

# What About The Children?

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## RESEARCH SUMMARY

### **Gunnar, M (1998) Quality of Early Care and Buffering of Neuroendocrine Stress Reactions : Potential Effects on the Developing Human Brain Preventative Medicine, 27:208-11**

Research in rodents has indicated that levels of hormones released as a result of stress create part of an “early experience” which subsequently affects brain development. This paper looks at the evidence for similar patterns in humans.

At times of stress mammals release hormone-like substances called glucocorticoids. In rodents, research suggests that these glucocorticoids reduce the activity of the area of the brain involved with learning and memory. There is no evidence for this occurring in humans. However, there are studies that support a similar process occurring.

In one experiment, college students injected with glucocorticoids had impaired attention, which was proportional to the dose given. In another interesting study it was found that pre-school children with high levels of glucocorticoids were more likely to have “poor effortful control” as described by their parents and teachers.

In rats it is thought that the interaction of a pup with its mother is fundamental in depressing the response of areas of the brain to glucocorticoids. This is thought to buffer the potentially negative effect of glucocorticoids on the developing brain.

In humans, the security of the attachment relationship has been investigated with regard to glucocorticoid reactivity. Several studies suggest that infants with securely attached relationships indeed show more evidence of maternal buffering of glucocorticoids than insecurely attached infants - e.g. 18 month olds who were fearful of strange events (such as being approached by a clown asking them to play) but who were securely attached to the parent who was with them, did not show any elevation in glucocorticoid levels during the test session. In contrast, similarly wary toddlers who were insecurely attached exhibited significant glucocorticoid increases.

Interestingly research shows that a warm substitute caregiver may also be able to buffer the glucocorticoid response. Researchers in Hungary and France have also looked at glucocorticoid levels in relation to group size in day care centres. They found higher levels of glucocorticoids in larger toddler groups and those with poor ratios of children to caregivers.

The author concludes by suggesting that the data supports the hypothesis that sensitive, responsive, secure caretaking plays an important role in buffering the elevations in glucocorticoids in infants and young children. It is not known whether failure of such buffering has consequences for human brain development.

Summary by Dr Elizabeth Shawcross