	***Mean d'***	***Mean C***
Part 1 (Pride)	1	3	25.0%	126	80.8%	30	19.2%	9	75.0%	.77%	1.478	0.000
Part 2 (Fear)	1	8	66.7%	127	81.4%	29	18.6%	4	33.3%	.80%	1.720	0.018
Part 3 (Catharsis)	1	6	50.0%	120	76.9%	36	23.1%	6	50.0%	.75%	1.349	0.000

Panel Discussion and Open Response Questions: Audience

Like the two choreographic groups, this section shows excerpts from both audience groups' personal experiences of the performance and further qualitative information that corresponds to the reported data regarding emotion responses. On the questionnaire, the audience was asked to tell share their experience from the performance. Audience Members are labeled A-B according to group for confidentiality.

Audience Member A (Nonverbal Group) Response:

What do you think of the performance was about?

"It felt like a lifelong learning process that you have to walk through until you can receive and give pure unconditional love."

Audience Member B (Nonverbal Group) Response:

Panel Discussion, Open Response

"The dancers told the story well. You could hear the increase up to the climax. It felt like years had passed in the performance. I have never experience such mixed feelings."

Audience Member A (Verbal Group) Response:

What do you think the performance was about?

"I've tried to see how the choreographers relate to each other and what moves them, which influences the dynamics between them."

Audience Member B (Verbal Group) Response:

Panel Discussion, Open Response

"I suffered and smiled along with the dancers."

Discussion

Statistical analyses were performed with two research questions: is the nonverbal choreographic technique an effective method to communicate of emotions (i.e. *can the dancers/audience feel the intended emotions relayed from the choreographers/dancers?)* as well as can the dancers/audience directly choose the specific emotion they are supposed to feel (i.e. *Can the dancers/audience guess which specific emotions they are supposed to feel?).*

As stated before this analysis is treated as mostly descriptive with expectation of seeing an effect for the emotion type (the intended emotions and the non-intended emotion). The two variables day and part did not have expected interactions, nevertheless were used for structure and exploration. Rather, we hypothesized that there could be a difference regarding the emotion transference accuracy based the choreographic technique (nonverbal or verbal). Statistically, thesis is simply asking whether the transference can or cannot be made accurately (Forster, 2016).

Study 1

Nonverbal Group (1)

Research Question 1: *Can the dancers feel the intended emotions relayed from the choreographers?*

The descriptives show a complete assessment of the group 1 dancers' response to all 15 emotion options. With this, we can see that highest mean values were for the emotion happiness and elated joy during the first and third parts. This is not the intended emotion, so this suggest that the dancers were feeling more of the positively valence emotions.

Nevertheless, Catharsis (which was one of the three intended emotions) is the third highest emotion, felt in its respective part (part 3). Similarly, the other two intended emotions (pride and fear) are the next highest felt emotions and were felt the most during their respective parts (part1 and part 2) as well. This suggest that the dancers from the nonverbal group were feeling the intended emotions with some form of continuity, and correspondence to the specific parts. *Figure 9*. further illuminates this trend by showing that there is a clear difference between the nonverbal dancers felt intended emotions versus non-intended emotions. *Figure 10*. illuminates this trend in further detail by showing the general assessment of the emotions felt for each part separately. Specifically, there was high arousal felt for each part. This suggest that the arousal levels were not dependent upon the emotion types. These graphic trends demonstrate that the dancers are able to decipher and distinguish the three specific emotions for each part from the remaining twelve emotions that were offered as options in the questionnaire. This potentially means that, from the graphic trend, the nonverbal choreographic process has the potential to accurately communication emotions. This could mean that a nonverbal approach, specifically in the context of dance is another avenue for effective emotion sharing (Pelowski, et al., 2018).

To further explain these visual trends found in *Figure 9*. and *Figure 10*. a repeated measure ANOVA was performed. Table 2 shows the nonverbal group, had no significant results for the repeated measures ANOVA for the categories of Day and Part, however there was a significant effect for emotion type. This value suggest that there is a significance difference between the intended emotions and the non-intended emotions regarding the nonverbal group's emotion response. This could be because the nonverbal choreographic technique aided in the dancers' ability to decipher their emotions. This could also be because the dancers actually felt the emotions and grew more certain in the distinction between the ones they felt and the ones they did not feel.

Research Question 2: *Can the dancers guess which specific emotions they are supposed to feel?*

Figure 11. visually shows that the dancers were able to correctly guess which emotions they were supposed to feel. To account for the accuracy of this guessing Table 3 shows the details of how the dancers guessed. Table 3 shows that the dancers were best at knowing which emotions they were not supposed to feel with the highest scores in the category of "Correct Rejects". A Fisher's Exact test revealed that there was no difference in the dancer's yes-no response. In addition, the d' and C results specifically show that the

dancers answered with more yes response than no but also that those response were based on signal sensitivity. This suggest that the dancers not only felt the emotions they were supposed to feel, they were also able to identify those felt emotions. This could be because the dancers were certain in their guessing because those emotions were actually felt.

Verbal Group (2)

Research Question 1: *Can the dancers feel the intended emotions relayed from the choreographers?*

Table 4 shows the complete assessment of the group 2 dancers' response to all 15 emotion. The highest mean value is for Catharsis in the respective part 3 (one of the three intended emotions) with the other two, Pride and Fear closely behind. This shows that the intended emotions were felt collectively more than the non-intended emotions. *Figure 12.* further illuminates this felt emotion response with the visual demonstration that the dancers felt the intended emotions more the non-intended emotions and specifically, the intended emotion (Catharsis) the most. *Figure 13.* suggest that the general feelings of positivity and negativity were felt in correspondence to the respective to the parts (i.e. negative valence was felt more than positive valence during part 2, fear). Notably the arousal remained high for all the parts for both days. This again, suggest that the arousal levels were not dependent upon the emotion types.

Table 5 shows the verbal group, had no significant results for the repeated measures ANOVA for the categories of Day, Part, and Emotion Type. This means there were no main effects to show an significant difference between any of the time required to teach the choreography (days), any of the three intended emotions (parts), nor either of the intended emotion and non-intended emotions (emotion type) - suggesting that perhaps the nonverbal group was better at feeling the intended emotions than the verbal group. Nonetheless, the graphic trends demonstrate clear difference among the categories. *Figure 12.* shows the average responses for group 2 with an increase in felt intended emotions over time and decreased felt non-intended emotions over time, which was expected for this verbal group (Orgs, 2013). This trend is rather common to the choreographic nature of processing a choreographer's verbalized intentions for a piece and the improvement of that processing with time and exposure to the material.

Research Question 2: *Can the dancers guess which specific emotions they are supposed to feel?*

As previously stated the dancers were given the opportunity to directly guess which emotions they believed the choreographers wanted them to feel. *Figure 14*. shows the percentages of accuracy for correctly guessing and incorrectly guessing the emotion. This figure shows that with time the dancers of group 2 scored worse on day 2 than day 1. Interestingly, this could mean that the verbalized feedback did no aid in the improvement of the dancers' comprehension of the choreographers' intentions, instead this graphic trend indicated that on the contrary, this may have confused the dancers more (Orgs, 2015).

To account for the accuracy of this guessing Table 6 shows the details of how the verbal dancers guessed. Similar to the nonverbal group, Table 6 shows that the dancers were best at knowing which emotions they were not supposed to feel with the highest scores in the category of "Correct Rejects". A Fisher's Exact test revealed that there was no difference in the dancer's yes-no response and once again, the d' and C results specifically show that the verbal dancers answered with more yes response than no, but also that those response were based on signal sensitivity. This could be because the dancers were certain in their guessing because those emotions were actually felt because of the verbal feedback from the choreographers.

Group 1 and Group 2 Comparisons

Research Question 1: *Can the dancers feel the intended emotions relayed from the choreographers?*

The descriptives show a complete assessment of the group 1 and group 2 dancers' response to all 15 emotion options. The highest felt emotion was Catharsis (one of the intended emotions) within the respective part (part 3). The other two intended emotions were felt on relatively high in their respective parts as well. This suggest that there is some type of similarity in the degree to which both choreographic groups felt the emotions. *Figure 15*. aggregated the intended emotions and non-intended emotions for the two choreographic groups. It can be seen that the verbal group felt the intended emotions slightly more than the nonverbal group. However, it is worth noting that both choreographic groups follow a similar trend of feeling the intended emotions more than the non-intended emotions. This similarity suggest that nonverbal choreographic approach can be as effective as the verbal choreographic approach.

To further explicate the visual trend found in *Figure 15*. an ANOVA was performed to compare the choreographic group and emotion type (intended and non-intended). There was no significant difference between the choreographic groups. This suggest that perhaps there both choreographic techniques are effective approaches to communicate emotion intent. However, there was a significant difference between group 1 (nonverbal) and group 2 (verbal) with regard to emotion type (intended emotions and non-intended emotions). This significance could possibly mean that the choreographic process influences the difference in felt emotion (intended or non-intended).

Research Question 2: *Can the dancers guess which specific emotions they are supposed to feel?*

The Fisher's Exact test reveals that there is no difference in the two groups' ability to guess the correct emotions. This means that despite there being a significant difference in felt emotion between the two groups, the cognitive assessment of directly guessing which specific emotions they were supposed to feel does not prove to be better or worse depending on the choreographic process.

Study 2

Research Question 1: *Can the audience feel the intended emotions relayed from the dancers?*

The audience felt the emotion of sadness the most, specifically during part 2. The intended emotions were felt higher in their respective parts, however they were not the overall highest, felt emotions. This suggest that both audience groups felt the non-intended emotions more. Perhaps sadness was felt the most, because it is a basic emotion (Ekman, 1957). Nevertheless, *Figure 16*. shows that two audience groups both generally felt the intended emotions more than the non-intended emotions, with some variance between parts. Both groups felt the intended emotion more than the non-intended emotion for part 2. However, for part 1 the verbal audience group felt the non-intended emotions more than the intended emotions, but the opposite is true for the nonverbal audience group. These similarities and differences could be because each group of dancers' ability to relay the specific emotion during the specific emotion parts.

To further understand *Figure 16*. a MANOVA was performed to look at the differences between the two audience groups with respect to their felt emotion types (intended and non-intended) with respect to the three parts of the dance piece. There were no

significant differences in the audience group that watched group 1 (nonverbal) and the audience group that watched group 2 (verbal) regarding the audience groups' ability to decipher between the intended emotions and non-intended emotions. This suggest that both choreographic groups were effective at communicating the intended emotions. This could be because of the two groups' interaction with one another during the piece.

Research Question 2: *Can the audience guess which specific emotions they are supposed to feel?*

Figure 17. shows that the nonverbal audience group was slightly better at guessing which emotion they were supposed to feel than the verbal audience group. This suggest that the nonverbal group of dancers could be more effective at communicating emotions than the verbal group. Nonetheless, both the nonverbal and verbal audience groups scored higher in correct guessing than incorrect guessing. Table 12 further explains this visual trend, showing that the audience was best at guessing the emotion for part 2, but still relatively high in guessing accuracy for all three parts. Like both dancer groups from study 1, the audience groups had a higher score for the "correct guessing" category. This potentially means that even if the audience is not able to specifically name which emotion they were supposed to feel, they can effectively eliminate the emotions that they are not supposed to feel. The Chi-Square test revealed that there were no significant difference between the two audience groups. This suggest that both the dance groups were effective at communicating the intended emotions. The *d´* results and *C* results reveal that the audience had little to no bias toward the yes-no type answers for part 1 and part 3. However, they tended to answer yes more than no for part 2. This suggest that there could be a difference in the audience ability to guess, based on the specific emotion.

General Discussion

Study 1. There were interesting trends and patterns between the two studies. Study 1 demonstrated that both the nonverbal and verbal choreographic groups felt the intended emotions more than the non-intended emotions and that those felt emotions corresponded to respective parts. However, in comparison, the nonverbal group actually felt the intended emotions more. This could be because the nature of the nonverbal technique. A nonverbal choreography technique affords the possibility of variation in how emotions are felt without the limitations or biases of language (Peick, 2005). With this space for interpretation, perhaps the dancer from the nonverbal group were able to come to the understanding of the intentions

of the choreographer with more clarity and less doubt and wordy distraction. This is at least what was reported when the dancers were interviewed (See Results section, Interviews Group1)

Study 2. The audience was only give one opportunity to view quite an emotionally arousing dance performance and then asked to tell us how they felt. How unnerving! The audience was quite moved by the piece, many reported that they wanted to cry, or that they felt inspired to change things about their personal life. This is not necessarily evident in the numerical data, nonetheless, is does correspond. Perhaps the audience did not feel the exact intended emotions they were supposed to feel but they did feel some emotion more than others did, and those emotions were generally in correspondence to the emotion valence for each part. More importantly, after the performance many audience member stayed to ask questions regarding the choreographic process, and if the dancers were faking the emotions they were conveying. This conversation fostered an abundance of encouragement for more analysis regarding the triadic exchange and its manipulations along with ideas regarding this type of behavioral experimentation and its affordances.

Study 1 and Study 2. This thesis is specifically interested in the triadic exchange between choreographer, dancer and audience. We can see the dynamics of this exchange when we look at study 1 and study 2 side by side. Both the dancers and the audience members had graphic trends of feeling the intended emotions more than the non-intended emotions. This potentially means that when the choreographer is communicating a specific emotion intent to the dancers, the dancers were able to grasp that intended emotion and effectively convey it to the audience. The conveyance to the audience is usually done without any explicit verbalized forms of communication. Thus this exchange was mirrored between the choreographer and the dancer to see if this has effects on the efficacy of felt and comprehended emotions Study 1 demonstrates that the choreographic nature of both groups prove to be transmitting general emotion intents effectively and that is evident in the audiences responses as well. Together these studies shows that there is clearly an effective mode of emotion sharing occurring between the choreographer, dancer and audience, however, the complexities of how the body shares these emotions based on variation in choreographic training should be further investigated in the future.

Concerns and Limitations

This study is the first to look at effects of emotion communication in the context of movement with a nonverbal choreographic process. Studies have looked at the cognitive abilities of views to decipher specific emotions based on video excerpts from ballet dancers (Christensen, 2014). However, this is the first study to look at the communicative relationships between the choreographer, dancer, and audience concerning shared emotion within the context of actual studio and performance settings. In retrospect, the emotions chosen based on Grice's cooperative principle of communication, should be questioned. Is this specific emotion set a more comprehensive of the schema of emotions than, other possible emotions? In the future, other emotion should be used based on other theories and findings regarding emotions and emotion sharing specifically. Another limitation was the small sample size. Only three dancers per group were evaluated and this poses a dilemma when attempting to run statistical analyses. Time was another constraint. The dancers from both groups and choreographers all would have liked to have more time to more carefully and thoroughly transition through the choreographic process.

This experiment was performed in both English and German given the demographic context of Vienna, Austria. Nonetheless, this poses possible errors when translating word meanings, especially within the context of emotions. For example, various emotions on the list such as catharsis and contempt have conflicting definitions when translating between English and German. This would have a large impact on the way the audience responded. There was also an imbalance in between audience group, with two more audience members for the nonverbal group than the verbal group. This could have an effect on the analytical results. Additionally, during the performance the choreographers simply moved positions around the circle to indicate the change in part. However, this was perhaps not always noticed or fully made clear to the audience during the instructions. This would have a significant effect on the way the audience responded to the questionnaire and the amount of uncertainty and error in their responses for each part. Along with this, the performance was approximately 40 minutes long thus, there was a large potential for the audience to simply forget which part corresponded to which.

There is also the important element of music. Which was brought up as a question between the author and her supervisor as well as the audience. Music has a huge impact on movement perception (Christensen et al., 2014; Howlin, 2017). Nevertheless, within the context of this study the desire was not to test to see if music had an effect on the communication of emotion within a dance piece. This thesis focused on the shared emotion

within a common choreographic process with varying conditions. Thus this warranted that the music not be separated from dance, as often it is debated in choreomusicology theory i.e. that music and dance are both separable and inseparable (Mason, 2012). Rather this thesis eliminates one particular element, verbalized language, specifically, between the choreographer and dancer, because this new approach mirrors the type of exchange between the audience and the dance.

One concern in particular is that the author of this thesis was also the choreographer. This poses a large potential of biases when rating and perceiving the dancers emotion. Nevertheless, for the purpose of this thesis, and its exploratory nature, the author of the thesis insisted on being a part of the entire process in order to regulate how the experiment was conducted and thus how the results manifest. Finally, there is the concern regarding the general exploratory nature of the experiment regarding dance and emotions. Nonetheless, we believe dance to be an under investigated medium from which common real-world trends of emotion sharing occurs quite regularly. Perhaps instead we should be asking, in the future, how could one incorporate various elements of analysis (e.g. motion capturing, biofeedback mechanisms) for understanding the complexities of emotion exchange when using the dancing body?

Conclusion

This experiment used a two-part study to ask if the dancers/audience could feel the intended emotions and if the dancers/audience could guess those intended emotions with outcomes depending on the choreographic process. These studies showed that there are indications that both choreographic dancer groups felt the intended emotions more than the non-intended emotions and that those were effectively conveyed to the audience because the audience felt them more as well. Both choreographic dance groups were able to choose which emotions they were supposed to feel as well. There were no significant difference found between the two choreography groups and their efficacy of feeling and guessing those emotions and this was the same for the audience members. However, there were effective differences between the felt emotions (intended emotions vs non-intended emotions) for the nonverbal group and between the nonverbal and verbal groups.

In the immediate future, this research must repeat this experiment by exploring a more varied range of emotions, cultural implications and the significance of time and space in order to edifying the current findings and cultivate a future of insightful work for the artistic scientific communities. In the distance future, this research must continue with more dancers,

more experiments testing this nonverbal technique. This research must also move to the questions of how and why the nonverbal body movements are so effective in the investigation of emotion experience. This research must ask the questions about the detailed complexities that allow such a process to work so effectively. Why does nonverbal communication carry such essential knowledge and empathic affordances? Why are most if not every human, quite receptive to such communication and its knowledge? These questions and more could begin to catapulted current epistemic investigations of emotion sharing, movement and communication and ultimately consciousness.

Most importantly, this master's thesis experiment is more than the numeric significance recorded from the questionnaires. Moving with the dancers and experiencing their gradually authentic engagements during the creative process could never be captured in the form of numeric measurements. The profundity that this project had on the dancers' wellbeing was remarkable. During these six days, the dancers were challenged with a purposefully silence and thus sometimes difficult self-awareness investigation with the aid of their bodies' movements as the expressive cannon from which to discover and unravel the nuances of emotion and emotion sharing along with the complexities nonverbal communication. We worked with dancers from varying movement styles with various exposure to a contemporary choreographic process, yet each claimed to have experienced monumental edification in their personal lives which implies that this thesis work extends beyond the pages of this text and consequently beyond the worlds both of art and science.

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Figure Index

Table Index

Appendix A

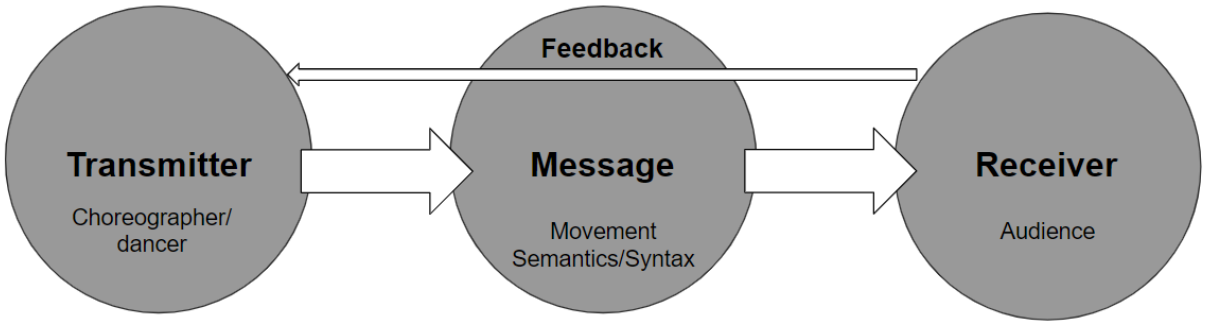

Figure A. Rendition of Guido Orgs, triadic exchange feedback loop between choreographer, dancer and audience member (Orgs, 2015)

Appendix B

Supplementary Material B1. Consent forms

Research Consent Form Protocol Director: Imani Rameses
Protocol Title: Investigating the effects of nonverbal communication between choreographer and dancer

DESCRIPTION: You are invited to participate in **a research study** on the effects of nonverbal communication within the triadic exchange between the choreographer and the dancer and the audience.

You will be asked to participate in a choreographic process of improvisation and choreographic sequences of movement. The experiment will take place over the span of 7 consecutive days, with each day dedicated to a specific task of emotion related transferal solely through the utilization of the body. Each session will be recorded, the third of which will include a filmed interview, during which you will be asked to share your experience. The filmed material will be used for further data analysis as well as example footage for various presentations and conferences. There will also be a performative component during which you will showcase the choreography created during this 6 day intensive.

TIME INVOLVEMENT: Your participation will take approximately 36 hours broken up into 6 hour increments for 6 consecutive days, (minus the last rehearsal day of only 3 hours and including the performance day of only 6 hours).

PARTICIPANT'S RIGHTS: If you have read this form and have decided to participate in this project, please understand your **participation is voluntary** and you have the **right to withdraw your consent or discontinue participation at any time without penalty or loss of benefits to which you are otherwise entitled**. **The alternative**

is not to participate. You have the right to refuse to answer particular questions. The results of this research study may be presented at scientific or professional meetings or published in scientific journals. With your permission, your identity will be made known in written materials resulting from the study. By signing this form you agree that we (Imani Rameses, Florian Pizana and the University of Vienna) will not be held responsible for any injuries or illnesses that may occur during the week. You will have to be accountable for your own body.

CONTACT INFORMATION:

- ***Questions:*** If you have any questions, concerns or complaints about this research, its procedures, risks and benefits, contact the Protocol Director Imani Rameses at imanirameses@gmail.com
- Alternate Contact If you cannot reach the Protocol Director, please contact *Florian Pizana* at +43 699 10474926

SIGNATURE _____ **DATE** _____

Print name of participant _____

Supplementary Material B2. Video Consent forms

Video Use Consent Form
Protocol Director: Imani Rameses
Protocol Title: Investigating the effects of nonverbal communication between choreographer and dancer

As part of this research project, we have made a videotape recording of you while you participated in the experiment. We would like you to indicate what uses of this videotape you are willing to consent to by initialing below. You are free to initial any number of spaces from zero to all of the spaces. We will only use the videotape in ways that you agree to. In any use of this videotape, your name would *not* be identified. If you do not initial any of the spaces below, the videotape will be destroyed.

(AS APPLICABLE)

A checkmark or initial indicates that you give your permission for the following:

_____The videotape can be studied by the research team for use in the research project.

_____The videotape can be shown to subjects in other experiments.

_____The videotape can be used for scientific publications.

_____The videotape can be shown at meetings of scientists interested in the study of emotion.

_____The videotape can be shown in classrooms to students.

_____The videotape can be shown in public presentations to nonscientific groups.

_____The videotape can be used on television and radio.

FOR QUESTIONS ABOUT THE STUDY

- Please contact Imani Rameses at imanirameses@gmail.com
- Questions, Concerns, or Complaints: If you have any questions, concerns or complaints about this **research study**, its procedures, risks and benefits, or alternative courses of treatment, you should ask the Protocol Director. You may contact her now or later at imanirameses@gmail.com
- Emergency Contact: If you feel you have been **hurt by being a part of this study**, or need immediate assistance please contact Imani Rameses at +43 665 65210982
- Alternate Contact If you cannot reach the Protocol Director, please contact *Flo Pizana* at +43 699 10474926

I have read the above description and give my consent for the use of the videotape as indicated above.

_____ _____

Signature of Adult Participant Date

_____

Print Name of Adult Participant

Appendix C

Supplementary Material C1. Dancer's Debriefing Script

Hello everyone,

I am extremely grateful that you are participating in my master's thesis project. Many Many thanks! This will be a process, like most choreographic experiences.

There are three sections. There will be opportunities for solos, duets, trios and group work. Most of the project will be structured improvisation. You should be gathering material as you move for each section and we will be guiding you through your movement as well. There are no boundaries, so please feel free to simply move without constraints to a specific style or technique. (The most challenging aspect of this process will be the fact that we will not be

communicating with you verbally. Now, bear with us, this will be a new experience for us as well. So we would appreciate your patience, and your willingness to step outside of your comfort zone. Because it will, indeed, be quite challenging for all of us. So embrace the frustrations, the confusions, the uncertainty, it is all a part of the experience and the process.)*

There will be schedules posted on the walls around the studio if you have any questions about what is happening at which times. If you have an emergency or need anything, you can always come to us. If it is an emergency, please, do verbalize it. At the end of each day, you will fill out a questionnaire, where you will be given the opportunity to share your experiences during the intensive. This will be filmed, for experimental purposes, and so we can remember the choreography we create together as well as the process of choreographing without verbal forms of communication. We hope you will find pleasure and epiphanies in this experience and enjoy this journey as much as we will. Thank you so very much and we are looking forward to moving with you! Any Questions?

---

*This was only said for the nonverbal group

Supplementary Material C2.Group 1 Dancer's Schedule

Group 1 Experiment Schedule

Day 1

9:00-9:30	Debriefing
9:30-10:00	Warm-Up
10:00-11:00	Improvisation
11:00-11:30	Improvisation
11:30-12:00	Codify Improvisation (dancers begin refining and sampling movement that will later be integrated into final choreographic sequences)
12:00-12:30	Lunch Break (it is imperative that the dancers do **NOT** engage in any conversation about what has taken place in the studio; all other forms of conversation are welcome)

12:30-13:00	Improvisation
13:00-13:30	Codifying Improvisation into duos, trios
13:30-14:00	Introducing Choreographing Part 1
14:00-14:30	Finding an ending place, allowing for ((non-verbal) movement clarifications)
14:30-15:00	Dancers answer questionnaire

Day 2

9:00-9:30	Warm-Up
9:30-10:00	Review Choreography from previous day
10:00-11:00	Improvisation with
11:00-11:30	Improvisation with the intended choreographic music
11:30-12:00	Codify Improvisation (dancers begin refining and sampling movement that will later be integrated into final choreographic sequences)
12:00-12:30	Lunch Break (it is imperative that the dancers do **NOT** engage in any conversation about what has taken place in the studio, all other forms of conversation are welcome)
12:30-13:00	Improvisation
13:00-13:30	Codifying Improvisation
13:30-14:00	Introducing Choreographing Part 2
14:00-14:30	Finding an ending place, allowing for ((non-verbal) movement clarifications)
14:30-15:00	Dancers answer questionnaire

Day 3

9:00-9:30	Warm-Up
9:30-10:00	Review Choreography from previous day
10:00-11:00	Improvisation
11:00-11:30	Improvisation
11:30-12:00	Codify Improvisation (dancers begin refining and sampling movement

	that will later be integrated into final choreographic sequences)
12:00-12:30	Lunch Break (it is imperative that the dancers do **NOT** engage in any conversation about what has taken place in the studio, all other forms of conversation are welcome)
12:30-13:00	Improvisation
13:00-13:30	Codifying Improvisation
13:30-14:00	Introducing Choreographing Part 3
14:00-14:30	Finding an ending place, allowing for ((non-verbal) movement clarifications)
14:30-15:00	Dancers answer questionnaire **AND** are also permitted to verbalize experiences: **Interviews**

Day 4

9:00-9:30	Warm Up
9:30-10:30	Reviewing all materials of the choreography without music
10:30-11:00	Break first part of the choreography with music
11:00-11:30	Break 2nd part of the choreography with music
11:30-12:00	Codify Choreography will be taking note of dancer's movement
12:00-12:30	Lunch Break (it is imperative that the dancers do **NOT** engage in any conversation about what has taken place in the studio, all other forms of conversation are welcome)
12:30-13:00	Introduce Choreography with music
13:00-13:30	Codifying Choreography
13:30-14:00	Codifying Choreography
14:00-14:30	Finding an ending place, allowing for (nonverbal) movement clarifications)
14:30-15:00	Dancers answer questionnaire

Day 5

9:00-9:30	Warm-Up
9:30-10:00	Reviewing all materials of the choreography without music from

	previous day
10:00-11:00	Reviewing Individual Pride parts of the choreography without music
11:00-12:00	Reviewing all 3 parts of the choreography with music
11:00-11:30	Codify Choreography
11:30-12:00	Codify Choreography
12:00-12:30	Lunch Break (it is imperative that the dancers do **NOT** engage in any conversation about what has taken place in the studio, all other forms of conversation are welcome)
12:30-13:00	Codify Choreography
13:00-13:30	Codifying Choreography
13:30-14:00	All three parts: Codifying Choreography
14:00-14:30	Finding an ending place, allowing for (nonverbal) movement clarifications)
14:30-15:00	Dancers answer questionnaire

Day 6:

9:00-9:30	Debriefing
9:30-10:00	Warm-Up
10:00-10:30	Non-verbal Follow up Questions, Concerns about the piece
10:30-11:00	Reviewing all 3 parts of the choreography with music
11:00-11:30	Reviewing all 3 parts of the choreography with music
11:30-12:00	Dancers will answer a written questionnaire, and given an opportunity to verbalize their experience of the intensive

Supplementary Material C3. Group 2 Dancer's Schedule

Group 2 Experiment

Day 1

9:30-9:45	Debriefing/Questionnaires
9:45-10:30	Warm-Up

10:30-11:30	Intro Improvisation
11:30-12:30	Improvisation Part 1
12:30-13:00	Lunch **(it is imperative that the dancers do NOT engage in any conversations about what has taken place in the studio; all other forms of conversation are welcome)**
13:00-13:15	Reactivation
13:15-14:00	Codify Improvisation (dancers begin refining and sampling movement that will later be integrated into final choreographic sequences)
14:00-15:00	Finding an Ending for the day's choreography
15:00-15:30	Cool down/Dancers answer questionnaire
Day 2	
9:30-9:45	Debriefing/Questionnaires
9:45-10:30	Warm-Up
10:30-11:30	Review Previous Day(s) Choreography
11:30-12:30	Improvisation Part 2
12:30-13:00	Lunch **(it is imperative that the dancers do NOT engage in any conversation about what has taken place in the studio; all other forms of conversation are welcome)**
13:00-13:15	Reactivation
13:15-14:00	Codify Improvisation (dancers begin refining and sampling movement that will later be integrated into final choreographic sequences)
14:00-15:00	Finding an Ending for the day's choreography
15:00-15:30	Cool down/Dancers answer questionnaire
Day 3	
9:30-9:45	Debriefing/Questionnaires
9:45-10:30	Warm-Up
10:30-11:30	Review Previous Day(s) Choreography
11:30-12:30	Improvisation Part 3

12:30-13:00	Lunch **(it is imperative that the dancers do NOT engage in any conversation about what has taken place in the studio; all other forms of conversation are welcome)**
13:00-13:15	Reactivation
13:15-14:00	Codify Improvisation (dancers begin refining and sampling movement that will later be integrated into final choreographic sequences)
14:00-15:00	Finding an Ending for the day's choreography
15:00-15:30	Cool down/Dancers answer questionnaire and **INTERVIEWS**

Day 4

9:30-9:45	Debriefing/Questionnaires
9:45-10:30	Warm-Up
10:30-11:30	Review All 3 Parts Choreography
11:30-12:30	Rework the choreography
12:30-13:00	Lunch **(it is imperative that the dancers do NOT engage in any conversation about what has taken place in the studio; all other forms of conversation are welcome)**
13:00-13:15	Reactivation
13:15-14:00	Codify Improvisation (dancers begin refining and sampling movement that will later be integrated into final choreographic sequences)
14:00-15:00	Finding an Ending for the day's choreography
15:00-15:30	Cool down/Dancers answer questionnaire

Day 5

9:30-9:45	Debriefing/Questionnaires
9:45-10:30	Warm-Up
10:30-11:30	Review All 3 Parts Choreography
11:30-12:30	Refining the choreography
12:30-13:00	Lunch **(it is imperative that the dancers do NOT engage in any conversation about what has taken place in the studio; all other forms**

	of conversation are welcome)
13:00-13:15	Reactivation
13:15-14:00	Codify Improvisation (dancers begin refining and sampling movement that will later be integrated into final choreographic sequences)
14:00-15:00	Finding an Ending for the day's choreography
Day 6	
10:30-11:30	Warm Up
11:30-12:00	Break
12:00-13:00	Final RUN THROUGH
13:00-14:00	Final Questionnaires/ EXIT INTERVIEWS
14:00-15:00	Late Lunch

Supplementary Material C4. Choreographer's Sign Movement Lexicon

From the top: tap the top of head

Repeat: circling hands

Collective Attention: arm/hand up, flipping wrist

Starting from: table wiping

Add on/Move on: tap each wrist

Question: Caress the beard

Clarity: wiping the face

Break: crisscross forearms

Time: check the wrist

End of Rehearsal Thank you: pound fist into palm, prayer hands

Appendix D

Supplementary Material D1. PANAS Questionnaire

Given before and after each day of the experiment to both group 1 and group 2:

PANAS-GEN

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you GENERALLY feel this way, that is how you feel ON AVERAGE. Use the following scale to record your answers.

Name_____ Date_____

	Very Slightly or not at all		Moderately		Extremely
Active	☐	☐	☐	☐	☐
Attentive	☐	☐	☐	☐	☐
Determined	☐	☐	☐	☐	☐
Inspired	☐	☐	☐	☐	☐
Alert	☐	☐	☐	☐	☐
Afraid	☐	☐	☐	☐	☐
Nervous	☐	☐	☐	☐	☐
Ashamed	☐	☐	☐	☐	☐

Hostile	☐	☐	☐	☐	☐
Upset	☐	☐	☐	☐	☐

PANAS Evaluation (Group 1)

The PANAS-SF questionnaire was used before and after each of the six experiment day. Each dancer rated his or her emotion state based on the present moment in which they were filling out the questionnaire Questions were answered on a 5 point Likert Scale (1 = very slightly or not at all and 5 = Extremely).

Table D1. Group 1 Pre-Panas Results

		PA PANAS		NA PANAS	
Training	Day	M	SD	M	SD
	Day 1	3.267	0.704	1.267	0.458
Encoding	Day 2	3.533	0.743	1.667	1.029
	Day 3	3.733	0.884	1.267	0.594
	Day 4	3.4	1.183	1.133	0.352
Refinement	Day 5	4.067	0.884	1.133	0.352
	Day 6	3.60	0.967	1.000	0.000

Table D1. shows the mean and standard deviation for all the participants of group 1 preceding each day's experimentation (pre PANAS) PA equals Positive Affect, NA stands for Negative Affect.

Table D2. Group 1 Post-Panas Results

		PA PANAS		NA PANAS	
Training	Day	M	SD	M	SD
	Day 1	3.867	0.915	1.267	0.458

Encoding	Day 2	3.867	1.189	1.000	1.200
	Day 3	2.933	1.280	1.400	0.829
	Day 4	3.933	1.335	1.389	0.000
Refinement	Day 5	4.067	0.961	1.133	0.352
	Day 6	3.7	1.418	1.000	0.000

Table D2. shows the mean and standard deviation for all the participants of group 1 after each day's experimentation (pre PANAS) PA equals Positive Affect, NA stands for Negative Affect.

PANAS Evaluation (Group 2)

Questions were answered on a 5 point Likert Scale (1 = very slightly or not at all and 5 = Extremely).

Table D3 Group 2 Pre-Panas Results

		PA PANAS		NA PANAS	
Training	Day	M	SD	M	SD
	Day 1	3.467	1.125	1.400	0.632
Encoding	Day 2	3.533	1.642	1.000	1.149
	Day 3	3.400	1.121	1.067	0.258
	Day 4	3.867	0.990	1.467	0.640
Refinement	Day 5	2.733	1.099	1.400	0.051
	Day 6	3.467	1.246	1.400	0.507

Table D3. shows the mean and standard deviation for all the participants of group 2 preceding each day's experimentation (pre PANAS) PA equals Positive Affect, NA stands for Negative Affect.

Table D4. Group 2 Post-Panas Results

		PA PANAS		NA PANAS	
Training	Day	M	SD	M	SD

	Day 1	3.733	1.099	1.400	0.632
Encoding	Day 2	3.733	1.334	1.067	1.199
	Day 3	4.200	1.297	1.133	0.352
	Day 4	3.533	0.990	2.133	1.060
Refinement	Day 5	4.200	0.862	1.200	0.041
	Day 6	4.267	0.703	1.600	0.986

Table D4. shows the mean and standard deviation for all the participants of group 2 after each day's experimentation (pre PANAS) PA equals Positive Affect, NA stands for Negative Affect.

Supplementary Material D2: Dancer's Questionnaire Section A: Days One-Three

Dancer`s Experience Questionnaire

Name _____ Date_____

Thank you very much. Your participation is extremely helpful for our research.

Have you ever participated in this type of choreographic process? Yes or No

If yes, please elaborate when, where, and with whom:

_____
_____

How well did you understand the choreographers` intentions today? Please circle your response:

(not at all) 1 - 2 - 3 - 4 - 5 - 6 - 7 (very much so)

Please briefly explain your answer below:

What do you think the choreographer's intentions for the dance are?

What do you think the dance means?

Any other thoughts, questions?

Supplementary Material D3: Dancer's Questionnaire Section B: Days Four-Six

Name _____
Date_____

Thank you very much for your participation. Your participation is extremely helpful for our research.

On a scale from 1(not at all) to 7(very much so), How well did you understand the choreographers` intentions? Please circle your response:

(not at all) 1 - 2 - 3 - 4 - 5 - 6 - 7 (very much so)

What do you think the choreographer's intentions for the dance are?

Did you find it difficult to understand the choreographer`s intentions for the dance? Why or Why not?

What do you think the dance means?

Any other thoughts, questions?

Now, please think back to when you were dancing. How did you feel while dancing? Please try to think about your general feelings, however if you had notable feelings —if only fleeting—feel free to include those as well.

During part 1 of the dance, I felt…

	Not at all			Neither			Extremely
Elated joy	☐	☐	☐	☐	☐	☐	☐
Happiness	☐	☐	☐	☐	☐	☐	☐
Sadness	☐	☐	☐	☐	☐	☐	☐
Despair	☐	☐	☐	☐	☐	☐	☐
Fear	☐	☐	☐	☐	☐	☐	☐
Terror	☐	☐	☐	☐	☐	☐	☐
Cold anger	☐	☐	☐	☐	☐	☐	☐
Hot anger	☐	☐	☐	☐	☐	☐	☐
Catharsis	☐	☐	☐	☐	☐	☐	☐
Disgust	☐	☐	☐	☐	☐	☐	☐
Contempt	☐	☐	☐	☐	☐	☐	☐
Shame	☐	☐	☐	☐	☐	☐	☐
Guilt	☐	☐	☐	☐	☐	☐	☐
Pride	☐	☐	☐	☐	☐	☐	☐
Boredom	☐	☐	☐	☐	☐	☐	☐

In general, I felt…

	Not at all			*Neither*			*Extremely*
Emotionally (aroused)	☐	☐	☐	☐	☐	☐	☐
Positive emotion	☐	☐	☐	☐	☐	☐	☐
Negative emotion	☐	☐	☐	☐	☐	☐	☐

During part 2 of the dance, I felt…

	Not at all			Neither			Extremely
Elated joy	☐	☐	☐	☐	☐	☐	☐
Happiness	☐	☐	☐	☐	☐	☐	☐
Sadness	☐	☐	☐	☐	☐	☐	☐
Despair	☐	☐	☐	☐	☐	☐	☐
Fear	☐	☐	☐	☐	☐	☐	☐
Terror	☐	☐	☐	☐	☐	☐	☐
Cold anger	☐	☐	☐	☐	☐	☐	☐
Hot anger	☐	☐	☐	☐	☐	☐	☐
Catharsis	☐	☐	☐	☐	☐	☐	☐
Disgust	☐	☐	☐	☐	☐	☐	☐
Contempt	☐	☐	☐	☐	☐	☐	☐
Shame	☐	☐	☐	☐	☐	☐	☐
Guilt	☐	☐	☐	☐	☐	☐	☐
Pride	☐	☐	☐	☐	☐	☐	☐
Boredom	☐	☐	☐	☐	☐	☐	☐

In general, I felt…

	Not at all			*Neither*			*Extremely*
Emotionally (aroused)	☐	☐	☐	☐	☐	☐	☐
Positive emotion	☐	☐	☐	☐	☐	☐	☐
Negative emotion	☐	☐	☐	☐	☐	☐	☐

During Part 3 of the dance, I felt…

	Not at all			Neither			Extremely
Elated joy	☐	☐	☐	☐	☐	☐	☐
Happiness	☐	☐	☐	☐	☐	☐	☐
Sadness	☐	☐	☐	☐	☐	☐	☐
Despair	☐	☐	☐	☐	☐	☐	☐
Fear	☐	☐	☐	☐	☐	☐	☐
Terror	☐	☐	☐	☐	☐	☐	☐
Cold anger	☐	☐	☐	☐	☐	☐	☐
Hot anger	☐	☐	☐	☐	☐	☐	☐
Catharsis	☐	☐	☐	☐	☐	☐	☐
Disgust	☐	☐	☐	☐	☐	☐	☐
Contempt	☐	☐	☐	☐	☐	☐	☐
Shame	☐	☐	☐	☐	☐	☐	☐
Guilt	☐	☐	☐	☐	☐	☐	☐
Pride	☐	☐	☐	☐	☐	☐	☐
Boredom	☐	☐	☐	☐	☐	☐	☐

In general, I felt…

	Not at all			*Neither*			*Extremely*
Emotionally (aroused)	☐	☐	☐	☐	☐	☐	☐
Positive emotion	☐	☐	☐	☐	☐	☐	☐
Negative emotion	☐	☐	☐	☐	☐	☐	☐

Now, please stop for a second and consider the following questions:

1. **What do you think *the choreographers wanted to communicate via the movement of the dance* for *each* section of the dance?**
   Please go back to the individual emotion words above and circle any feelings that you think the choreographer specifically wanted to communicate for each part of the dance. You can circle as many words as you think are correct, but ***please only choose notable feelings***. You can also circle no words if you think none apply.

2. **What do you think the *observers of your dance will feel when they watch you perform for each section of the dance* (even if it was not the choreographer´s intention)?**
   Please go back and place a *star next to the feeling words* above for each part of the dance that you think apply.
   You can circle as many or as few words as think apply.
   You can also circle no words if you think none apply.

3. **Within the entire dance experience today, did your experience or feelings/impressions change or develop throughout?**

(not at all) 1 - 2 - 3 - 4 - 5 - 6 - 7 (very much so)

If you answered '2' or more, please briefly explain your experience below:

4. If you answered '2' or more, in general, which part(1,2,3) of the dance did you experience change the most?

1 - 2 - 3

Supplementary Material D4: Audience Questionnaire

Please read the following:

BUT DO NOT CONTINUE UNTIL AFTER THE DANCE IS COMPLETE.

This performance is the result of a long period of training and preparation by the choreographers and dancers, and is meant to be perceived, and we hope, enjoyed as a work of art.

Nevertheless, this show is also a distinct portion of a larger student research project focusing on audience interaction with dance itself. Therefore, we hope that you might work with us, as you watch the show, to help us collect some data on your own personal experience. We would like to request the two following things:

1. **While you are watching the dance:**

   You may have noticed that you received a colored ticket when you entered. As you watch the dance, we would like to specifically request that you **pay close attention** to the dancers wearing the **same color**. You are of course free to watch the entire show and all dancers, and we hope that you will enjoy. However, after the dance is finished, we will ask you a few questions about the dancers wearing **your ticket color**, and we ask that therefore you give special attention to them. Don't worry, **this will not be a memory test**, and we do not expect you to memorize the dance moves or the visual appearance of your dancers, etc. Rather, we will ask you more about your own reactions and aesthetic experience of their dancing.

   Please also notice that there will be 3 parts to the dance. These will be indicated by the "**stand-up sit-down**" demonstration done by the choreographers during the performance . We will ask you some questions about your experience of each.

2. **After the dance:** When the dance is finished, and the lights come up, we would like to ask you to begin the survey. This should take about **10 minutes or less**. After everyone is finished, we will have a panel discussion in which you are welcome to discuss your experience with the choreographers and dancers.

PLEASE DO NOT CONTINUE TO THE NEXT PAGE UNTIL THE DANCE IS FINISHED

Thank you again!

Now we would like to ask you some questions about your experience

All answers you provide will be anonymous. Your data will only be used for scientific or academic purposes.

By answering the following questions, you consent that you have read and understand this explanation and give us permission to use your data for academic or scientific purposes (including research papers, conference presentations, etc.)

Dance ticket color_____

Now, please think back to when you were watching the dance. How did YOU FEEL? while watching? Please try to think about your general feelings, however if you had notable feelings —if only fleeting—feel free to include those as well.

Now, please think back to when you were watching the dance. How did YOU FEEL? while watching? Please try to think about your general feelings, however if you had notable feelings —if only fleeting—feel free to include those as well.

During PART 1: How did you feel?

	Not at all						Extremely
Elated joy	☐	☐	☐	☐	☐	☐	☐
Happiness	☐	☐	☐	☐	☐	☐	☐
Sadness	☐	☐	☐	☐	☐	☐	☐
Despair	☐	☐	☐	☐	☐	☐	☐
Fear	☐	☐	☐	☐	☐	☐	☐
Terror	☐	☐	☐	☐	☐	☐	☐
Cold anger	☐	☐	☐	☐	☐	☐	☐
Hot anger	☐	☐	☐	☐	☐	☐	☐
Catharsis	☐	☐	☐	☐	☐	☐	☐
Disgust	☐	☐	☐	☐	☐	☐	☐
Contempt	☐	☐	☐	☐	☐	☐	☐
Shame	☐	☐	☐	☐	☐	☐	☐
Guilt	☐	☐	☐	☐	☐	☐	☐
Pride	☐	☐	☐	☐	☐	☐	☐
Boredom	☐	☐	☐	☐	☐	☐	☐

In general, I felt…

	Not at all						*Extremely*
Emotionally (aroused)	☐	☐	☐	☐	☐	☐	☐
Positive emotion	☐	☐	☐	☐	☐	☐	☐
Negative emotion	☐	☐	☐	☐	☐	☐	☐

During PART 2: How did you feel?

	Not at all						Extremely
Elated joy	☐	☐	☐	☐	☐	☐	☐
Happiness	☐	☐	☐	☐	☐	☐	☐
Sadness	☐	☐	☐	☐	☐	☐	☐
Despair	☐	☐	☐	☐	☐	☐	☐
Fear	☐	☐	☐	☐	☐	☐	☐
Terror	☐	☐	☐	☐	☐	☐	☐
Cold anger	☐	☐	☐	☐	☐	☐	☐
Hot anger	☐	☐	☐	☐	☐	☐	☐
Catharsis	☐	☐	☐	☐	☐	☐	☐
Disgust	☐	☐	☐	☐	☐	☐	☐
Contempt	☐	☐	☐	☐	☐	☐	☐
Shame	☐	☐	☐	☐	☐	☐	☐
Guilt	☐	☐	☐	☐	☐	☐	☐
Pride	☐	☐	☐	☐	☐	☐	☐
Boredom	☐	☐	☐	☐	☐	☐	☐

In general, I felt…

	Not at all						*Extremely*
Emotionally (aroused)	☐	☐	☐	☐	☐	☐	☐
Positive emotion	☐	☐	☐	☐	☐	☐	☐
Negative emotion	☐	☐	☐	☐	☐	☐	☐

During PART 3: How did you feel?

	Not at all						Extremely
Elated joy	☐	☐	☐	☐	☐	☐	☐
Happiness	☐	☐	☐	☐	☐	☐	☐
Sadness	☐	☐	☐	☐	☐	☐	☐
Despair	☐	☐	☐	☐	☐	☐	☐
Fear	☐	☐	☐	☐	☐	☐	☐
Terror	☐	☐	☐	☐	☐	☐	☐
Cold anger	☐	☐	☐	☐	☐	☐	☐
Hot anger	☐	☐	☐	☐	☐	☐	☐
Catharsis	☐	☐	☐	☐	☐	☐	☐
Disgust	☐	☐	☐	☐	☐	☐	☐
Contempt	☐	☐	☐	☐	☐	☐	☐
Shame	☐	☐	☐	☐	☐	☐	☐
Guilt	☐	☐	☐	☐	☐	☐	☐
Pride	☐	☐	☐	☐	☐	☐	☐
Boredom	☐	☐	☐	☐	☐	☐	☐

In general, I felt…

	Not at all			*Neither*			*Extremely*
Emotionally (aroused)	☐	☐	☐	☐	☐	☐	☐
Positive emotion	☐	☐	☐	☐	☐	☐	☐
Negative emotion	☐	☐	☐	☐	☐	☐	☐

STOP. Before continuing…

Now, please stop for a second and consider the following question:

1. **What emotions do you think *the choreographer and dancers wanted to communicate via the dance* for *each* section?**
   Please go back to the individual emotion words above and circle any feelings that you think the choreographer specifically wanted to communicate for each part of the dance. You can circle as many words as you think are correct, but ***please only choose notable feelings***. You can also circle no words if you think none apply.

PLEASE PAY ATTENTION TO ONLY THE DANCERS WEARING YOUR TICKET COLOR

Do you have a background in the arts? Yes or No

If yes, please elaborate:

_____
_____

Have you ever witnessed this style of choreography? Yes or No

If yes, please elaborate when, where, and with whom:

_____
_____

How well did you understand the piece today? Please circle your response:

(not at all) 1 - 2 - 3 - 4 - 5 - 6 - 7 (very much so)

Please briefly explain your answer below:

What do you think the dance means?

3. **Within the entire dance experience today, did your experience or feelings/impressions change or develop throughout?**

(not at all) 1 - 2 - 3 - 4 - 5 - 6 - 7 (very much so)

If you answered '2' or more, please briefly explain your experience below:

4. If you answered '2' or more, in general, which part(1,2,3) of the dance did you experience change the most? **1 - 2 - 3**

Thank you for your participation!

Abstract

The meaning of the body's movements is elusive in its nature - often only to be understood in relation to its action on or within an environment. Yet, what does an arbitrary bend of the knee have to do with elated joy? What does the torque of the waist mean in relation to anger? More than one could ever imagine… especially in the context of dance.

The body's movements and its emotion-expressing affordances, enable the investigation of nonverbal aspects of the triadic message exchange between the choreographer, the dancer and the audience. To explore the particular intersection of these phenomena: emotion, movement (dance), and communication, this experiment utilized a non-verbal communicative choreographic process to investigate the efficacy of the communication of one's emotion experience though movement.

This was a two part study. In study 1, the choreographer relays emotion intentions to two differing choreographic groups of dancers. In study 2: the two groups of dancers relay emotional intentions to an audience. The two groups of dancers differed in choreographic training: one received no verbal choreographic feedback and the other did. During the experimentation period, the choreographic process took place in two parts: the kinematic structure of the movement and the refinement of the movement. Each dancer was surveyed on their emotional experience using a scale-based assessment, as well as interviewed in order to evaluate their ability to feel and understand the emotional intentions of the choreographers.

The results reveal the effectiveness of nonverbal communication of emotional experience between the choreographer and the dancer and the dancer and the audience by comparing the survey responses between the two groups of dancers and the audience. Specifically, the results demonstrate dancers' ability to feel and understand the emotional intentions of the choreographers, as well as the audience's ability to feel and understand the emotional intentions of the two groups of dancers.

This study unfurls the assumptions and uncertainties about the body and its movements as a constituent of thought--elucidating how effective we can communicate even the complexities of emotions, utilizing the body as an explicit tool of communication, and ultimately share those emotional experiences that arise in the body's movements with others successfully.

Kurzzusammenfassung

Die Bedeutung der Bewegungen des Körpers ist in seiner Natur schwer fassbar, und oft nur in Bezug auf seine Wirkung auf oder in einer Umgebung zu verstehen. Doch was hat eine willkürliche Beugung des Knies mit beschwingter Freude zu tun? Was bedeutet das Drehen der Taille in Verbindung mit Wut? Mehr als man sich je vorzustellen vermag.... vor allem im Kontext des Tanzes.

Die Bewegungen des Körpers und seine emotional ausdrucksstarken Leistungen ermöglichen die Untersuchung nonverbaler Aspekte des triadischen Informationsaustauschs zwischen ChoreografIn, TänzerIn und Publikum. Um die besondere Überschneidung dieser Phänomene -- Emotion, Bewegung (Tanz) und Kommunikation -- zu erforschen, bediente sich dieses Experiment eines nonverbalen kommunikativen choreografischen Prozesses, um die Wirksamkeit der Kommunikation der eigenen Emotionserfahrung durch Bewegung zu untersuchen.

Dies war eine zweiteilige Studie. In Studie 1 gaben ChoreographInnen Emotionsabsichten an zwei verschiedene choreografische Gruppen von TänzerInnen weiter. In Studie 2 vermittelten die beiden Gruppen von TänzerInnen emotionale Absichten an ein Publikum. Die beiden Gruppen von TänzerInnen unterschieden sich im choreographischen Training: Die eine erhielt kein verbales choreographisches Feedback und die andere tat es. Während der Versuchsperiode fand der choreografische Prozess in zwei Teilen statt: der kinematischen Struktur der Bewegung und der Verfeinerung der Bewegung. Jede Tänzerin wurde anhand einer skalenbasierten Bewertung zu ihrer emotionalen Erfahrung befragt und interviewt, um ihre Fähigkeit zu bewerten, die emotionalen Absichten der Choreographen zu fühlen und zu verstehen.

Die Ergebnisse verdeutlichen die Wirksamkeit der nonverbalen Kommunikation emotionaler Erfahrung zwischen den ChoreographInnen und den TänzerInnen sowie zwischen den TänzerInnen und dem Publikum durch den Vergleich der Umfrageergebnisse zwischen den zwei TänzerInnengruppen und dem Publikum. Insbesondere demonstrieren die Ergebnisse die Fähigkeit der TänzerInnen, die emotionalen Absichten der ChoreografInnen zu fühlen und zu verstehen; sowie die Fähigkeit des Publikums, die emotionalen Absichten der beiden Gruppen von TänzerInnen zu fühlen und zu verstehen.

Diese Studie beschreibt die Annahmen und Unsicherheiten über den Körper und seine Bewegungen als Bestandteil des Denkens - und zeigt, wie effektiv wir selbst die Komplexität von Emotionen kommunizieren können, indem wir den Körper als explizites Kommunikationsmittel nutzen und schließlich diese emotionalen Erfahrungen, die in den Bewegungen des Körpers entstehen, mit anderen erfolgreich austauschen.