

When Nicolae Ceausescu came to power, in the mid-nineteen-sixties, Romania saw the proliferation of leagane- literally, "cradles," otherwise known as institutional homes for the very young. Ceausescu... banned almost all abortions for women who hadn't had at least four children, and instituted a thirty percent income tax on childless men and women who were over the age of twenty-five. In the span of a single year, the birth rate rose by thirteen per cent and the infant population nearly doubled... In 1985, the dictator raised the minimum number of children to five and the age of women covered by the decree from forty to forty-five... The result was one of the saddest natural experiments in modern psychology. Thousands of children, from birth to the age of three, grew up neglected in understaffed institutions...

In 1994, Mary Carlson and her husband, Felton Earls, travelled to Romania to learn more about the effects of maternal deprivation on these children.... Carlson... a former student of Harry Harlow, the psychologist who is best known for his studies of socially deprived monkeys, and Earls later wrote, [they] found familiar "the muteness, blank facial expressions, social withdrawal, and bizarre stereotypic movements of these infants." These behaviors "bore a strong resemblance" to the types of reactions that Carlson had seen in socially deprived monkeys and chimpanzees.

Source 1

At a leagane [institutional home for the very young] in the Romanian city of Iasi, a child-development specialist named Joseph Sparling had organized a yearlong early-enrichment program for a group of infants, sparing them from the severe neglect and sensory deprivation typical of care in these institutions. The child-to-caregiver ratio for the children in the program was four to one, compared with the institutional standard of twenty to one. Carlson and Earls measured the cortisol levels of the enriched children, as well as of children in a control group. They took saliva samples multiple times a day, tracking how cortisol levels fluctuated over time and in response to stressful events. The levels of the children in the control group, they found, were off kilter, while the levels of the enriched children were more like those of Romanian children who had been home-reared. Cortisol in children who are home-reared tends to peak just before they wake up and then taper off; in the leagane infants of the control group, cortisol peaked in the afternoon and remained elevated. That pattern, in turn, correlated with lower performance on numerous cognitive and physical assessments. By contrast, the children in Sparling's enrichment program, who were receiving higher-quality care and more attention, performed better both physically and behaviorally.

... In a subsequent interview, Carlson said of the study, "When the enriched kids returned to the typical conditions that involved little touching, the physical and behavioral advantage they had obtained faded. Although the enriched group showed a better response to stress as long as eighteen months later, they still were socially withdrawn and failed to respond normally to other children and adults."

Source 1

Touch is the first of the senses to develop in the human infant, and it remains perhaps the most emotionally central throughout our lives.

Source 1

The evolutionary psychologist Robin Dunbar has found that, among other primates, the frequency of grooming (<http://www.newyorker.com/science/maria-konnikova/social-media-affect-math-dunbar-number-friendships>) is a consistent proxy for group size and coherence. Similarly, among humans, touch might seem to serve as little more than a proxy for social bonds: if we often experience friendly or loving caresses, it's safe to assume that we have a strong social network, which is itself one of the best predictors of happiness, health, and longevity.

Source 1

... [R]esearchers have discovered that touch need not be social to be effective. In her more than thirty years of research on touch, Tiffany Field, the head of the Touch Research Institute at the University of Miami's Miller School of Medicine, has sought repeatedly to disentangle the two. In one series of studies, one group of elderly participants received regular, conversation-filled social visits while another received social visits that also included massage: the second group saw emotional and cognitive benefits over and above those of the first. Field has found similar gains in both premature and full-term infants, pregnant women, children and adults with chronic pain conditions or emotional problems, and healthy adults. Even short bursts of touch- as little as fifteen minutes in the evening, in one of her studies, - not only enhance growth and weight gain in children but also lead to emotional, physical, and cognitive improvements in adults.

Source 1

The right kind [of touch] can lower blood pressure, heart rate, and cortisol levels, stimulate the hippocampus (an area of the brain that is central to memory), and drive the release of a host of hormones and neuropeptides that have been linked to positive and uplifting emotions.

Source 1

A massage chair is not a masseuse. Certain touch receptors exist solely to convey emotion to the brain, rather than sensory information about the external environment. A recent study shows that we can identify other people's basic emotions based on how they touch us, even when they are separated from us by a curtain. And the emotions that are communicated by touch can go on to shape our behavior. One recent review (<http://www.ncbi.nlm.nih.gov/pubmed/18992276>) found that, even if we have no conscious memory of a touch- a hand on the shoulder, say- we may be more likely to agree to a request, respond more (or less) positively to a person or product, or form closer bonds with someone.

Source 1

In one set of studies (<http://pss.sagepub.com/content/26/2/135>), out this month, touch was shown to boost the immune systems of people who had been exposed to the common cold. For two weeks, researchers monitored a little more than four hundred adults, asking them not just about their social interactions but about how many hugs they'd gotten over the course of each day. Then the subjects were quarantined in rooms on an isolated hotel floor, where the researchers proceeded to expose them to a cold virus. The virus was quite effective: seventy-eight per cent of subjects were infected, and just over thirty-one per cent showed signs of illness. But not everyone was equally susceptible. The people who had experienced more supportive social interactions battled infection more effectively and exhibited fewer signs of illness- and, when you tease apart the effects of social support and hugging, touch, in itself, accounted for thirty-two per cent of the reduction effect.

Source 1

“Stress is an explicitly biological phenomenon,” David Linden said when I asked him about the work, which came out after his book [Touch: The Science of Hand, Heart and Mind] was complete. “The body talks to the brain, the brain to the body. The notion that someone’s immune status could be modified by activity in touch-sensitive regions of the brain is not at all crazy. One could certainly imagine a cellular-level explanation for how that would happen.” The more we learn about touch, the more we realize just how central it is in all aspects of our lives- cognitive, emotional, developmental, behavioral- from womb into old age. It’s no surprise that a single touch can affect us in multiple, powerful, ways.

Source 1

Recently\*, the Toronto District School Board warned its employees that “there is no safe touch when you work with children,” Many of our kids spend most of the day in a touch-free zone. We don’t mind getting a massage, but we fear embracing touch wholeheartedly, either because we think it’s dangerous, in the case of young children, or “touchy-feely,” in the case of adults. We await what Tiffany Field\*, in 1998, called “a shift in the social-political attitude toward touch.”

- article from March 4, 2015
- Tiffany Field, the head of the Touch Research Institute at the University of Miami’s Miller School of Medicine. Has spend over 30 years researching touch.

Source 1

You're in a crowded subway car on a Tuesday morning, or perhaps on a city bus. Still-sleepy commuters lulled by vibrations remain hushed, yet silently broadcast their thoughts.

A toddler in his stroller looks warily at his fellow passengers, brows stitched with concern. He turns to Mom for reassurance, reaching out a small hand. She quietly takes it, squeezes, and releases. He relaxes, smiles, turns away- then back to Mom. She takes his hand again: squeeze and release.

A twenty-something in a skirt and blazer sits stiffly, a leather-bound portfolio on her lap. She repeatedly pushes a few blonde wisps off her face, then touches her neck, her subconscious movements both revealing and relieving her anxiety about her 9 a.m. interview.

A couple propped against a pole shares messages of affection; she rubs his arms with her hands. He nuzzles his face in her hair.

A middle-aged woman, squished into a corner, assuredly bumps the young man beside her with some elbow and hip. The message is clear; he instantly adjusts to make room.

Probing our ability to communicate nonverbally is hardly a new psychological tack; researchers have long documented the complex emotions and desires that our posture, motions, and expressions reveal. Yet until recently, the idea that people can impart and interpret emotional content via another nonverbal modality- touch- seemed iffy, even to researchers, such as DePauw University psychologist Matthew Hertenstein, who study it.

Source 2

In 2009, [Depauw University psychologist Matthew Hertenstein] demonstrated that we have an innate ability to decode emotions via touch alone. In a series of studies, Hertenstein had volunteers attempt to communicate a list of emotions to a blindfolded stranger solely through touch. Many participants were apprehensive about the experiment. "This is a touch-phobic society," he says. "We're not used to touching strangers, or even our friends, necessarily." ... The results suggest that for all our caution about touching, we come equipped with an ability to send and receive emotional signals solely by doing so. Participants communicated eight distinct emotions- anger, fear, disgust, love, gratitude, sympathy, happiness, and sadness- with accuracy rates as high as 78 percent. "I was surprised," Hertenstein admits. "I thought the accuracy would be at chance level," about 25 percent.

Previous studies by Hertenstein and others have produced similar findings abroad, including in Spain (where people were better at communicating via touch than in America) and the UK. Research has also been conducted in Pakistan and Turkey. "Everywhere we've studied this, people seem able to do it," he says.

Source 2



Indeed, we appear to be wired to interpret the touch of our fellow humans. A study providing evidence of this ability was published in 2012 by a team who used fMRI scans to measure brain activation in people being touched. The subjects, all heterosexual males, were shown a video of a man or a woman who was purportedly touching them on the leg. Unsurprisingly, subjects rated the experience of male touch as less pleasant. Brain scans revealed that a part of the brain called the primary somatosensory cortex responded more sharply to a woman's touch than to a man's. But here's the twist: The videos were fake. It was always a woman touching the subjects.

The results were startling, because the primary somatosensory cortex had been thought to encode only basic qualities of touch, such as smoothness or pressure. That its activity varied depending on whom subjects believed was touching them suggests that the emotional and social components of touch are all but inseparable from physical sensations. "When you're being touched by another person, your brain isn't set up to give you the objective qualities of that touch," says study coauthor Michael Spezio, a psychologist at Scripps College. "The entire experience is affected by your social evaluation of the person touching you."

Source 2

Scientists used to believe touching was simply a means of enhancing messages signaled through speech or body language but it seems instead that touch is a much more nuanced, sophisticated, and precise way to communicate emotions," Hertenstein [Depauw University psychologist] says.

It may also increase the speed of communication: "If you're close enough to touch, it's often the easiest way to signal something," says Laura Guerrero, coauthor of *Close Encounters: Communication in Relationships*, who researches nonverbal and emotional communication at Arizona State University. This immediacy is particularly noteworthy when it comes to bonding. "We feel more connected to someone if they touch us," Guerrero notes.

Source 2

“[Touch is] an essential channel of communication with caregivers for a child,” says San Diego State University School of Communication emeritus professor Peter Andersen, author of *Nonverbal Communication: Forms and Functions*.

A mother’s touch enhances attachment between mother and child; it can signify security (“You’re safe: I’m here”) and, depending on the type of touch, it can generate positive or negative emotions. (Playing pat-a-cake makes infants happy, while a sudden squeeze from Mom often signals a warning not to interact with a new object).

Source 2

Mom’s touch even seems to mitigate pain when infants are given a blood test. University of Miami School of Medicine’s Tiffany Field, director of the Touch Research Institute, has linked touch, in the form of massage, to a slew of benefits, including better sleep, reduced irritability, and increased sociability among infants- as well as improved growth of preemies.

Source 2

We're never touched as much as when we're children, which is when our comfort level with physical contact, and with physical closeness in general (what scientists call proxemics), develops. "The fact that there's a lot of cultural variation in comfort with touch suggests it's predominantly learned," Andersen says.

Warm climates tend to produce cultures that are more liberal about touching than colder regions (think Greeks versus Germans, or Southern hospitality versus New England stoicism). There are a number of hypotheses as to why, including the fact that a higher ambient temperature increases the availability of skin ("It pays to touch somebody if there's skin showing or they're wearing light clothing through which they can feel the touch," Andersen says); the effect of sunlight on mood ("It increases affiliativeness and libidinousness- lack of sunlight can make us depressed, with fewer interactions")' and migratory patterns ("Our ancestors tended to migrate to the same climate zone they came from. The upper Midwest is heavily German and Scandinavian, while Spaniards and Italians went to Mexico and Brazil. That influences the brand of touch").

Source 2

Even fleeting contact with a stranger can have a measurable effect, both fostering and enhancing cooperation. In research done back in 1976, clerks at a university library returned library cards to students either with or without briefly touching the student's hand. Student interviews revealed that those who'd been touched evaluated the clerk and the library more favorably. The effect held even when students hadn't noticed the touch.

More recent studies have found that seemingly insignificant touches yield bigger tips for waitresses, that people shop and buy more if they're touched by a store greeter, and that strangers are more likely to help someone if a touch accompanies the request. Call it the human touch, a brief reminder that we are, at our core, social animals. "Lots of times in these studies people don't even remember being touched. They just feel there's a connection. They feel that they like that person more," Guerrero [coauthor of *Close Encounters: Communication in Relationships*, who researches nonverbal and emotional communication at Arizona State University] says.

Source 2

Just how strong is touch's bonding benefit? To find out, a team led by University of Illinois at Urbana- Champaign psychologist Michael Kraus tracked physical contact between teammates during NBA games (consider all those chest bumps, high fives, and backslaps). The study revealed that the more on-court touching there was early in the season, the more successful teams and individuals were by season's end. The effect of touch was independent of salary or performance, eliminating the possibility that players touch more if they're more skilled or better compensated.

"We were very surprised. Touch predicted performance across all the NBA teams," says Kraus. "Basketball players sometimes don't have time to say an encouraging word to a teammate; instead, they developed this incredible repertoire of touch to communicate quickly and accurately," he explains, adding that touch can likely improve performance across any cooperative context. As with our primate relatives, who strengthen social bonds by grooming each other, in humans, "touch strengthens relationships and is a marker of closeness," he says. "It increases cooperation but is also an indicator of how strong bonds are between people."

Source 2

If a post-rebound slap on the back or the brush of a hand while delivering a bill can help us all get along a bit better, it may be because "when you stimulate the pressure receptors in the skin, you lower stress," says the Touch Research Institute's [Tiffany] Field. At the same time, warm touch stimulates release of the "cuddle hormone," oxytocin, which enhances a sense of trust and attachment.

Source 2

Andersen says, "... More touch-oriented doctors, teachers, and managers get higher ratings."

Source 2

“We do a lot of self-touching: flipping our hair, hugging ourselves,” Field [of the Touch Research Institute and University of Miami School of Medicine] notes. Other common behaviors include massaging our foreheads, rubbing our hands, or stroking our necks. Evidence supports the idea that it’s effective: Self-massage has been shown to slow the heart rate and lower the level of the stress hormone cortisol.

Source 2

Perhaps because touch affects both the person being touched and the one doing the touching, it is one of the most fundamental ways of fostering and communicating intimacy in a romantic relationship...

After the first three (eye-to-body contact, eye-to-eye contact, and speaking), the remaining nine involve touching (starting with holding hands, then kissing, and eventually sexual intimacy)....

...Over time romantic partners adjust the amount of touching they do, up- or downshifting their behavior to move closer to their significant other’s habits. Inability to converge on a common comfort zone tends to derail a relationship early on, while among couples in long-term marriages, touching reaches an almost one-to-one ratio.

While couples who are satisfied with each other do tend to touch more, the true indicator of a healthy long-term bond is not how often your partner touches you but how often he or she touches you in response to your touch. “The stronger your reciprocity, the more likely someone is to report emotional intimacy and satisfaction with the relationship,” Guerrero [coauthor of *Close Encounters: Communication in Relationships*, who researches nonverbal and emotional communication at Arizona State University] says. As with many things in relationship, satisfaction is as much about what we do for our partner as about what we’re getting.

Source 2

Oxytocin is a neurotransmitter that acts as a hormone... [It] is released in the body when we feel safe and connected and tells the brain, "Everything is all right." Dr. Paul Zak has determined that the human brain naturally produces oxytocin during breast-feeding, orgasm, hugs, snuggling, holding hands, partner dance, massage, bodywork, and prayer...

As discovered by Zak and Therodoridou, oxytocin thus motivates a variety of pro-social behaviors such as generosity, compassion, and forgiveness. In other words, its presence in the brain helps us to trust and bond with strangers.

... another study orchestrated by Zak, in which he found that oxytocin increases a person's likelihood to trust strangers and to give them money. In this study, participants were asked to give away a portion of \$10 they had been given by researchers. The researchers found that participants who had been dosed with oxytocin were 80% more generous than control group participants....

... Research by Theodoridou and colleagues showed that participants who were given synthetic oxytocin were more likely to perceive strangers as attractive and trustworthy when compared to control participants not dosed with oxytocin.

Previous research by Vuilleumier had shown that human beings have a bias towards recognizing negative facial expressions more than neutral or positive ones, and Surguladze had found a dramatic increase of this effect in populations of depressed people.

Guastella's research showed that people who received oxytocin countered this tendency and were more likely to recognize and recall happy faces.

Oxytocin is found only in mammals and needs stimulation to be released.

...[P]hysical touch stimulates the most potent release of oxytocin....

Source 3

In one study, researchers at the University of Colorado and Yale had an employee of the experimenters (blind to the study's purpose) accompany participants to a designated testing room on an elevator. While riding up, the employee asked participants to temporarily hold a coffee cup, which held either warm or iced coffee, while the employee filled out some basic forms.

After arriving upstairs, participants were then asked to rate a fictional person on ten traits, including things like honest vs. dishonest, humane vs. ruthless, and so on. Those who'd held the warm cup tended to rate the target person as "warmer"- more humane, trustworthy, and friendly- than those who held the iced coffee. In other words, physical warmth produced "interpersonal warmth" in these participants.

Source 4

In social species, prosocial emotions are those that promote the well-being of the group. By engaging in acts of trust and cooperation, social groups survive. Parents and offspring form attachments, and individuals act in mutually beneficial, altruistic ways to sow trust between one another. A growing number of studies on touch and emotion reveal our deep-seated need for human contact and warmth. Touch may be the key for communicating prosocial emotions, and for promoting group cohesion and survival.

Source 5

Dr. Dacher Keltner from the UC Berkeley Department of Psychology and Dr. Matthew Hertenstein (now at DePauw University) have conducted extensive research on how touch communicates emotions. In their 2006 paper **Touch Communicates Distinct Emotion**, [Dr. Dacher] Keltner [from the UC Berkeley Department of Psychology ]and [Dr. Matthew] Hertenstein [(now at DePauw University)] investigated the ability of touch to convey various emotions... For their study, 212 volunteers between the ages of 18-40 were sorted into pairs called dyads. In each dyad, one person did the touching (the "encoder") and the other received the touch (the "decoder").



Each dyad sat at a table that was bisected by an opaque black curtain, and had no opportunity to see or hear one another. The decoder was instructed to place a bare forearm through the curtain. On the other side of the curtain was the encoder, who presented one of twelve emotions to the decoder by touching the decoder's exposed arm. In addition, the encoder was given freedom to choose how best to communicate each of the emotions, including anger, disgust, fear, happiness, sadness, surprise, sympathy, embarrassment, love, envy, pride, or gratitude. The decoder then chose which of the twelve emotions best described what the encoder was attempting to communicate. Keltner and Hertenstein found that anger, fear and disgust were communicated at levels above chance (which was set at 25%) along with prosocial emotions such as love, gratitude, and sympathy.

...this experiment revealed that we use consistent types of touch to communicate particular emotional states.... The types of tactile displays, including tapping, stroking, squeezing, poking, pushing, and tickling, among others, were noted and quantified in terms of frequency, duration, and intensity. Although 106 encoders participated in the experiment, they tended to use similar tactile displays to convey emotion. For example, sympathy was most likely to be communicated with patting or stroking, while anger was most likely communicated with pushing.

In a 2009 paper that re-examined this data, Keltner and his team found some interesting patterns of gendered communication... Only when the dyad consisted of males was anger communicated at greater-than-chance levels. Only when the dyad consisted of females was happiness communicated at greater-than-chance levels. Sympathy was communicated at greater-than-chance levels only when there was at least one female in the dyad. One of the more humorous findings of the study was how helpless men and women were at communicating specific emotions to one another. As Dr. Keltner explained in a public lecture, "When women tried to communicate anger to the man he had no idea what she was doing and he got nothing right. And when the man tried to communicate compassion to the woman she got zero right. She had no idea what he was doing."

Source 5

Receptors sensitive to pressure, warmth, and other triggers, cause our bodies to release a rush of oxytocin. Oxytocin has been studied in monogamous prairie voles, in nursing mothers, and in human couples where it is thought to be involved with the promotion of associative behaviors such as compassion, and which builds trust between individuals.

Source 5

In a 2010 paper published in the journal *Emotion*, Dr. Keltner's group correctly predicted better outcomes in the 2008-2009 season for those NBA teams whose athletes touched one another most frequently and in a positive manner (e.g. chest bumping, high-fives, hugs, huddles, etc) early in the season. As Darwin astutely noticed, for social animals, behaviors that allow us to cement bonds with others should persist because altruism is an adaptive trait. Chemical messengers such as oxytocin help to reinforce specific adaptive behaviors such as positive touch.

Source 5

Not only does touch foster cooperation within groups, it is necessary for proper physical and psychological development in infant mammals. From birth, regular nurturing touch has been shown to have growth promoting effects in infants. Pups that are separated from their mothers for prolonged periods have stunted growth compared to rats who are not separated from their mothers even though they may be fed the same amount. In a 2003 paper, Dr. Saul Shanberg and colleagues describe how the 'mothering behavior' of female rats (in this case grooming) stimulates the release of prolactin and growth hormone in her pups, both necessary for proper growth.

Extending these findings to humans, Dr. Tiffany Field (from the Touch Research Institute) and others compared the growth rates of premature infants who were maintained in incubators without touch (standard protocol) to those who were subjected to light massage several times a day.... Despite being fed exactly the same amount, the premature babies who were lightly massaged several times a day gained 21-47% more weight than the premature infants who were not touched. Randomized, controlled studies with other premature infants have shown similar results.

Source 5

In addition to having a well-known calming effect on infants, a nurturing touch is critical for proper cognitive development. Studies have shown that babies who are held and touched in a positive way more often also demonstrate lifelong resilience to stress and improved cognition.

Source 5

Elderly patients in nursing homes, particularly widows, may also be missing the warm touch of a loved one. One study (<http://www.ncbi.nlm.nih.gov/pubmed/12408216>) observed that “therapeutic touch” (described as a healing process facilitated by hands) decreased stress associated cortisol levels, and the frequency of agitated behaviors (such as pacing and vocalizations) in individuals suffering from Alzheimer’s Disease.

Source 5

Source 1:

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Source 4

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