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## A Duet between the Head and the Heart: the Effect of Love on the Brain

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A Duet Between the Head and the Heart: The Effect of Love in the Brain and Body

Sarah Neiswander

The University of Akron

April 2021

## Abstract

What happens to us when we fall in love? Aside from the symptoms that are normally portrayed in rom-coms and cheesy TV shows, there is so much that happens inside that we are not aware of. For my research project, I want to delve into the scientific and chemical reactions that occur inside the brain and respective systems throughout every phase of love: from the honeymoon phase to “dying of a broken heart”. This paper will provide explanations for why we feel or act the way we do, and allow some light to be shed on a subject that some know all too well, and some not at all. To accompany this research paper is a dance work that will have a similar structure. Within multiple sections, dancers will convey the ideas and results presented in my research, and embody the ups and downs of love as a whole. Contrary to popular belief, there is a connection between the head and the heart, and I want to share that information with both romantics and cynics alike.

## Introduction

The concept of love is one that we are all familiar with. It is a universal theme that has impacted every one of us, whether we realized it or not. Some argue that love is the only thing needed to make it through life, while others reject that idea and favor cynicism over romanticism. We see acts of love everywhere: online, in shows and movies, songs, and daily in our own personal lives. Some believe that love is just romantic relationships, but it is far more. Even though love itself can seem daunting and confusing, research has shed some light over the years on what love is to us.

So many seem to fixate on the external effects of love, but I'm looking to dive deeper and inwards towards the internal results. Love affects every part of the body, not just the heart. There are millions of reactions and connections happening in our brains at any given moment, and I am curious to see what those are related to our relationships and phases of love we go through over time. Not every single question we have about love can be answered, but science has proven to be an illuminating teacher about many foreign concepts, love hopefully being one of them.

What makes us begin to love? How does love make us feel as crazy as we do sometimes? Do we change if we are without love for a period of time? Is the act of self love different than loving someone else? These are just a few of the infinite questions about love that come to mind. Love can be both daunting and simple, and science and research is not exactly a romantic gesture, but they can help us understand. The full answer may not be there, but we have more information on this topic than ever. I'm motivated through my curiosity of love, and how it acts as a universal theme in all forms of life.

As mentioned above, love can be endlessly shown and discussed. I wanted to show some of the stages of love visually, and provide information about what is happening inside of us

during that time. I choreographed, recorded, and produced a dance film to supplement this research, and connect with my cast and the audience about the effects of love and what it can do. The title for this film is *A Duet Between the Head and the Heart*, as a demonstration that love is connected through our entire body, not just our heart. There are four different sections in this piece, each one relating to a different stage of love. Location, music, and choreography all play a part in showing the effects of love, and my cast of eleven dancers convey the highs and lows that occur with it. The lighting for one of the sections was designed by Christopher J. Ha, and the filming of the piece was done by Kristen Dauber. The presentation of my dance film was in the virtual showing of Terpsichore Dance Club's Spring into Dance, on April 10th.

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## Research

The reasons that one can fall in love are endless. People can experience love as soon as they are born, and that love can last for the rest of their life. But what factors play a role in becoming attached to someone we hardly know? There's general qualities for sure: similar interests, desirable characteristics, social influences, or even reciprocal liking (Brogaard). Those traits may seem basic, but there is a deeper level that happens inside that makes the person who possesses those qualities seem like the perfect match. Neurochemicals like dopamine, oxytocin, serotonin, and vasopressin flood the brain and can produce a series of reactions that lead to our attachment and attraction to whoever provides that stimulation. Each of those chemicals provide a different feeling or experience for us, and contribute to why we feel the way that we do.

When experiencing love, especially in the early stages (also known as "the honeymoon phase"), a person might look at their partner and feel excited or giddy. This is because their brain

releases the feel good hormone dopamine. This is part of the brain's reward system: we do something that feels good, dopamine is released. When levels of dopamine are particularly high, side effects may happen such as a lack of appetite or insomnia, which plays into the stereotype of being so madly infatuated that you can't eat or sleep all too real ("Cupid's Chemical Addiction"). Experiencing this feeling may feel great, but there is always a fall after the high. People will go out of their way to trigger that reward response from the body, whether it is the right decision or not. That can be a hard craving to fight, especially when relationships can turn sour. Other chemicals in the brain can add to those feelings of euphoria as well.

Serotonin plays a part in the science behind love when it comes to the status of being in and forming a relationship. Reduced levels of serotonin can also affect parts of how we feel, like our mood. Gaining attraction for someone makes us produce less serotonin, making us feel head over heels. Interestingly enough, scientists discovered that those who suffer from OCD, or obsessive compulsive disorder also have reduced levels of serotonin (Wu). This correlation can make one wonder if that plays a role in why we hear things today about being "obsessed with someone", or the idea of being "crazy in love". They may seem hyperbolic, but I believe those phrases may hold more truth than we think.

The two other hormones that we experience through love are oxytocin and vasopressin. These chemicals are released not during attraction, but when we become fully attached to someone. When feelings of romantic love occur, oxytocin and vasopressin interact with our body's reward system, and leave us feeling content and happy. They also can stimulate dopamine release as well, with the help of the hypothalamus ("Cupid's Chemical Addiction"). With all of these different hormones racing through our body, it is perfectly clear why we can spend our whole life searching for whatever can get us feeling this way forever. Of course, we know that

love is not the easiest concept to understand, but looking into the different chemicals we have inside and what they do to us make the complications of how we feel a bit more clear.

It's a no brainer that love makes us feel amazing. However, the reactions that happen aren't always to our best interest. Having too much of a good thing is never a good idea, and that can apply directly to feelings of attachment. These neurological pathways leading to the reward center can lead to addictive behavior, such as emotional dependency and obsessiveness ("Cupid's Chemical Addiction"). Just like we can get addicted to caffeine, nicotine, or sugar, we can become addicted to a person, and how they make us feel.

Aside from romantic love, another avenue that's equally as interesting is self love. We can receive all these feel-good chemicals from a partner-but can we recreate that with our own self? Researchers found that high serotonin levels in the brain can be associated with high levels of self-esteem and social status (Slywester). With that being said, the more we do to increase our confidence with who we are and where we stand in society, the more we can feel better and increase the quality of life. It isn't possibly to fully recreate the reactions that happen in our brain during romantic love, but self love can definitely play a role in making us feel good.

This research was conducted to learn more about the internal effects of love on the brain and body. With this information, I can see behind some of the stereotypes that we have about love and what it does to us, and understand some deeper meanings. With what I learned during this research process, I felt I could undergo the choreographic process with clearer intentions, to try and fully convey the intricacies of love and what it can do.

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## **Choreographic Process**

During the process of creating this dance film, I wanted to make sure I covered as many phases of love that I felt necessary. Some see love as a cliché, especially in the arts field, so I tried to refrain from obvious songs or gestures referring to love. Music played a huge part in my process as well. I started curating a playlist of potential songs to choreograph to over a year ago, and slowly narrowed it down to four as this semester came around. With those four songs, I found myself in four different hypothetical scenarios about a stage of love, and how I felt in that situation influence the movement I created. By the end of my piece, I felt as if you could see a journey that my cast went through, going through the highs and lows of love and coming out on the other side. That journey isn't easy, but the lesson learned is that it's worth it.

The first section of my piece conveys feelings of excitement, suspense, and happiness. I chose the song "Afeto", by Mayra Andrade, to help set the mood for the entire work in general. Afeto translates to affection in Portuguese, in which the whole song is sung in. I decided to begin the dance with a non-English song so instead of relying on and really listening to the words, the audience had to decide what this part of the piece was about based solely on the dancers. The movement is upbeat and a little self-indulgent, and gave my cast the permission to let go and dance freely. The scenario imagined in "Afeto" is getting ready to meet the person that you're attracted to, and feeling all of those first date feelings. It's a fun beginning, and provides a great exposition before things take a turn for the worse.

The second section shows the duality of love. We see people in love all around us, but we have no idea what can be going on behind closed doors. My idea for this section was to set a duet on two dancers, who are in very different relationships. In this case, I chose to use a cheesy love song, "(I Don't Know Why) But I Do", by Clarence "Frogman" Henry. The first dancer over-performs equally cheesy movement, and the audience sees a woman happily in love. As she

finishes her part, the lights darken, the pitch of the song slows, and you see the other dancer enter, looking disheveled and defeated. As she begins her part of the duet, the lyric “I don’t know why I love you, but I do” takes on a whole new meaning. As the dance progresses, eventually these dancers end up back to back, doing what seems to be the same movement, but expressed in different ways. As the camera circles around, the audience literally sees the two sides to their stories, and how love can be both the best and the worst thing for someone. As mentioned above, love has addictive qualities, and people stay in relationships for far longer than they should just to get that high as much as they can.

After the fallout of love, all one can do is stop for a second and try to pick up the pieces. The third section of this piece is a short monologue that talks about what to do after you’ve been hurt. Randy Newman, famously known for singing “You’ve Got a Friend in Me”, performs this at the end of Chance the Rappers song, “5 Year Plan”. His voice brings feelings of nostalgia, while he speaks candidly about how people can get past heartbreak and the pain that comes with. A single dancer performs, wearing all black and almost becoming a narrator for this piece. The solo is short and concise, and she dances directly to the camera as he says, “You can get over anything, almost.... I’m telling you the truth.” As he starts to tell us one last piece of advice, the dancer notices some light coming into the studio, and begins to run towards it. It is quite literally the light at the end of the tunnel, and as the piece transitions into the fourth and final piece, we see what’s on the other side of heartbreak, and the beauty that comes with new beginnings.

You can’t get the rainbow without a little rain, right? That’s the lesson learned for the final section of this piece. As the entire cast comes to dance together, the audience gets the sense that things are going to be okay, despite all the trials and tribulations that come with finding love. The songs, appropriately titled “RAIN”, by Ben Platt, sings of making it through the storm, and

coming out on the other side. In the scenario pictured inside my head, self love prevails over all other types of love. If you can't love yourself, who can you love? The idea of being comfortable and content in your own skin is too important to ignore, and once self love is achieved, all other aspects of life are improved as well. The movement is joyful and optimistic, and provides a happy ending for the story being told throughout this dance film

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## **Reflection**

Researching, choreographing, and editing this piece has been the most challenging and fulfilling project I have done in my educational career. It has pushed me to my limits, and taught me that good things take time. This process has had its fair share of obstacles, but that only makes the end result that much more satisfying. I have only choreographed one other dance work before, which was light and fun and very surface-level movement. I knew that I wanted to eventually make a work that had deeper layers, but waited until I was more prepared and emotionally ready. Making a dance about something as common and overdone as love had the risk of coming off basic or ingenuine, so I had to reach deeper than I ever have before. It's also the longest piece I've choreographed. Having four different sections was tricky, but helped tell the story I wanted to show, and I felt like it helped the pacing of the piece as well.

I have known that I wanted to create a longer, more serious dance for years now. However, I could not have predicted my freshman year that I would have to do the entire process during a global pandemic. My original plan of creating a piece for a live performance was thrown out the door, and for a while I didn't even know if the dance program would even have a show to premiere this piece to anyone. Practicing patience and perseverance became a weekly,

almost daily occurrence as different health and safety regulations affected this process, from rehearsal schedules to the literal movement itself. I had a larger cast than the studio's capacity, so we could not all practice at the same time. When we did rehearse, sometimes it had to be virtual to follow the University's guidelines. Once we could rehearse in person, there was to be no contact between dancers. At the end of the day, myself and my cast were just happy to be able to continue to do what we love, so we did what we had to do. Looking back, this piece has turned out better than I ever imagined, and was well worth the stress and uncertainty. My dancers were more than willing to follow the guideline provided, and put up with last minute changes like professionals. Having a recorded dance film provides me with tangible evidence that art survives against all odds, and I am forever grateful to be able to look back on this process in the coming years and remember what we went through to accomplish this.

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## **Conclusion**

This research project has allowed me to answer questions about the concept of love I've always wanted to know, and gave me permission to take a deeper look inside and at the relationships I hold in my own life. I've gained insight about the science of love, and drew connections from what happens in our brain and how that affects everything else we do. This research has made me a better dancer, choreographer, and artist, and will impact any other works I decided to create in the future.

Making dance backed by scientific research has changed my process entirely, while leading to incredible results. The combination of science and dance may be an interesting combination to some, but I find it a perfect blend of fact and fiction. People can relate to the

work that I've made, because they've experienced it themselves. Listening to the mood of the music or seeing specific moves that the dancers do can cause the audience to think of their own relationships, and that makes a successful piece of art. I've grown immensely during my time at the University of Akron, but nothing has changed me more than this project, and I'll hold the results close to my heart long past graduation.

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