

RUNNING HEAD: Human Touch and Social Life

**That Human Touch That Means So Much:
Exploring the Tactile Dimension of Social Life**

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Interpersonal touch is a fundamental but undervalued aspect of human nature. In the present article, the authors review psychological research showing that even fleeting forms of touch may have a powerful impact on our emotional and social functioning. Given its significant beneficial effects, touch may be valuable as a therapeutic or health-promoting tool.

**That Human Touch That Means So Much:
Exploring the Tactile Dimension of Social Life**

No one wants to live alone

Who wants to smile, laugh, or cry alone

Have we lost the touch that means so much

Have we lost the human touch

From *Human Touch*, performed by Nina Simone (written by Charles Reuben)

Ever had cold feet at night? People had a remarkable solution to this problem in the Middle Ages. Many nobles in medieval Europe had large beds that allowed a noble, his wife, their children, some servants, and his knights to sleep together in the dead of winter (Lacroix & Naunton, 2010). If this sleeping arrangement sounds a little too cozy, this is probably because modern people like you and I have come to regard the practice of sleeping together with one's entire household as shameful and uncivilized. Indeed, over the centuries, various forms of interpersonal touch have become less and less common, squelched under an onslaught of changing cultural values and new technology. We increasingly view touch as unhygienic and even invasive, as in the case of sexual harassment, for example. And sequestering ourselves behind phones and laptop screens has only exacerbated the trend.

Given that interpersonal touch is increasingly becoming a scarce commodity, it is important to ask how touch influences our lives. Why is touching and being touched by others so important to us? New research suggests that even fleeting forms of touch may have a powerful impact on our emotional and social functioning. For instance, people can communicate distinct

emotions such as anger or sadness through touch. Moreover, people who are touched briefly on the arm or shoulder are more likely to comply with requests such as volunteering for charity activities. These findings could have far-ranging implications for the role of touch in everyday life and point to important applications in therapy and virtual communication.

The Emotional Power of Touch

Whether we get a friendly slap on the back, a sensual caress, or a loving kiss -- interpersonal touch has a powerful impact on our emotions. In fact, our skin contains receptors that directly elicit emotional responses, through stimulation of erogenous zones or nerve endings that respond to pain (Auvray, Myin, & Spence, 2010; Hertenstein & Campos, 2001).

Furthermore, research by Matthew Hertenstein, director of the Touch and Emotion Lab at DePauw University, has shown that touch may communicate distinct emotions (Hertenstein, Keltner, App, Bulleit, & Jaskolka, 2006). Hertenstein and his associates asked pairs of participants to sit at a table with a curtain between them, so that they were unable to see one another. One of the participants, the encoder, was asked to communicate distinct emotions (e.g. anger, disgust, fear, sympathy) by touching the other person's arm. The person being touched, the decoder, was asked to identify the communicated emotion from a number of response options. Although they could neither see nor talk to each other, the participants were able to encode and decode distinct emotions such as anger, fear and disgust at above-chance levels.

The emotional impact of interpersonal touch is ingrained in our biology. Indeed, there is some direct evidence that, in mammalian species, touch triggers the release of oxytocin, a hormone that decreases stress-related responses. Researchers first tested this idea by stroking rats' abdomens for 30-45 seconds. They found that this type of soft touch raised rats' oxytocin

levels (Ågren, Lundeberg, Uvnäs-Moberg, & Sato, 1995). Interpersonal touch can also induce oxytocin release among humans. For instance, in one experiment, couples who engaged in a warm touch exercise, during which they touched each other's neck, shoulders, and hands, had more oxytocin in their saliva than couples who did not engage in this exercise (Holt-Lunstad, Birmingham, & Light, 2008). Likewise, women who report frequent partner hugs display higher levels of oxytocin in their blood than women who report few partner hugs (Light, Grewen, & Amico, 2005). The oxytocin-enhancing effects of touch may reduce the discomfort that people experience from everyday stressors, such as family turmoil or conflict at work (Di Simplicio, Massey-Chase, Cowen, & Harmer, 2009; Taylor, 2006).

In the early 1950s, American psychologist Harry Harlow provided a dramatic demonstration of the importance of touch in coping. Harlow set out to study the effect that separation from their mothers has on children by conducting a range of controversial experiments with baby Rhesus monkeys. Harlow raised the baby monkeys in isolation in a cage that contained two surrogate “mothers” – one made of metal wire and the other wrapped in terrycloth. Although the wire mother contained a bottle from which the monkeys could nurse, the monkeys would cling to the terrycloth mother when they were frightened, even when this led them to dehydrate and starve. Harlow's monkeys were apparently hungry for something other than food: They were literally starving for a warm, comforting touch. With these studies, Harlow was the first to show that intimate body contact, and not feeding, was the most important factor in mother-child bonding.

Harlow conducted his ground-breaking (and arguably cruel) experiments after reading a World Health Organization report on the detrimental effect of institutionalization. This report was written by the British psychiatrist John Bowlby, a pioneering researcher who developed

attachment theory (Bowlby, 1973). Attachment theory suggests that touch from sensitive caregivers allows infants to feel safe and secure, and thus forms the basis of securely attached relationships later in life. Developmental research has supported these notions. For instance, mothers' nurturing touch was found to foster more secure attachment in low birth weight infants nine months later (Weiss, Wilson, Hertenstein, & Campos, 2000). Furthermore, infants who were



tenderly held by their mothers and for longer periods of time were more securely attached than infants who were held reluctantly or awkwardly (Ainsworth, Blehar, Waters, & Wall, 1978). Thus, early nurturing touch from caregivers plays a key

role in shaping children's emotional security.

The soothing effects of touch likely remain important in adulthood. There is growing evidence that touch from a romantic partner buffers us against stress. For instance, happily married women who are holding their husband's hand have smaller threat-related neural responses than when they are holding the hand of a stranger or do not engage in handholding (Coan, Schaefer, & Davidson, 2006). People may also obtain the comforting effects of touch from non-romantic relationships, and even with non-human animals such as pets (McConnell, Brown, Stayton, & Martin, 2011). Even inanimate objects appear to have an effect. Some fascinating experiments have shown that people recover more quickly from social rejection when they are holding a teddy bear on their lap (Tai, Zheng, & Narayanan, 2011).

Soft touch does not always have comforting effects. Jonathan Levav of Columbia University and Jennifer Argo of the University of Alberta (2010) found that a female's light, comforting pat on the shoulder increased feelings of security. However, this calming effect did not occur when individuals were touched by a male and was weaker when the touch consisted of

a handshake. This finding suggests that gentle touch by non-threatening individuals is most likely to have beneficial effects. Touch is also less likely to have beneficial effects when it violates cultural, social, or personal norms. For instance, uninvited touch from a stranger is often perceived as intrusive or threatening (Thayer, 1986). Likewise, touching the waist area is only appropriate in the context of a strong bond or close relationship (Lee & Guerrero, 2001). Finally, some people generally dislike being touched (Wilhelm, Kochar, Roth, & Gross, 2001).

The Social Power of Touch

Beyond regulating our emotions, interpersonal touch may also regulate our social relationships. Cultural anthropologist Alan Page Fiske (1991, 2004) has elaborated on the social significance of touch. According to Fiske, touch is a key element of a *communal sharing relationship*, a relationship that occurs in all cultures between mothers and their children, and among members of a group with a shared identity. When people engage in communal sharing, they implicitly assume that their bodies share a common substance, which could be real, imagined, or implied. Interpersonal touch (but also other activities like joint eating or dancing) indicates the presence of a communal sharing relationship by referring to the sharing of a common substance.

If Fiske is correct, touch may render people more willing to share resources. April Crusco of the University of Mississippi and Christopher Wetzel of Rhodes College (1984) conducted a famous test of this idea, in which they examined the effects of touch on tipping behaviour. They conducted the research among diners of two restaurants in a small college town in the American south, where one of three waitresses served the diners. After a waitress collected a diner's money, she went to get change (in the early 1980s, most people presumably paid in cash). At this

point, the researchers instructed the waitresses to touch the diners briefly on the shoulder or the palm of the hand, or to not touch the diners at all. The results showed that diners who were touched by the waitress left between 18% and 36% more tips than diners who were not touched, a pronounced difference that was statistically reliable. These beneficial effects of a brief touch have since been observed for many other behaviors, such as signing a petition (Willis & Hamm, 1980), returning lost money (Kleinke, 1977), helping to pick up dropped items (Guéguen & Fischer-Lokou, 2003), volunteering for charity (Goldman, Kiyohara, & Pfannensteil, 1985), and looking after a dog (Guéguen & Fischer-Lokou, 2002).

Some particularly provocative studies have examined the effects of touch on courtship behavior. One study (Guéguen, 2007, Experiment 1) took place in a French nightclub. During slow romantic songs, an attractive 20-year-old male went up to a young woman and said, "Hello. My name is Antoine. Do you want to dance?". When he made his request, the man either touched the woman lightly on her forearm or refrained from touching her. While 43% of the women who were not touched accepted the invitation, 65% of the women who were touched agreed to dance. In a parallel study, an attractive male tried to obtain phone numbers from young women on the street. Of the women who were not touched, 10% provided their phone number, compared to 19% of the women who were touched (Guéguen, 2007, Experiment 2). These findings suggest that touch can be a powerful catalyst of romantic liaisons.

Equally notable are findings that touch can motivate people to work harder on shared tasks (e.g., Steward & Lupfer, 1987; Guéguen, 2004). One recent study on this topic examined touches exchanged between members of basketball teams (Kraus, Huang, & Keltner, 2010). The researchers observed touch behaviors of 294 players from all 30 National Basketball Association (NBA) teams during one game that was played within the first two months of the 2008-2009

season. The focus was on touches among two or more players who were celebrating a positive play that helped their team, including behaviors such as high fives, head slaps, or team huddles. The researchers then related the frequency of these touches to basketball performance during the subsequent NBA season. The results showed that early season touch predicted season performance. This relation held even when the researchers statistically controlled for player salary, preseason expectations, and early season performance. Indeed, the only measure that could account for the relation between touch and performance was the amount of cooperation that was observed during the game. These findings suggest that touch among basketball players is a strong indicator of trusting and cooperative attitudes, which may facilitate team performance.

The prosocial tendencies induced by touch may sometimes have harmful effects. In cultures that encourage recklessness and irresponsibility, touch may amplify the destructive behavior. One study showed that customers in US public taverns who were briefly touched by a waitress ordered more drinks and consumed more alcohol than customers who were not touched (Kaufman & Mahoney, 1999). Another recent study showed that men playing an investment game made riskier decisions after a woman pat them lightly on the shoulder (Levav & Argo, 2010). Interpersonal touch may thus lead people to pursue riskier strategies, particularly when these strategies are socially sanctioned.



Although touch may smooth social interactions and help people bond with others, people may feel unnerved when others get too familiar with them in a purely professional setting (Leander, Chartrand & Bargh, 2012). Thus, the social benefits of touch are likely to materialize only in appropriate situations.

Conclusions and Outlook

Although psychologists have learned a great deal about the significance of touch, the scientific inquiry of touch is still in its infancy. One important complexity that has yet to be addressed is that touch is inherently a multisensory experience. During interpersonal touch, we typically experience tactile stimulation, but also changes in warmth, along with changes in what we see, hear, and smell. Nevertheless, inputs from other senses can have independent effects. For instance, merely being in a warm room or holding a warm drink can make people feel closer to others compared to when they are in a cold room or holding a cold drink (Williams & Bargh, 2008; see also IJzerman & Saddlemeier, in press). More research is needed to establish whether and how warmth and other sensory experiences like smell, sounds, and vision contribute to the effects of touch (see Paladino, Mazzurega, Pavani, & Schubert, 2010, for a pioneering study on this topic).

Other important questions relate to the role of culture. Culture regulates how easily we can access interpersonal touch, by determining who is allowed to be touched by whom, which parts of the body can be touched, what touch means, how touch is ritualized in greetings (e.g., whether we kiss or shake hands with our friends), and so on. However, it is unclear to what degree we can attribute the influence of touch to psychological factors. As we have seen, some of the effects of touch are physiological, such as the release of oxytocin, and they are part of our biological hardware. These physiological processes may be resistant to cultural constraints. For instance, one study showed that individuals who consider touch inappropriate may still show physiological benefits from touch (Wilhelm et al., 2001). However, evidence of this kind remains limited. More research is therefore needed before we can draw firm conclusions about the role of culture in determining the physiological effects of touch.

Despite these limitations, insights from touch research could have many real-world applications. For instance, touch-based therapies may be useful in treating deficiencies in perspective taking (i.e. perceiving someone else's thoughts and feelings), one of the core symptoms of autistic spectrum disorder (Baron-Cohen & Belmonte, 2005). Given that oxytocin (which is released upon touch) improves perspective-taking abilities among high-functioning autistics (Guastella et al., 2010; Hollander et al., 2007), touch-based interventions might be helpful to autistic individuals (see Escalona, Field, Singer-Strunck, Cullen, & Hartshorn, 2001). More broadly speaking, interpersonal touch may support health-promoting behaviors by enhancing compliance. Indeed, one study showed that when service staff at a home for the elderly touched the patients while verbally encouraging them to eat, these patients consumed more calories and protein up to five days after the touch (Eaton, Mitchell-Bonair, & Friedmann, 1986; for related findings, see Guéguen & Vion, 2009).



Incorporating interpersonal touch in educational and health systems may sometimes be difficult. Educators and health professionals may fear malpractice and abuse charges (Field, 2001). Moreover, some individuals may prefer not to be touched, even when they might derive benefits from it (Wilhelm et al., 2001). Consequently, it seems useful to look for technological substitutes for interpersonal touch. The emerging fields of mediated social touch (Haans & IJsselsteijn, 2006) and affective haptics (Tsetserukou, Neviarouskaya, Prendinger, Kawakami, & Tachi, 2009) study and design haptic devices and systems that can elicit, enhance, or influence people's emotions. These efforts have produced devices that can mimic aspects of interpersonal touch, such as the "Huggy Pajama", a haptic jacket that gives wearers the tactile sensations of a

hug whenever a sender hugs a doll-shaped device (Keng et al., 2008). Preliminary evidence suggests that at least some of the behavioral effects of mediated touch parallel the effects of interpersonal touch (Haans & IJsselsteijn, 2009).

French novelist Michel Houellebecq (1998) envisioned a future in which all contact between people is mediated by technology. As such, one might wonder if haptic technology can ever replace interpersonal touch. Is being hugged by a haptic jacket as valuable as being hugged by a human being? Will the ultimate high-tech society be completely devoid of human touch? Though provocative, these questions may be largely beside the point. In the foreseeable future, the main use of haptic technology lies not in replacing human touch. Rather, haptic technology provides touch experiences for individuals who will otherwise remain touch-deprived. For instance, individuals with social anxiety, who find it awkward to be touched by people, may find it acceptable to wear a haptic jacket. Likewise, haptic technology may allow parents to hug their children while at work or traveling. New technological developments may thus enable greater numbers of individuals to reap the social and emotional benefits of interpersonal touch.

Glossary:

- **Affective haptics** is a novel area of research that focuses on the study and design of devices and systems that can elicit, enhance, or influence human emotional states by using the sense of touch.
- **Attachment theory** describes the dynamics of long-term relationships between humans. Its most important tenet is that an infant needs to develop a secure bond with at least one primary caregiver for social and emotional development to occur normally.
- **Autism Spectrum Disorder** is a broad category of psychological conditions characterized by abnormalities in social interactions and communication, stereotyped or repetitive behaviors and interests, and/or cognitive delays. It includes both high-functioning individuals with mild symptoms of autism (often called Asperger's Syndrome) and individuals with more severe symptoms, such as severe to profound mental retardation.
- A **cultural anthropologist** belongs to a branch of the social sciences that studies cultural variation among humans.
- A **communal sharing relationship** is a type of social relationship in which members implicitly assume that their bodies share a common substance that binds them together. This relationship is typically found among close kin or members of a group with a salient shared identity.
- **Coping** is the process of managing taxing circumstances, and seeking to reduce or tolerate stress or conflict.

- **Developmental** research involves the social and mental development of human beings over the course of their life span.
- **Haptic** sensory information includes both tactile sensations that are mediated by the skin, and kinesthetic sensations based on body position and movement, and muscular tensions.
- A **haptic jacket** is a garment worn on the upper body that can simulate haptic sensations by using mechanical stimulation (for instance, from vibrating motors or heating elements) to simulate the sensation of being touched.
- **High-functioning autism** is an informal term that is often applied to autistic individuals who are not cognitively impaired (i.e. have an average or higher than average IQ).
- **Oxytocin** is a mammalian hormone secreted by the posterior pituitary gland, which is located near the base of the brain. It is known for stimulating contractions of the uterus during labor and then the production of milk. Recently, studies have confirmed oxytocin's role in pair bonding and maternal behaviors.
- **Perspective-taking** refers to the ability to perceive someone else's thoughts, feelings, and motivations.
- Human **physiological processes** pertain to the physical and chemical factors and processes involved in the functions of living persons and their parts.
- **Physiological benefits** improve the processes and functions of (parts of) the body.
- According to **relational models theory**, people are inherently social animals who organize their lives in terms of their relationships with others. These relationships are culture-specific implementations of four types of basic social bonds. Communal sharing is one type of such a bond.
- **Tactile** means “pertaining to the sense of touch”. Tactile experiences are one type of haptic

sensory information.

- **Threat-related neural responses** pertain to activations of neurons in the brain that are evoked by threatening situations.

- **Touch-based therapies** such as massage therapy use the beneficial effects of touch to treat health problems or psychological disorders.

- The **World Health Organization (WHO)** is a specialized agency of the United Nations that seeks to coordinate international health activities and to help set evidence-based policy standards through research and health trend assessment.

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