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Krista Blankenship
*Lindenwood University*

Chastin Oliver
*Lindenwood University*

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# The Power of Dance: How Dance and Emotion Connect

Krista Blankenship[1] and Chastin Oliver[2]

*The purpose of this study was to test whether or not audiences could experience emotions portrayed by dance performances. The researchers hypothesized that if the audience can identify the emotion being expressed, then they would experience that same emotion. The researchers also predicted that music would cause a greater level of emotional reaction to the performance. The participants watched two dance videos, one portraying a sad emotion and the other a love/passion emotion and rated their emotional reactions. After analyzing the data, the hypothesis was proven only partially correct. The participants who correctly identified the emotion portrayed in the video had a strong emotional reaction, but those who identified the emotion incorrectly had a strong emotional reaction as well. Contrary to expectations, the results showed that music did not influence the identification of the emotion of the dancers, and those participants who viewed the performances without music rated the experience of that emotion with more intensity than those who viewed the dance videos with music. These results could be due to the music causing cognitive overload, so those viewing the videos without music were able to focus more intently on the emotion being portrayed.*

[1] Krista Blankenship, Undergraduate Psychology Department, Lindenwood University, 105 S. Kingshighway, St. Charles, MO 63301, kjb410@lionmail.lindenwood.edu.

[2] Chastin Oliver, Undergraduate Psychology Department, Lindenwood University, 105 S. Kingshighway, St. Charles, MO 63301, cao154@lionmail.lindnewood.edu.

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Randee Lawrence (2008) describes her experience of watching the dance "Cry", by the Alvin Ailey American Dance Theater, as a moment that greatly changed her view on dance. The piece is about a black woman's suffering through slavery, and Lawrence (2008), being neither black or having any affiliation with slavery, had an emotional reaction to the dance. She felt a deep sadness come about her, like the sadness the dancer herself was portraying (Lawrence, 2008); in other words, an audience member was able to experience the emotion portrayed in the performance. This idea was what sparked the interest for this study.

The purpose of this study was to examine the relationship between the emotions that the dancers portray and the emotional reaction of the viewers. The hypothesis stated that if the participant was able to identify the emotion displayed in a dance, then that participant would be able to experience that emotion that he or she identified. The rationale for this hypothesis is based on the idea of mirror neurons.

Mirror neurons are active in the brain when an action is being both performed and observed by an individual (Molnar-Szakacs & Overy, 2009). For an example, if a child were playing dodge ball and then watching other children play dodge ball, the same area of the brain is active in both situations. These are the mirror neurons at work. Mirror neurons also help with the understanding of human communication and human empathy (Molnar-Szakacs & Overy, 2009). Mirror neurons could display a relationship between the performer and the audience member.

The art of dance is growing, meaning that more people are becoming involved with it. Dance Movement Therapy (DMT) has also become more popular. This technique uses music, light, and movement as treatments for mild depression and

recovery from other diseases such as cancer (Hong, Jeong, Kim, Lee, Park, & Suh, 2005). Those involved in DMT are able to release negative emotions through movement in a fun environment. People are also able to view dance on a more regular basis through television and theater. There are many popular dance television shows such as *Dancing With the Stars, So You Think You Can Dance,* and *America's Best Dance Crew* that people get excited about. Watching dance involves a lot more thought process than one assumes, because the audience member has to be ready to engage intellectually with the dance (Ambrosio, 2008). Each viewer needs to keep an open mind as well as be ready to interpret the piece (Ambrosio, 2008).

In this study, 100 participants were given a survey asking mainly about their dance experience. In a previous study, ballet dancers, capoeira, which is an Afro-Brazilian art form that combines elements of martial arts, music, dancers, and dance, and non-dancers were shown videos of ballet and capoeira moves (Dombrowski, Heil, Jansen-Osmann, & Orgs 2008). The dancers showed the most activation in the premotor and parietal cortices when viewing the moves they were familiar with; ballet dancers with ballet moves and capoeira dancers with capoeira moves (Dombrowski, et al.,2008). Subsequently, having some background in the dance field could spark more emotion while watching a performance.

The music may also play into the audience's emotions. The Shared Affective Motion Experience suggests that music is not only perceived through sound but expressive motor acts (Molnar-Szakacs & Overy, 2009). This means that the participant's emotional state could lead to an emotional response to the song (Molnar-Szakacs & Overy, 2009). The music, itself, can also influence the listener. The

harmonies, phrases, and complexity of the music are related to perceiving artistic tension as well (Frego, 1999). Emotional reactions also vary based on the situational context. For example, the same tune can be played at weddings and funerals but provoke different emotions like joy and sorrow (Baraldi, 2009). The participant's reaction to the videos could be provoked by a memory rather than identifying with the dancers' emotions. Therefore, the groups in this study will observe dances with and without music.

By testing if an audience member can experience the same emotion the dancers are displaying, certain benefits arise. Viewing the different forms of dance allows the participants to become more culturally sound. This type of study can also better the communication between the audience and performers.

## Method

### Participants

Participants consisted of 48 undergraduate students from Lindenwood University. There were 15 male students and 33 female. These participants were between the ages of 18 and 24. The average participant was 19 years old, with a standard deviation of 1.633. All the participants were fluent in English and had no sight or hearing impairments. Participants were recruited through the Lindenwood Participant Pool. The participants that were recruited were students in an entry-level Psychology, Sociology, and Anthropology course, where their professor rewarded them with extra credit. These students were also given candy for their participation.

### Materials and Procedure

The materials used in this study consisted of a computer and a projector, along with a projection screen, which are commonly found in the classrooms at Lindenwood

University. The computer and projection system were used to display the visual/audio of *So You Think You Can Dance* (Lythgoe, N., 2003-2008) videos from www.YouTube.com. Since the study was performed in a classroom setting, desks were used.

Four groups of participants, both male and female, were gathered in a classroom setting where they were seated at a desk to watch two particular dance videos. Writing utensils were available for the participants at the beginning of the study.

First, the participants were given two informed consent forms, explaining they had the option to withdraw from the study at anytime. One was for the researchers and the other for the participant to keep. Then a general survey asking the participants of their gender, age, and dance experience was given (See Appendix A).

The four groups watched two particular dance videos. The videos were shown in a particular viewing sequence in order to counterbalance the experiment so that confounding variables would be eliminated. The dance videos portraying sadness and love/passion were found on YouTube.com from the TV series *So You Think You Can Dance* (Lythgoe, N., 2003-2008). The dance videos were displayed on a projection screen from a computer. Group 1 watched the dance portraying sadness first and the love/passion dance second. Group 2 watched the love/passion dance first and the sadness dance second. All of the dance videos in both Groups 1 and 2 were shown without music. Group 3 watched the dance portraying sadness first and the love/passion dance second. Group 4 watched the love/passion dance first and the sadness dance second. All of the dance videos in both Groups 3 and 4 were shown with music. The dance portraying the sad emotion was a dance choreographed by Tyce Deorio to the song "This Woman's

Work" by Maxwell. The dance portraying the love/passion emotion was a dance choreographed by Mia Michaels to the song "When You Look at Me" by Celin Dion.

Following each video, the participants were asked to identify the emotion they felt was being portrayed as well as rate on a scale from 1-5 (1 being the least and 5 being the most) on how strongly the participant felt and/or experienced that same emotion (See Appendix B).

Finally, the participants were debriefed on the study and were handed a feedback letter with the researchers' contact information. The participants could then contact the researchers if they had any questions or interest in the results once the experiment was presented to and evaluated by the professor of the Advanced Research Methods course. Candy was also given to the subjects in thanks for their participation.

## Results

When analyzing the information from the demographic survey it was found that 75% of the participants had never taken a dance class prior to the study. There was one participant who had taken around 1,000 dance classes in the past year, which became an outlier in the results. There were three individuals who did not provide this information. When the participants were asked how many live dance performances they had watched over the past year, 18.8% had never seen a live performance and 18.8% had seen at least three. Two of the participants did not provide this information. The majority of the participants rated that they "sometimes" watched a dance television series such as *So You Think You Can Dance* (Lythgoe, N., 2003-2008). When asked to rank their enjoyment of watching dance on a scale from 1-5 (1 being the least and 5 being the most), 47.9% rated 5 for their response.

A two independent samples t-test was used to analyze whether music influence the participants' identification of the emotion being portrayed. Twenty-seven participants received the dance videos without music and showed no significance, $t(46)= -.620$, $p>.05$. Twenty-one of the participants saw the dance videos with music and also showed no significance, $t(45.3)= -.630$, $p>.05$. This suggests that music as no influence on identifying an emotion during a dance performance.

During the analysis on how music affects the intensity of the participants' emotional response, the participants that saw the dance videos without music showed a greater intensity level then those who watched the videos with music. In the analysis groups 1 and 2, which received the videos without music, were combined. The participants in these groups who did not correctly identify the emotions portrayed in the dance videos had a mean score of 8.6 and a standard deviation of 1.52; those who correctly identified only one emotion from either dance video had a mean score of 8.1 and a standard deviation of 1.54; the participants who identified both emotions correctly had a mean score of 8.2 and a standard deviation of 1.46. In the analysis groups 3 and 4, which received the videos with music, were also combined. These participants who did not correctly identify the emotions portrayed in the dance videos had a mean score of 7.5 and a standard deviation of 0.707; those who correctly identified only one emotion from either dance video had a mean score of 8.0 and a standard deviation of 1.31; the participants who identified both emotions correctly had a mean score of 7.5 and a standard deviation of 1.04.

The results found supported the idea that music does not influence an individual's capability to identify the emotional communication between performers and

their audience. It is also assumed that no matter what emotions are being portrayed by dance performers, some kind of emotional response is intensified.

## Discussion

After analyzing the results, our hypothesis, that those who identified the emotions in the dance videos correctly be able experience that emotion, was shown to be partially correct. Those who correctly identified the emotions did have an emotional response to the dance videos; however, the participants who did not identify the emotions correctly rated around the same intensity of emotional response as those who portrayed the emotions accurately. We also anticipated that music would cause a greater emotional reaction. This, however, was not the case. Those participants who watched the dance videos without music rated their emotional reaction with a greater intensity than those who watched the videos with music.

We have several different outlooks on why these results occurred. One reason could be that the intensity of the emotional reaction was done on a rating scale. The participants' personal values of the numbers on the scale could differ. The participants also could have been anticipating what the research would want them to answer, therefore altering their actual true response to the questions. Since the groups without music rated their emotional response with a higher intensity than the groups without, we thought the theory of mirror neurons may be taking place. The groups without music could have been focusing more on the dancer's emotion because there was no music, which may have been a distraction. With the participants focusing on the dancers' emotion and movement alone, the participants may have been more in tune with the dance mentally,

allowing the theory of mirror neurons to take place. All of these ideas could have influenced the results shown.

Something else we found interesting was the comparison of the accuracy of identifying the emotions. Forty one of the responses from all the groups identified the love/passion emotion correctly; however, only 24 of the responses identified the sad emotion correctly. We think that the emotion of love/passion is hard to define, which could be a limitation to the study. When a person thinks of love, all sorts of thoughts could come to mind. Love could be a mixture of emotions. For example, heartbreak is sad, but could still be considered love. So it is possible that the participants could have mistaken the sad emotion as such.

Throughout the study, some limitations were brought to attention. The experiment had a smaller sample size than intended. Also, because of the recruitment from the Lindenwood Participant Pool, there was only a small representation of the population. If the sample size had been larger and the recruitment could have been through the entire university, then the results may have differed. Another limitation was that some of the participants were missing data, which they simply did not fill out. The participants also watched videos of dance performances which could be a limitation in itself. If the participants had seen live performances, the emotional responses may have different intensities than those in this experiment.

Even with the limitations and the hypothesis being partially disproven, this study holds a great importance for future research. This study can help further the understanding of a performer's and audience's relationship and how it works. The study of mirror neurons and music and their effects on human emotion could also be continued,

maybe looking at auditory signals rather than visual signals. The participants in this study were also able to experience dance, allowing them to become more exposed to this art form. This could possibly lead to more of an interest in dance in the world of psychology.

Here are some ideas for future research on the subject. Instead of using videos for the dance performances, use actual live dance performances. By using live dance performances, the participants could have different emotional responses. Also, having a dancer actually in front of the participant could help the participant visually in determining the emotion. Different emotions besides sad and love/passion could be tested as well. Another interesting suggestion would be to try different styles of dance and see how the styles affect the audience's response. All of these ideas would add a lot to this study and would add to the research of human emotion.

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## Appendix A

### Survey

GROUP NUMBER_____ SUBJECT ID NUMBER: _____

Male _____ Female_____ Age_____

1. How many dance classes have you participated in the past year?

2. How many live dance performances have you viewed in the past year?

3. Rate on a scale how often you watch a dance TV series, such as *So You Think You Can Dance.*

Never----Rarely----Sometimes----Often----Always

4. On a scale from 1-5 (1 being the least and 5 being the most) how much you enjoy watching dance?

1--------2--------3--------4---------5

## Appendix B

## Questionnaire

GROUP NUMBER_____ SUBJECT ID NUMBER: _____

1. What emotion do you think this dance video #1 is portraying?

a. Love/Passion
b. Sad
c. Happy
d. Neutral

1a. Rate (1 being the least and 5 being the most) how strongly the emotion was portrayed in dance video # 1

1----2----3----4----5

2. What emotion do you think this dance video #2 is portraying?

a. Love/Passion
b. Sad
c. Happy
d. Neutral

2a. Rate (1 being the least and 5 being the most) how strongly you felt the emotion identified in the video. For example, if you thought the emotion portrayed in the dance was anger, rate how angry you felt while watching.

1----2----3----4----5

## Videos

(watch with and without music)

Love/Passion dance: http://www.youtube.com/watch?v=vOVfa_SGojE&feature=related

Sad dance: http://www.youtube.com/watch?v=OrILXIASpSM