

Holding Loved One's Hand Can Calm Jittery Neurons

By **BENEDICT CAREY**

Married women under extreme stress who reach out and hold their husbands' hands feel immediate relief, neuroscientists have found in what they say is the first study of how human touch affects the neural response to threatening situations.

The soothing effect of the touch could be seen in scans of areas deep in the brain that are involved in registering emotional and physical alarm.

The women received significantly more relief from their husbands' touch than from a stranger's, and those in particularly close marriages were most deeply comforted by their husbands' hands, the study found.

The findings help explain one of the longest-standing puzzles in social science: why married men and women are healthier on average than their peers. Husbands and wives who are close tend to limit each other's excesses like drinking and smoking but not enough to account for their better health compared with singles, researchers say.

"This is very imaginative, cutting-edge science, linking this complex response to stress to different areas of the brain," said Dr. Ronald Glaser, director of the Institute for Behavioral Medicine Research at Ohio State University, who was not involved in the study.

In the study, to appear in the journal *Psychological Science* this year,

Findings help explain why married men and women live longer.

neuroscientists at the University of Wisconsin and the University of Virginia used newspaper advertisements to recruit 16 couples from the Madison, Wis., region. The couples were all rated as very happily married on an in-depth questionnaire asking about coping styles, intimacy and mutual interests.

Lying in the jaws of an M.R.I. scanning machine and knowing that they would periodically receive a mild electric shock to an ankle, the women were noticeably apprehensive. Brain images showed peaks of activation in regions involved in an-

icipating pain, heightening physical arousal and regulating negative emotions, among other systems.

But the moment that they felt their husbands' hands — the men reached into the imaging machine — each woman's activity level plunged in all the regions gearing up for the threat. A stranger's hand also provided some comfort, though less so.

"The effect of this simple gesture of social support is that the brain and body don't have to work as hard, they're less stressed in response to a threat," said Dr. James A. Coan, a psychologist at the University of Virginia and the study's lead author. His co-authors were Dr. Hillary Schaefer and Dr. Richard J. Davidson of the University of Wisconsin.

Relaxing in the face of a perceived threat is not always a good idea. The brain's alarm system, which prompts the release of stress hormones that increase heart rate and move blood to the muscles, prepares people to fight or run for their lives, researchers say.

But this system often becomes overactive in situations that are nagging but not life threatening like worries over relationships, deadlines, money or homework. Easy access to an affectionate touch in these moments — or to a hug, a back rub or more — "is a very good thing, is deeply soothing," Dr. Coan said.

The most profoundly comforting hand-holding was between "super-couples," whose scores on the marriage questionnaire reflected an extremely close relationship, the study found. The brain region involved in anticipating pain was particularly sensitive to this marital quality, suggesting that a touch between close partners can blunt the sensation of physical pain, which is related to the level of anticipation.

All of which also explains why the withdrawal or absence of affectionate touch can be so upsetting. In research published late last year, Dr. Glaser and his wife, Dr. Janice Kiecolt-Glaser, reported that blisters lingered longer during marital strife.

And rejection, the ultimate withdrawal of touch, registers in the brain much like an ankle shock, said Dr. Lucy Brown, a neuroscientist at the Albert Einstein College of Medicine. Fear of the shocks activated a region in the brain "that we saw activated in people looking at a beloved who had recently rejected them," Dr. Brown wrote in an e-mail message.

"Love has its risks," she added. "It can make us very unhappy," too.