Pleasure and Pain: The Science of Love

A film by Judith König

LOGLINE

Love can change our lives - in the truest sense of the word. Recent scientific studies prove that love is more than just an emotion. It is a drive that transforms our brain and our body profoundly. This film shows the fascinating science behind what love is, what it does to us - and whether it is good for us at all.

BACKGROUND INFORMATION

"The sun cannot be without shine, man cannot be without love," said Johann Wolfgang von Goethe. The latest research results show just how right he was. Scientists at Yeshiva University in New York have found that love is an impulse deeply rooted in our brain stem - as is the need for food and rest. To survive, we must eat, sleep, love and be loved.

But love not only keeps us alive - it can also kill us. Stress cardiomyopathy is a serious disorder of the heart muscle. The symptoms are similar to those of a heart attack and usually occur after extreme emotional stress with a correspondingly high level of stress hormones. This is why cardiologists also call the disease "Broken Heart Syndrome". “Happy Heart Syndrome", a disease that was only discovered in March 2016, can be just as dangerous. Happy Heart Syndrome hits people when they're in seventh heaven. This mysterious phenomenon, especially among young people in a state of extraordinary euphoria, is no less dangerous than a real heart attack.

Fortunately, love has a less dramatic effect on most people - but still no less amazing. Wounds heal faster in people in happy relationships. Holding hands can reduce the feeling of pain in lovers. Kissing relieves allergies and strengthens the immune system. And marriage is even told to increase the life expectancy of men.

In this film, evolutionary biologists, neurologists, endocrinologists, internists and psychologists from Germany, France and the USA offer us a fascinating view of the miracle of love. We combine the latest research results with an unusual visual language so that we can experience the greatest of all feelings in a completely new way.

SYNOPSIS

“The Science of Love” is an exciting visual journey through the world of love from birth to death. Astonishing facts are presented clearly, with answers to all the questions we have always asked ourselves: Why do lovers have palpitations? Why are they less hungry and why do they sleep less? Does love come from the brain or from the heart? And why does heartbreak hurt so much?

We begin with the primal form of love: the relationship between a mother and her baby. The French birth researcher Michel Odent explains the complex function of the hormone oxytocin, which has only recently been fully understood. The primary task of this biochemical messenger is to control labour during childbirth. But once the child is born, the function of the hormone changes. Oxytocin is now responsible for the emotional attachment to the newborn child in the mother's brain. The hormone has a multifactorial effect: it reduces stress and anxiety, lowers blood pressure and heart rate, has a calming and aphrodisiac effect.

The striking thing: This "child-cuddling hormone" is also essential in the search for sexual partners, as psychologist Isabella Heuser has found out. She is conducting a study at the Charité hospital in Berlin. Test subjects take small doses of oxytocin as a nasal spray. After a short time it is already possible to observe how oxytocin changes perception. The more molecules of this neurotransmitter circulate in the blood circulation, the more attractive we find our partner. And during sexual intercourse, our brain pours out so much of it that our brain is overwhelmed by it.

So is love just a biochemical storm? Not at all, says American neurologist Lucy Brown. Inside a brain scanner we see increased activity in the brain stem of lovers when we show them pictures of their partners. This is the same region of the brain that controls the swallowing reflex, or our eye movements. That means we can't control love with the mind. It is not just a feeling like euphoria or fear, but an impulse - like hunger or thirst.

For evolutionary biologist Thomas Junker, this makes perfect sense. He says that the pleasure of sex is common to all animals that reproduce sexually, because sex is essential for the procreation of offspring. But love is what separates humans from animals. Due to the long maturation phase of the brain, human children depend on a stable relationship between their parents - and love holds the human sexual partners together. By rewarding long-term relationships, nature has ensured that we humans raise our offspring in a protected environment.

But love doesn't just have positive effects. Especially during puberty, this physically and psychologically sensitive phase of transformation from child to adult, we humans often have to experience how much love can hurt. And indeed, psychologist Naomi Eisenberger shows us through a study she is conducting with newly separated teenagers that the neuronal patterns of heartache are similar to those of pain caused by physical injuries. So a broken heart really hurts.

In extreme cases this can even be life-threatening. Dr. Christian von Bary examines the so-called Broken Heart Syndrome. The head physician of the cardiology department at the Red Cross Hospital in Munich shows us the symptoms of the so-called "stress cardiomyopathy". They are similar to those of a heart attack, although there are no circulatory disorders. The disease affects people who experience an emotional shock, for example because their partner leaves them or dies. The horror of the sudden emotional pain causes a shock reaction that can actually lead to cardiac arrest.

Even more astonishing - and fortunately rarer - is Happy Heart Syndrome. Dr. Jelena Ghadri from the University Hospital in Zurich introduces us to a twenty-six-year-old woman who suddenly suffered from shortness of breath during her wedding and collapsed. Initially, the cardiologists diagnosed a heart attack. But shortly afterwards it turned out that the bride suffered from a rare disease, which strikes people in moments of extreme happiness. Thanks to immediate treatment, she survived - and is now happily married.

Fortunately, however, love usually has far less dramatic effects. On the contrary, love is good for us - at least for men. The health scientist Stefan Felder found out that married men live on average almost two years longer than unmarried men. Single men are at more risk of disease and tend to indulge in riskier behaviour than married men. Stefan Felder puts the controversial point of view that married women care for their husbands and domesticate them. He claims that this effort costs women strength and time - lifetime. His tip: If possible, choose a partner who prefers similar activities and has similar interests as yourself to strengthen the harmony between you.

We see the positive long-term effects of love with the couple we meet at the end of our film. The two have been happily married for sixty years. They are participating in a study that investigates the higher life expectancy of married couples compared to single people. Talking to the spouses and the head of

the study, Barbara Frederickson, we see why this is the case: The vagus nerve is particularly active in people who live in long-term, happy relationships. There are physiologically measurable effects such as lower blood pressure values and resting pulse rate and a resulting lower risk of cardiovascular disease.

So apparently Goethe is also right when he writes: "Only love and death change things."

REALIZATION

Like Judith König's film "Hormones and Huffs: The Science of Puberty", this film mixes abstract studio scenes and real laboratory sequences to create exciting visuals.

The main characters in the studio scenes are lovers cast especially for this film. In casting, particular emphasis is placed on a representative cross-section of the communities in Germany and France. Everyone should be able to find themselves in the faces of our lovers. They are visual symbols for the different phases of love - from love between mother and child to love in old age. These people represent the amazing facts about love that we hear about from the narrator.

Our couples are staged in abstract studio situations. The studio is hung in black and equipped with a minimum of props. Dramatically illuminated, the actors move in their own universe. In selected parts of the film we leave the studio and go into the real world to meet scientists and see research projects that help us to understand the miracle of love.

For example, a mother caresses her baby on a changing table in the studio, while the narrator explains basic facts about the meaning of hormones. To learn more about the special effect of the love hormone oxytocin, we move to Oxytocin scientists laboratories, who report on the latest research findings,

In another scene we see a teenage girl crouching on the floor tearing up photos and letters. The camera moves around her and moves higher and higher in circles until it looks down vertically at the girl. You can tell that she is beside herself At the same time, we learn that our brain reacts to a lack of happiness hormones with withdrawal symptoms. Here, too, we return to the real world, to Naomi Eisenberger's clinic, to hear her insights into the psychological and physical effects of withdrawal of love.

AUTHOR

Judith König studied biology. Her journalistic career began in 1994 with an internship in print media. Since 1996 she has produced more than 250 TV productions, including magazine articles, reports and documentaries for HR (Service Natur, Service Gesundheit & Ernährung, Aus Wissenschaft und Forschung, Abenteuer Erde), NDR (Visite, Markt, DAS!), WDR (Quarks & Co, Q21, Nano), ARD (W wie Wissen, Ratgeber Technik) and ZDF (Gesundheitsmagazin Praxis).

Between 2004 and 2008 Judith König had a "transmission break" and took parental leave in Kenya.

Most recently, in collaboration with a&o buero, she produced the award-winning 52-minute scientific documentary " Hormones and Huffs: The Science of Puberty " for ZDF/ARTE.

PRODUCTION COMPANY

a&o buero filmproduktion gmbh is one of the most renowned production companies in Germany. Since its foundation in 1995, a&o buero has produced more than 80 high-quality documentaries, reports and features.

Our films and authors have been awarded the International Emmy Award, the Special Prize Prince Rainier III, the German Nature Film Award, the Green Screen Award, the German Human Rights Film Award, the Marler Television Award for Human Rights, the German-French Journalist Award and the Axel Springer Prize.

Our films are regularly shown at festivals in Jihlava, Thessaloniki, the Dok.Fest Munich, One World Berlin, BANFF, the San Francisco Film Fest, FIPA Biarritz, FIGRA Paris, FIFA Montreal and the Japan Wildlife Film Festival.

The a&o buero has offices in Cologne and Hamburg.

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