Neuro Harlow: The effect of a mother's touch on her child's developing brain

Researchers were particularly interested in levels of resting activity in the children's brains in a network of areas sometimes referred to as the "social brain".

In the 1950s, the American psychologist Harry Harlow famously showed that infant rhesus monkeys would rather cling to a surrogate wire mother covered in cosy cloth, than to one that provided milk. A loving touch is more important even than food, the findings seemed to show. Around the same time, the British psychoanalyst John Bowlby documented how human children deprived of motherly contact often go on to develop psychological problems. Now this line of research has entered the neuroscience era with a study in *Cerebral Cortex* claiming that children with more tactile mothers tend to have more developed social brains.

Jens Brauer and his colleagues videoed 43 mum-child dyads as they sat together on a couch and played with a Playmobil Farm. The mothers knew they were being filmed but didn't know the aims of the study. There were 24 boys and 19 girls and their average age was 5.5 years. Coders then watched back the videos and counted every instance that the mothers touched their child or vice versa. Finally and within the next two weeks, the researchers scanned each child's brain while they lay as still as possible looking at a lava lamp screensaver (a brain imaging technique known as a resting-state scan).

The researchers were particularly interested in levels of resting activity in the children's brains in a network of areas known to be involved in functions such as empathy and thinking about other people's mental states – sometimes referred to as the "social brain". They found that the children who were touched more by their mother in the ten-minute play session tended to have more resting activity in the social brain, especially the right superior temporal sulcus (STS). Children who received more touch also showed more resting connectivity between different functional nodes within their social brain, such as between the STS and the inferior frontal gyrus and the left insula. Children touched more by their mother also usually touched their mothers more, but the links between mothers' touch and the children's neural activity were still significant after factoring this out.

Previous research has found that greater resting activity in a person's social brain is linked with their social and emotional abilities, such as being able to take other people's perspective. Based on this, the researchers said "one may speculate that children with more touch more readily engage the mentalizing component of the 'social brain' and that, perhaps, their interest in others' mental states is greater than that of children with less touch."The research has some serious limitations, most obviously – and as the researchers' acknowledged – that the results are correlational, so it's possible unknown factors are driving differences in amounts of motherly touch and in the children's brain development. For example, perhaps some mothers are more engaged on many levels, including talking to their children more. Such mothers might be more tactile, but it could be, for instance, the way they talk to their children that is responsible for the brain differences. Another major factor, not mentioned by the researchers, is potential genetic effects. The same genes driving tactile behaviour in mothers might be passed down to their children influencing their brain development. It's also worth noting that it remains to be seen if similar results would be found for levels of touch from a father or other caregiver.

These issues aside, Brauer and his colleagues ask us to consider their results in light of animal research that is able to experimentally control how much motherly touch different individual animals are exposed to. This has shown that greater maternal touch is associated with important brain changes in rats, for example in the way their brains respond to stress, and that rats raised with more touch go on to be more tactile towards their own offspring. "On the backdrop of this work then, it is not unreasonable to suspect a potential causal role of touch for human development," the researchers said.

(Source: www.bps.org.uk/research-digest/neuro-harlow-effect-mothers-touch-her-childs-developing-brain)

A. Read the text and answer the following questions.

1. What was the main focus of the researchers' study described in the passage?

A. The effects of nutrition on brain development

B. The relationship between maternal touch and children's social brain activity

C. How children's speech patterns relate to empathy

D. The impact of visual stimuli on children's attention span

2. What did Harlow's experiments with infant rhesus monkeys demonstrate?

A. Monkeys prefer food over comfort

B. Comfort and touch are more important than food for infants

C. Monkeys can survive without maternal care

D. Food has no impact on psychological development

3. According to the study, which brain area showed increased activity in children who were touched more by their mothers?

A. Amygdala

B. Cerebellum

C. Right superior temporal sulcus (STS)

D. Hippocampus

4. What major limitation did the researchers acknowledge about their study?

A. The children were too young to provide reliable data

B. The results were based on animal models, not humans

C. The findings were correlational and not necessarily causal

D. The brain scans were conducted incorrectly

5. Which of the following is not mentioned as a possible alternative explanation for the findings?

A. Genetic factors influencing both mothers and children

B. The way mothers talk to their children

C. Children's diet and physical health

D. The possibility that some mothers are generally more engaged

6. What broader implication do the researchers suggest based on animal studies?

A. Touch may play a causal role in human brain and social development

B. Human development is unaffected by maternal behaviour

C. Genetic inheritance is the sole cause of brain development differences

D. Touch has no measurable neurological impact in humans