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Truth in Sight: The Effect of Physical Cues on Emotion

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Abstract

This study explored whether an actor taking a physical pose, normally associated with a specific emotion, affected the emotional state of an actor and whether this state was observable as well as transferable to an observer in an empathic fashion. The study consisted of 53 students from CSB/SJU obtained through convenience sampling. Dyads of the participants where observed who alternated in the roles of actors, who took on a posture normally associated with an emotion, and observers, who watched the pose taken by the actor. There were two conditions. One denoting confidence and one denoting sadness. Actors had their faces covered with neutral masks, and the observers watched the actors take on poses. Deception was used so as to keep the effects unconscious to the participants. Surveys were distributed before and after the postures to assess the change in emotion of both members of each dyad. The sadness condition revealed a significant mean difference in emotional change among women who were acting, $t(16) = 2.38$, $p < .05$. The confidence condition revealed a significant mean difference in emotional change among men who were observing, $t(9) = 2.59$, $p < .05$. Lastly, the identification of emotion revealed a significant result among all participants, $X^2(1, N = 53) = 13.76$, $p < .001$.

The Effect of Physical Cues on Emotion

The nonverbal cues of an individual are an important part of human interaction as they contribute to 55% of communication (Mehrabian, 1981). While many studies have analyzed the way in which facial cues play a role in emotionality and communication there has been very little research in regards to the role that posture alone plays in this process. However, posture is often much more visible than that of facial cues, and can, therefore, be more useful to an individual at times. Further research in regards to posture may help develop improved methods of communication and increase understanding overall. Communication and understanding take place on both a conscious and unconscious level. The present study will look at the connection between posture and emotional conveyance and is influenced heavily by research on the self-perception theory, mimicry, empathy, and mirror neurons.

Self-perception Theory

Self-perception theory claims that people infer their attitudes by looking at their own behavior just as an outside observer might. This theory comes from the idea that, often, there are times when "internal cues are weak, ambiguous, or uninterpretable, the individual […] must rely upon those same external cues to infer the individual's inner states", (Bem, 1970, p. 2). Even very subtle differences in physicality can be associated with behavior change such as the phenomena that sitting in a left handed desk tends to make people lean more politically towards the left in their opinions and views or that crossing one's arms increases persistence at a specific task as this posture can be associated with stubbornness (Friedman & Elliot, 2008; Oppenheimer & Trail, 2010).

The facial feedback effect has furthered research by isolating the same effects, but with only using one's face (Schnall & Laird, 2003). Simply put, this effect is the tendency of facial

cues to trigger emotion. Also, an important attribute of the facial feedback effect is that it influences emotions on the affective, but not the cognitive, responses (Strack, Martin, & Stepper, 1988). To put this statement in basic terms, it means that the results are felt by the individual, but the individual is unaware that they are affected since the process is an unconscious one.

For example, simply forcing a smile is a way to boost one's happiness (Mori & Mori, 2009). When combined, the facial feedback effect and the self-perception theory have the capacity to induce powerful emotional states and memories such as seen in the practice of Alba Emoting. The practice of Alba emoting revolves around strict breathing, posture, and facial exercises which allow trained actors to achieve a great deal of emotional depth (Bloch, 1993).

In addition, any inhibitions in the self-perception theory or the facial feedback effect can directly affect an individual's ability to experience and understand personal emotions. This consequence has been observed in studies where facial reactions have been inhibited (Davis, Senghas, & Ochsner, 2009). A direct implication in present society was further shown by utilizing Botox to reduce people's physical ability to react to sad or angry writing. The reduction in physical ability led to the inability to emotionally interpret sad or angry writing (Havas et al., 2010; Hennenlotter et al., 2009). These studies display the effect physical actions have on emotion, and, while many focus specifically on the face, it logically may follow that neural connections from heavily repeated emotional stances and postures also have reinforced emotional reactions.

Posture Alone

There has been little research on the emotional conveyance of posture, but, starting when James (1950) proposed the idea that people assuming physical postures associated with negative or positive emotions may then experience the emotions associated with the congruent posture,

there have been some studies which have attempted to observe some of the ways in which posture influences the self as well as interpersonal interaction. For example, while posture and facial expression each separately have an effect, when put together they create a more intense emotional reaction in people than either would alone (Flack, Laird, & Cavallaro, 1999). As for posture alone, it has also been observed in studies that isolate posture that people felt more confident when sitting straight and pushing out their chest rather than when slouching with their gaze directed downwards (Briñol, Petty, & Wagner, 2009). In addition, people who assume high-power postures, reflecting confidence and positivity, rather than low-power postures, reflecting insecurity and negativity, automatically experience increased testosterone, feelings of power, and risk-tolerance (Carney, Cuddy, & Yap, 2010).

What is important to note about these studies is that the results are congruent with the larger base of data regarding the influence of the face on one's emotion. Essentially these studies are a basis for that the emotional response felt by physical cues may be transmitted similarly to that of facial cues. Because of this similarity, it may cautiously be proposed that much of the research regarding facial expression, especially in regards to emotional conveyance, may also generalize to posture. This generalization needs to be further assessed, but it provides a starting point for what the current study attempts to utilize in the way it tests emotional conveyance. The present study, however, also attempts to add to research by assessing the degree to which posture alone is important in communication.

Empathy

As humans, people rely heavily upon each other in social contexts. A way in which this interaction can be improved is by furthering understanding and relatability by achieving a higher degree of empathy. The dilemma that must then be solved is how to attain this proposed level of

empathy. One such idea exists in regards to conscious effort such as that taken by the Piagetian perspective or the simulation theory, such as a role taking strategy, to allow people to relate to others by putting oneself in their "mental" shoes (Gallese & Goldman, 1998; Selman & Byrne, 1974). However, conscious effort only represent part of every human interaction. The present study looks into the importance of unconscious processes to convey a greater understanding of human interaction.

These results of unconscious behavior and its benefits are constantly seen throughout society. One such example of this is when people automatically imitate another which has been shown to improve one's levels of empathic understanding (Neal & Chartrand, 2011; Vaughan & Lanzetta, 1981). Two such theories which explain this phenomenon is that of emotional contagion in conjunction with embodied emotion. Emotional contagion "is the tendency to automatically mimic and synchronize expressions, vocalizations, postures, and movements with those of another person's and, consequently, to converge emotionally" (Hatfield, Cacioppo, & Rapson, 1992, p. 153-154). Likewise, embodied emotion states that, after encountering an experience, such as a physical posture, the same centers of the brain activate and evoke the emotion again to a certain degree (Niedenthal, 2007).

The effects of these two theories have been demonstrated time and time again in numerous studies. For example, people imitating someone's expression while the other person got an electric shock increased their own perspiration and heart rate (Vaughan & Lanzetta, 1981). The practicality of mimicry is to increase understanding and take on another's perspective by getting a taste of what they are experiencing. The effectiveness of this is shown in a study where people were more likely to consider sleep deprivation a torture when feeling slight sleep deprivation themselves (Nordgren, Mcdonnell, & Loewenstein, 2011). In another study, people

mimicked photographs while trying to communicate the emotion of the photograph. This mimicry led the participants to feel a degree of the emotion portrayed in the photographs (Kleinke, Peterson, & Rutledge, 1998). While the present study does not measure the degree of imitation of the actor in comparison for the observer, it does not limit the observer's ability to act in an imitative fashion of the actor. In this regard imitation may still take place.

These automatic responses are so influential in interactions that individuals synchronize verbal and nonverbal behaviors almost immediately after meeting (Ireland & Pennebaker, 2011). The reason for the unconscious mimicry, also known as the chameleon effect, is that it improves interpersonal interactions (Chartrand & Bargh, 1999). Matching motor behaviors in a task tends to lead to increased levels of liking, and those with higher levels of empathy may have an edge in the world (Chandler & Schwarz, 2009). By recognizing another's posture either consciously or unconsciously people then select how to then act themselves. This helps social interaction through concepts such as hierarchical differentiation which refers to people's tendency to select a complementary behavior such as a dominant or submissive posture so as to get along with one another (Tiedens, & Fragale, 2003). Evidence has shown that being unable to mimic another's expressions makes it more difficult to understand their emotions (Neal & Chartrand, 2011). This difficulty can then negatively influence one's relationship in society in regards to lacking mimicry, the chameleon effect, and hierarchical differentiation.

One proposal for why mimicry takes place and its effectiveness is that of mirror neurons. One of the effects of mirror neurons is that they have the ability to recognize another's emotion by being activated themselves (Iacoboni, 2009). An example of this process could refer to an observer who sees someone who is very happy and then experiences a positive emotional response. Due to the observer's observation, he or she will feel a bit of happiness oneself in order

to understand and relate to the other individual. Mirror neurons provide another bit of evidence that people are designed to be interconnected with one another. They allow people to share emotions and even further their understanding of the intentions of others (Iacoboni, 2009). Mirror neurons exist partially as tool for education since due to these "Newborns instinctively imitate rudimentary manual and facial gestures" (Iacoboni, 2009, p. 48). We can then safely assess that empathy may then be inherent in nature due to the fact that the same neurons which allow humanity to learn also allow people to relate to one another.

The influence of empathic understanding in everyday life exists everywhere and cannot be underestimated. Direct evolutionary advantages are seen by the way in which empathy allows people to cooperate such as in the tendency of newborns to cry more when other newborns are crying rather than when on their own or when a tape of crying is being played (Sagi & Hoffman, 1976). This is apparently due to the inherent motivation of children to help those with whom they are interdependent (Heypach, Vaish, & Tomasello, 2013). Even chimpanzees lean towards options which help the greater population rather than selfish ones (Horner et al., 2011). Mirror neurons add to an individual's ability to foster interpersonal relationships throughout as children and even carry into adulthood to help people relate and understand one another (Iacoboni, 2009). When individuals lack these abilities to understand and learn, detrimental effects often occur. Deficits in the performance of mirror neurons have been pointed to as being responsible for many of the negative effects of autism (Oberman, & Ramachandran, 2007).

The aforementioned research is necessary to allow the assumption to be made that the actor in the present study will be affected by the posture through the self-perception theory, and that the observer will be able to observe and understand the emotion taking place in the actor as well as be affected by the physicality of the actor in an empathic fashion. These assumptions

were tested by having an actor to take on a physical posture associated with an emotion while an observer watched the process. Surveys were distributed before and after the process so as to assess the level of emotional change. The following research hypotheses were assessed:

Research Hypothesis 1: The assumed physical posture will increase the corresponding emotion in the actor. This research hypothesis is tied to the research of the self-perception theory in that the actor will assume a posture linked to a specific emotion and will later fill out a survey to assess the emotional change which that posture had on oneself.

Research Hypothesis 2: The emotion represented by the physical posture of the actor will be correctly identified by the observer. The observer will report what emotion they interpret the actor's posture as, and the responses will later be coded. This research hypothesis is created so as to assess the conscious understanding of the emotional posture by the observer.

Research Hypothesis 3: The actor's physicality will affect the observer so as to achieve an increase in the corresponding emotion. This research hypothesis is tied into the research of mirror neurons as well as emotional contagion. The observer will be given a survey after watching the actor so as to assess the change in emotion.

Research Hypothesis 4: The more intense the emotion is felt by the actor the more intense the observer will rate the emotion in the actor as. This research hypothesis is to compare the conscious assessment of the observer to the unconscious effect which the experiment had so as to find out which is more important.

Research Hypothesis 5: The greater the emotional response of the actor is the more intense the emotional response of the observer will be. This research hypothesis is also tied into the research of mirror neurons as well as emotional contagion. The observer will be given a

survey after watching the actor so as to later assess the degree to which the emotional change of the actor and the emotional change of the observer are related.

Method

Participants

53 participants for this study were recruited through convenience sampling of the student body of the College of St. Benedict and St. John's University which are two small liberal arts colleges. The majority of the participants were from the PRIA pool of the psychology department which consisted of students who were compensated with partial course credit in their psychology course. The remaining participants volunteered and were not compensated for their participation. Some dyads were same-sex and some were mixed-sex pairs.

Materials

Stopwatch. The researcher in the room used a stopwatch to time how long the participants held each posture to assure equal time for each trial.

Mask. A blank mask was used so that the observer could not view any of the actor's facial cues during the study. The mask had the eye holes covered so that the actor did not see and risk being affected by the facial cues of the observer.

Triangular peg puzzle. A logic puzzle involving jumping pegs was distributed at check in as well as one other time during the study so as to assure the participants were at a baseline at the beginning of each posture. The puzzle was completed individually each time. The game had fifteen movement spaces and began with fourteen pegs. Every time a peg was jumped it was removed from the board. Jumps could only be made into an unoccupied space. The goal of this game was to eliminate all but one of the pegs from the board.

Pre-Experimental Survey. A survey was distributed to the participants after they had first completed the peg puzzle so as to attain a baseline measure of confidence and sadness in the individual. The survey consisted of seven items. The items involved gender report, a yes or no response, fill in the blank, and responses based on a ten point scale. The survey is shown in Appendix A.

Post-Experimental Survey (Actor). A survey was distributed to the actor after the participant had finished assuming the posture denoting the specified emotion. The data taken from this survey were the confidence and sadness ratings. The survey consisted of seven items. The items required the participant to respond based on a ten point scale. The survey is shown in Appendix B.

Post-Experimental Survey (Observer). A survey was distributed to the observer after the actor had finished assuming the posture denoting the specified emotion. The data taken from this survey were the confidence and sadness ratings of the observer's emotional state, the emotional state of the actor, and the emotion which the observer labeled the actor as. The survey consisted of nine items. The items involved one fill in the blank response, and the rest were responses based on a ten point scale. The survey is shown in Appendix C.

Procedure

This experiment used a within groups design and involved a total of one researcher and two research assistants. The study was advertised as a study assessing how easily someone can concentrate for a specified time given different postures. When participants arrived they were asked to read and sign an informed consent form. They were told they would still receive credit even if they declined the study at any point. The researcher and assistants split up where one researcher checked people in and distributed a triangular peg puzzle, and the other two

conducted the experiment in the rooms. When the participants arrived they were then paired randomly. After being paired they attempted to complete the triangular peg puzzle for two minutes while in the same room, and, afterward, received the pre-experimental survey. After the surveys were completed and collected, the participants were led in their pairs by one of the researchers, to one of the two available treatment rooms. The two treatment rooms were identical in nature.

At the rooms, the two subjects were first questioned as to their relationship with each other. The researcher then made a note as to whether the subjects were strangers, acquaintances, friends, close friends, or other. The participants then chose randomly from two pieces of paper held by the researcher to determine who would start as the actor and who would start as the observer. The researcher then made a note and consulted a list as to which condition (either sadness or confidence) would be acted first. Block randomization and counter balancing prior to the study determined which of two conditions the dyad experienced first. The actor then received instructions for the randomly assigned condition. The instructions were given to the actor outside the room while the observer waited inside so that the observer would not hear. The researchers had specific guidelines to advise how the actor should stand. Examples of the instructions are as follows: The participant in the sadness condition was instructed to relax ones neck and shoulders so that the individual's arms hung loosely at his or her sides and to direct one's gaze in the direction of his or her shoes. The participant was also told to let his or her arms hang loosely at their sides. The participant in the confidence condition was instructed to keep one's head and chin up with his or her gaze focused straight ahead. The individual was also to pull one's shoulders back while pushing out his or her chest. The actor was also told that he or she would be holding the pose for ten seconds at a time, and the process would be done a total of five times.

After describing to the actor how he or she must pose, the researcher then led the actor into the room and explained to the observer that they must stand and pay attention to the actor as he or she will later assess how well the actor maintained concentration. The actor and the observer stood approximately six feet from each other during the trials. The actor was then given a mask with the eyeholes covered and was instructed to wear the mask. Then the researcher asked the actor to initiate the previously mentioned physicality. The researcher timed the physicality with a stopwatch and told the actor to release the physicality after ten seconds. Once the actor was relaxed the researcher asked the actor to initiate the physicality again. This process was done until the actor assumed to posture a total of five times while the observer watched. After completing the five treatments, the researcher distributed a post-experimental survey to actor and a post-experimental survey to the observer. After this survey was completed it was collected by the researcher. Both the actor and observer were then instructed to attempt the triangular peg puzzle again for two minutes to assure a return to an unaltered state. If any participants solved the peg puzzle at this phase in the study after not solving it the first time, or if they solved it the first time but not the second time, their results were removed from the study as their emotional state after completion or failure would not have made a consistent reference point. Next, the actor and observer switched roles. The actor was taken out of the room so that they observer would not hear and given instructions for the opposite condition in the study (If the confidence condition was done first then the sadness condition would be done at this point, and if the sadness condition was done first then the confidence condition would be done at this point). At the point of entering the room the process repeated itself until the second round of post-experimental surveys were collected. After collecting the surveys, the researcher revealed the true purpose of the study and debriefed the participants. After the study, the emotion which the

observer labeled the actor as was coded as having correctly or incorrectly identified the actor's emotion in regards to the condition. The responses were coded by the researcher and the research assistants, and were done after establishing good inter-rater reliability.

Results

The first research hypothesis was that the assumed physical posture will increase the corresponding emotion in the actor. Statistical analysis using a dependent samples t-test did not reveal a statistically significant result in the Confidence condition, $t(25) = .53$, $p > .05$ or in the Sadness condition $t(26) = .90$, $p > .05$ (see Table 1). These results did not support the research hypothesis, and thus assuming the physical posture did not increase the actor's emotion. However, examining the data by gender revealed a statistically significant difference among women in the sadness condition in that the female participants increased in their sadness scores after introducing the posture, $t(16) = 2.38$, $p < .05$. Female actor's sadness pre-treatment scores (M = 2.29, SD = 1.31) differed from their sadness post-treatment scores (M = 2.71, SD = 1.57).

The second research hypothesis was that the emotion represented by the physical posture of the actor will be correctly identified by the observer. Statistical analysis using Chi Square Goodness of Fit revealed a statistically significant pattern in the identified emotion of the observer, $X^2(1, N = 53) = 13.76$, $p < .001$. Consistent with the research hypothesis, observers were correctly able to identify the emotion represented by the physical posture of the actors.

The third research hypothesis was that the actor's physicality will affect the observer so as to achieve an increase in the corresponding emotion. Statistical analysis using a dependent samples t-test did not reveal a statistically significant result in the Confidence condition, $t(25) = .90$, $p > .05$ or in the Sadness condition $t(25) = .000$, $p > .05$ (see Table 2). These results did not support the research hypothesis. However, examining the data by gender revealed a statistically

significant among men in the Confidence condition in that the observers increased in their confidence scores after the introduction of the actor's posture $t(9) = 2.59$, $p < .05$. Table 4 shows these data. Male observer's confidence pre-treatment scores (M = 6.80, SD = 1.32) differed from their confidence post-treatment scores (M = 7.70, SD = 1.16).

The fourth research hypothesis was that the more intense the emotion is felt by the actor the more intense the observer will rate the emotion in the actor. Statistical analysis using Pearson's Correlation did not reveal a significant linear relationship between the actor's emotion and the observer's emotional rating. For the Confidence condition, $r(24) = .22$, $p > .05$. This did not support the research hypothesis. For the Sadness condition, $r(24) = .13$, $p > .05$. This did not support the research hypothesis.

The fifth research hypothesis was that the more intense the emotion is felt by the actor the more intense the emotional response will be felt by the observer. Statistical analysis using Pearson's Correlation did not reveal a significant linear relationship between the actor's emotion and the observer's emotional response for the Confidence condition nor for the Sadness condition. For the Confidence condition, $r(24) = .00$, $p > .05$. This did not support the research hypothesis. For the Sadness Condition, $r(24) = .11$, $p > .05$. This did not support the research hypothesis.

Discussion

This study examined the effect of posture on emotion as well as the degree to which physicality alone empathetically translates to another person. It also assessed how accurately a person can observe and identify physicality. The study attempted to add to the current basis of research in numerous different ways. The study attempted to isolate posture without facial cues as to assess its importance in emotional conveyance. The study also attempted to assess the

degree to which emotions are conveyed through posture by comparing the emotional change of an actor to that of an observer. Lastly, the experiment attempted to compare conscious and unconscious methods of understanding emotions in relation to posture. The initial research hypotheses only produced significant results in the ability of the observers to consciously identify the correct emotion of the actor. However, the study produced significant results when looking further into the results by examining data by gender in that, for men, the observer's confidence level increased in the confidence condition, and, for women, the actor's sadness increased in the sadness condition. A significant result was also attained in that the observers were able to correctly identify the kind of emotion represented by the actor.

As seen with the results among women, it appears that the negative condition seemed to have a greater effect size than the positive emotions. This result falls in line with the two forms of prior research indicating the women would be more likely to experience an emotional change in sadness. The first line of research states that negative emotions affect people more than positive ones (Baumeister et al., 2001). The second area of research involves women and in that they are more susceptible to negative emotions than men (Johnson & Whisman, 2013). The two concepts could very well explain why only women in the sadness condition experiences an emotional change.

Since the data indicated that only men are more influenced by the confidence level of others there is likely something else causing the result rather than the idea of mirror neurons and emotional contagion. The fascinating part about this result is that the actors did not actually increase in confidence. Instead, the posture itself evoked a response from the observers. This definitely lends support to the idea that a great deal of communication is influenced by posture. However, since male observer confidence was the only statistically significant result in this area,

it is also very possible that other influences are at work such as the tendency for males to engage in a fight or flight response when perceiving social threats (Geary & Flinn, 2002). This conclusion is drawn from the fact that only conscious assessment by the participants was made in regards to identifying an emotion. Since the postures were also accurately identified by the observers the process may have become a conscious rather than an unconscious one.

It is important to note that aside from sheer interest in the results, the data was examined by gender because of the research indicating that women are more likely to be affected by negative emotions. This was done in hopes of combatting the potential of such small effect sizes so that the degree of change in each participant could be assessed to a greater degree. While this yielded several interesting and significant results, running additional statistical tests on the data inherently increases the possibility of the occurrence of a Type I error which should be taken into account in future research.

Even though the data did not produce many significant results, this area of this study could be very beneficial to society as a whole. It is true that the effect sizes are likely small in nature, but it is possible that, if a person were to attempt to understand another's emotion, a very small degree of the emotion would be all that is needed to experience an empathic understanding. This may explain the results achieved in the study in that that people do not need to be heavily influenced by another's emotions so as to identify what another is feeling. It is also important to acknowledge the possibility that people may be able to recognize emotions based on cues rather than experiencing another's condition. Lastly, it must be acknowledged that that facial cues may possibly be unique in their conveyance of emotion while posture simply works to emphasize their effects rather than having importance on their own.

Social comparison theory could also explain why other results were not statistically significant (Wills, 1981). It is possible that social comparison may have had a stronger effect on an individual than the effects of empathy. Essentially this means that an observer witnessing and actor in the sadness condition may feel better about themselves and therefore decrease in his or her own sadness. The opposite effect would also occur in the confidence condition. This explanation could attribute to the lack of significance in the data if this phenomenon is manifesting itself in some individuals, but not in others.

The study itself has many limitations that could definitely be assessed in future research. Firstly, the present study had very low power. Using more participants would not only create a better chance to achieve a statistical result, but it would also greatly increase the external validity by making the sample more representative. The study used both same-sex and mixed-sex dyads to attempt to increase generalizability, but, it is possible that gender difference could have affected the results by introducing a confound as some dyads would be more similar than others. Future research could isolate specifically same-sex dyads or mixed-sex dyads so as to evaluate if this plays a role. Having only college students involved in the study definitely limits the overall impact of the research especially since most were involved in psychology courses. This study also was had to be very careful about how extreme postures had to be since a psychologist could not be present. The emotions were also selected due to their ease and ability to be replicated through instruction, but it is possible that confidence would have less of an effect on an individual since it may not have as large of an effect as others. This study also was only able to assess two different emotions due to the constraints on the number of participants available. Comparing a greater range of emotions could definitely be beneficial to this line of research as well as society as a whole.

Research in this field can very likely produce greater significance with minor adjustments to the current procedure. Further research may want to explore the possibility of using deception that points the participants towards a greater deal of introspection. People tend to be very poor at identifying their emotional states through introspection to being with, and, by using deception to distract from their emotional states, a degree of overall perception may have been lost (Nisbett & Bellows, 1977). Another way in which the effect could be increased would be to add a more direct emotional change to the participants such as the possibility of reading a sad story to induce sadness as well as adding a posture. Doing so would remove some of the control in the study, but it would likely increase the degree to which the actor is affected by an emotion. This approach would then focus the research more on the emotional change in the observer rather than that of the actor.

Further research could also develop a study similar to this one but possibly have a psychologist on hand so that people could be pushed farther in their physicality similar to that of Alba Emoting. This would likely evoke a greater emotional response from the individual and increase the effect size of the study. A further study could also examine more emotions than the ones I have chosen here so as to assess how useful the physical posture is across the whole emotional spectrum. Lastly, further research could be done by having the actor as a confederate so as to focus solely on the observer's actions and vice versa. This could lead to a more controlled study.

This area of research is still needed due to the possible implications of these findings. Further understanding of posture can be used in the clinical setting in instances such as the treatment of depressed individuals. This study can also be used very practically in the theater by providing guidelines for what an actor should try to portray onstage so as to evoke a catharsis

from the audience. Educators need to keep their nonverbal cues in mind as well so as to foster the best environment for students and even to maintain their role of leadership. Posture can also be a focus when increasing compliance by persuading people to take a stance which they did not previously believe due to their physicality (Burger & Caldwell, 2003; Wells & Petty, 1980). Further clarification of posture could event result in great influence in the fields of marketing and advertising so as to portray physicality and communicate the greatest level of understanding.

The practicality of this research should not be underestimated in present society. This is exemplified in the declining level of empathy in college students (Konrath, O'Brien, & Hsing, 2011). This drop in human relationships is only likely to get worse due to the impersonal direction in which society is headed. A more refined understanding of communication could potentially help combat this decline by repairing and forming interpersonal connections in society. Due to the potential benefits to society, the nonverbal understanding of the physicality of the individual should be further researched in the future.

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Appendix A: **Pre-Experimental Survey**

Gender: (Circle one) Male Female

Did you eat breakfast today? (Circle one)

Yes No

How alert are you feeling currently? (Circle a number)

Not Alert At All	1	2	3	4	5	6	7	8	9	10	Extremely Alert

How confident do you feel currently? (Circle a number)

Not Confident At All	1	2	3	4	5	6	7	8	9	10	Extremely Confident

How many hours of sleep did you get last night? (Write answer below)

_____

How sad do you feel currently? (Circle a number)

Not Sad At All	1	2	3	4	5	6	7	8	9	10	Extremely Sad

How difficult would you rate the peg puzzle? (Circle a number)

Not Difficult At All	1	2	3	4	5	6	7	8	9	10	Extremely Difficult

Appendix B: **Post-Experimental Survey (Actor)**

How difficult would you rate holding concentration was? (Circle a number)

Not Difficult At All	1	2	3	4	5	6	7	8	9	10	Extremely Difficult

How physically exhausted do you feel currently? (Circle a number)

Completely Physically Exhausted	1	2	3	4	5	6	7	8	9	10	Not Physically Exhausted At All

How confident do you feel currently? (Circle a number)

Not Confident At All	1	2	3	4	5	6	7	8	9	10	Extremely Confident

How well would you rate yourself on holding concentration? (Circle a number)

I Performed Very Poorly	1	2	3	4	5	6	7	8	9	10	I Performed Very Well

How would you rate your mental fatigue currently? (Circle a number)

Completely Mentally Exhausted	1	2	3	4	5	6	7	8	9	10	Not Mentally Exhausted At All

How sad do you feel currently? (Circle a number)

Not Sad At All	1	2	3	4	5	6	7	8	9	10	Extremely Sad

How hungry are you currently? (Circle a number)

Very Hungry	1	2	3	4	5	6	7	8	9	10	Not Hungry At All

Appendix C: **Post-Experimental Survey (Observer)**

How would you rate your mental fatigue currently? (Circle a number)

Completely Mentally Exhausted	1	2	3	4	5	6	7	8	9	10	Not Mentally Exhausted At All

How well do you think the actor held concentration? (Circle a number)

The Actor Performed Very Poorly	1	2	3	4	5	6	7	8	9	10	The Actor Performed Very Well

How confident would you rate the actor? (Circle a number)

Not Confident At All	1	2	3	4	5	6	7	8	9	10	Extremely Confident

How physically exhausted do you feel currently? (Circle a number)

Completely Physically Exhausted	1	2	3	4	5	6	7	8	9	10	Not Physically Exhausted At All

How sad do you feel currently? (Circle a number)

Not Sad At All	1	2	3	4	5	6	7	8	9	10	Extremely Sad

How confident do you feel currently? (Circle a number)

Not Confident At All	1	2	3	4	5	6	7	8	9	10	Extremely Confident

How sad would you rate the actor? (Circle a number)

Not Sad At All	1	2	3	4	5	6	7	8	9	10	Extremely Sad

How difficult would you rate the task of holding concentration? (Circle a number)

Not Difficult At All	1	2	3	4	5	6	7	8	9	10	Extremely Difficult

If you were to label the actor with an emotion what would it be? (Write answer below)

_____

Table 1

Overall Actor Mean Score

Condition	Pre-treatment Mean (SD)	Post Treatment Mean (SD)
Confidence (*n* = 26)	7.23 (1.58)	7.04 (1.84)
Sadness (*n* = 27)	2.44 (1.48)	2.63 (1.50)

Table 2

Overall Observer Mean Score

Condition	Pre-treatment Mean (SD)	Post Treatment Mean (SD)
Confidence (*n* = 26)	7.04 (1.31)	7.23 (1.37)
Sadness (*n* = 27)	2.42 (1.79)	2.42 (1.53)