

Hands On Research: The Science of Touch

By [Dacher Keltner](#) | September 29, 2010 | [7 Comments](#)

Dacher Keltner explains how compassion is literally at our fingertips.

Greater Good's latest video features our executive editor, Dacher Keltner, on the science of touch. Here, he elaborates on cutting-edge research into the ways everyday forms of touch can bring us emotional balance and better health.

A pat on the back, a caress of the arm—these are everyday, incidental gestures that we usually take for granted, thanks to our amazingly dexterous hands.



Brian Jackson

But after years spent immersed in the science of touch, I can tell you that they are far more profound than we usually realize: They are our primary language of compassion, and a primary means for spreading compassion.

In recent years, a wave of studies has documented some incredible emotional and physical health benefits that come from touch. This research is suggesting that touch is truly fundamental to

human communication, bonding, and health.

In my own lab, in a study led by my former student Matt Hertenstein (now a professor at DePauw University), we asked whether humans can clearly communicate compassion through touch.

Here's what we did: We built a barrier in our lab that separated two strangers from each other. One person stuck his or her arm through the barrier and waited. The other person was given a list of emotions, and he or she had to try to convey each emotion through a one-second touch to the stranger's forearm. The person whose arm was being touched had to guess the emotion.

Given the number of emotions being considered, the odds of guessing the right emotion by chance were about eight percent. But remarkably, participants guessed compassion correctly nearly 60 percent of the time. Gratitude, anger, love, fear—they got those right more than 50 percent of the time as well.

We had various gender combinations in the study, and I feel obligated to disclose two gender differences we found: When a woman tried to communicate anger to a man, he got zero right—he had no idea what she was doing. And when a man tried to communicate compassion to a woman, she didn't know what was going on!

But obviously, there's a bigger message here than "men are from Mars and women are from Venus." Touch provides its own language of compassion, a language that is essential to what it means to be human.

In fact, in other research I've found that people can not only identify love, gratitude, and compassion from touches but can differentiate between those kinds of touch, something people haven't done as well in studies of facial and vocal communication.



“To touch is to give life”

Regrettably, though, some Western cultures are pretty touch-deprived, and this is especially true of the United States.

Ethologists who live in different parts world quickly recognize this. Nonhuman primates spend about 10 to 20 percent of their waking day grooming each other. If you go to various other countries, people spend a lot of time in direct physical contact with one another—much more than we do.

This has been well-documented. One of my favorite examples is a study from the 1960s by pioneering psychologist Sidney Jourard, who studied the conversations of friends in different parts of the world as they sat in a café together. He observed these conversations for the same amount of time in each of the different countries.

What did he find? In England, the two friends touched each other zero times. In the United States, in bursts of enthusiasm, we touched each other twice.

But in France, the number shot up to 110 times per hour. And in Puerto Rico, those friends touched each other 180 times!

Of course, there are plenty of good reasons why people are inclined to keep their hands to themselves, especially in a society as litigious as ours. But other research has revealed what we lose when we hold back too much.

The benefits start from the moment we're born. A review of research, conducted by Tiffany Field, a leader in the field of touch, found that preterm newborns who received just three 15-minute sessions of touch therapy each day for 5-10 days gained 47 percent more weight than premature infants who'd received standard medical treatment.

Similarly, research by Darlene Francis and Michael Meaney has found that rats whose mothers licked and groomed them a lot when they were infants grow up to be calmer and more resilient to stress, with a stronger immune system. This research sheds light on why, historically, an overwhelming percentage of humans babies in orphanages where caretakers starved them of touch have failed to grow to their expected height or weight, and have shown behavioral problems.

More on Touch

Check out [this research](#) on the positive effect of touch in schools, and learn how important touch is in communicating [positive emotions](#).

"To touch can be to give life," said Michelangelo, and he was absolutely right.

From this frontier of touch research, we know thanks to neuroscientist Edmund Rolls that touch activates the brain's orbitofrontal cortex, which is linked to feelings of reward and compassion.



We also know that touch builds up cooperative relationships—it reinforces reciprocity between our primate relatives, who use grooming to build up cooperative alliances.

There are studies showing that touch signals safety and trust, it soothes. Basic warm touch calms cardiovascular stress. It activates

the body's vagus nerve, which is intimately involved with our compassionate response, and a simple touch can trigger release of oxytocin, aka "the love hormone."

In a study by Jim Coan and Richard Davidson, participants laying in an fMRI brain scanner, anticipating a painful blast of white noise, showed heightened brain activity in regions associated with threat and stress. But participants whose romantic partner stroked their arm while they waited didn't show this reaction at all. Touch had turned off the threat switch.

Touch can even have economic effects, promoting trust and generosity. When psychologist Robert Kurzban had participants play the "prisoner's dilemma" game, in which they could choose either to cooperate or compete with a partner for a limited amount of money, an experimenter gently touched some of the participants as they were starting to play the game—just a quick pat on the back. But it made a big difference: Those who were touched were much more likely to cooperate and share with their partner.

These kinds of benefits can pop up in unexpected places: In a recent study out of my lab, published in the journal *Emotion* we found that, in general, NBA basketball teams whose players touch each other more win more games.

Touch therapies

Given all these findings, it only makes sense to think up ways to incorporate touch into different form of therapy.

"Touch therapy" or "massage therapy" may sound like some weird Berkeley idea, but it's got hard science on its side. It's not just good for our muscles; it's good for our entire physical and mental health.

Proper uses of touch truly have the potential to transform the practice of medicine—and they're cost effective to boot. For example, studies show that touching patients with Alzheimer's disease can have huge effects on getting them to relax, make emotional connections with others, and reduce their symptoms of depression.

Tiffany Field has found that massage therapy reduces pain in pregnant women and alleviates prenatal depression—in the women and their spouses alike. Research here at UC Berkeley's School of Public Health has found that getting eye contact and a pat on the back from a doctor may boost survival rates of patients with complex diseases.

And educators, take note: A study by French psychologist Nicolas Gueguen has found that when teachers pat students in a friendly way, those students are three times as likely to speak up in class. Another recent study has found that when librarians pat the hand of a student

checking out a book, that student says he or she likes the library more—and is more likely to come back.

Touch can even be a therapeutic way to reach some of the most challenging children: Some research by Tiffany Field suggests that children with autism, widely believed to hate being touched, actually love being massaged by a parent or therapist.

This doesn't mean you should turn around and grope your neighbor or invade the personal space of everyone around you.

But to me, the science of touch convincingly suggests that we're wired to—we need to—connect with other people on a basic physical level. To deny that is to deprive ourselves of some of life's greatest joys and deepest comforts.



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Very Likely



Likely



Unlikely



Very Unlikely



Not sure

About The Author

Dacher Keltner, Ph.D., is the founding director of the Greater Good Science Center and a professor of psychology at the University of California, Berkeley. He is the author of *The Power Paradox: How We Gain and Lose Influence* and *Born to Be Good*, and a co-editor of *The Compassionate Instinct*.

From this frontier of touch research, we know thanks to neuroscientist Edmund Rolls that touch activates the brain's orbitofrontal cortex, which is linked to feelings of reward and compassion. We also know that touch builds up cooperative relationships—it reinforces reciprocity between our primate relatives, who use grooming to build up cooperative alliances. There are studies showing that touch signals safety and trust, it soothes. But to me, the science of touch convincingly suggests that we're wired to connect with other people on a basic physical level. To deny that is to deprive ourselves of some of life's greatest joys and deepest comforts. Greater Good wants to know: Do you think this article will influence your opinions or behavior? Physical Science: Float-o-Meter. Research Question: How much will water and other liquids propel an object upward? Materials: Three plastic cups, water, another liquid of your choice (e.g., orange juice, milk), blue and green food coloring, table salt, scissors, permanent marker, metric ruler, modeling clay Procedure: To make a float-o-meter, cut a straw about 2 to 3 centimeters taller than the plastic cup. Using the marker and ruler, mark centimeters on the straw. Research Question: How do the different structures of animal mouths allow animals to eat different kinds of prey? Apply it to the outside of the appropriate plastic bag and then wash your hands. Repeat this step with each of the bags. Leave the bag labeled No Sunscreen unprotected. From this frontier of touch research, we know thanks to neuroscientist Edmund Rolls that touch activates the brain's orbitofrontal cortex, which is linked to feelings of reward and compassion. We also know that touch builds up cooperative relationships—it reinforces reciprocity between our primate relatives, who use grooming to build up cooperative alliances. There are studies showing that touch signals safety and trust, it soothes. Basic warm touch calms cardiovascular stress. 12 Responses to Hands on Research: The Science of Touch. Marie-Josée Shaar November 5, 2010 at 2:14 pm #. Based on a previous post of yours, I assume this only works if it's done with the palm as opposed to the back of the hand, right? Marie-J. Arthur Capetillo April 26, 2011 at 6:53 am #.