

What About The Children?



RESEARCH SUMMARY

Early Experience in Humans is Associated with Changes in Neuropeptides Critical for Regulating Social Behavior.

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Although it is obvious that the developing brain in the young child has also to be a functioning structure, the consequences of this dual activity are potentially far-reaching. The two processes of development and function have to be able to operate smoothly, and at the same time. Their interaction is vitally important. The most obvious example of this is that a child born with one eye receiving no light (say, due to a dense cataract) will never subsequently develop vision in that eye even when the cataract is removed. It is clear that the brain needs complex stimuli in order to develop normally and that any restriction or distortion of such stimuli can result in disturbed or delayed development. There are many examples of this occurring in many aspects of brain function, and in this paper the authors looked at children who were emotionally deprived as a result of being brought up in the institutionalised setting of an orphanage. It is well known that such children frequently experience problems in establishing social bonding, as is seen by their wariness of strangers and difficulty in developing relationships.

The pituitary is a part of the brain which releases a number of different substances which control a wide range of physiology. Interest has centred round the function of two such substances: oxytocin (OT) and vasopressin (VP). These substances appear to be released by the brain in response to a reassuring environment (e.g. comforting touches and smells.) Animal studies show that as the levels of these substances rise in the blood, animals increase their positive social interaction, being more able to form social bonds, showing affection towards parents, and remembering the social interactions. Significantly, a higher level of these substances released in response to pleasant stimuli, in turn seems to confer a sense of security and reduces stress levels. The process is therefore self-amplifying. Equally it would be reasonable to suppose that a reduced level of release of these substances could be harmful in a developing child, an effect which could be self-perpetuating. Although these substances have complex effects on brain structure, they freely pass into the blood stream and are excreted in the urine, so that it is very easy to measure the levels in a child without causing any upset or stress, simply by measuring the concentrations in urine.

The study looked at 18 children who had been living in orphanages for an average of sixteen months from immediately after birth and these were compared with 21 children who were being brought up by their biological parents in a home environment. The two groups were matched as far as possible for other factors. The study involved engaging the children in an interactive computer game while sitting on either their mother's lap or that of an unfamiliar female. This took half an hour, and during this time physical contact was made with the child in a friendly and reassuring way. Urine samples were then subsequently collected to measure the release of OT & VP in response to the activity.

Measurement showed that the basal levels of OT were the same in both groups of children but the institutionalised children had lower levels of VP than the family reared children. It is postulated therefore that social deprivation has an inhibiting effect on the VP system. Significantly VP appears to be critical for recognizing familiar individuals, a key component of forming social bonds. OT levels for family reared children increased after physical contact

with their mothers more than in the institutionalised group. No differences in OT level could be demonstrated after the interaction with an unfamiliar adult. It would seem therefore that the OT & VP systems had been in some way impaired in the institutionalised group and perhaps of even more significance it was shown that children who had had three years of relatively stable family environment after earlier neglect still showed this impaired response in terms of OT & VP secretion.

The authors end by pointing out that not all children who experience early neglect develop the same type of problems, and children with the lower hormonal reactivity may be able to develop satisfactory interpersonal relationships given time. The potential for damage, however, at an early age is undeniable, and this paper gives one more clear illustration of the vital significance of safeguarding and optimising the child's environment in every way possible in the early and formative years.

A review by Dr. Mike Miller