



# The neuroscience data on childcare

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Researching and understanding the effects of non-parental care on young children is complex. Each child, each family, each situation is different. Data can only speak in statistically significant generalities. Yet once the findings from the research become robust and repeated it is important to report it so that parents can incorporate this information into their decisions, as well as advocate for improved policies and programmes.

To date, many studies have examined the link between the stress hormone cortisol and the use of childcare in children. Because observed behaviours do not always reliably reflect a child's stress level, physiological measures are seen as more accurate assessments of a child's stress response in childcare. Humans produce cortisol even when they are not stressed. However, multiple pathways in the brain respond to threat or challenge by increasing activity of the HPA (hypothalamic pituitary adrenal) system that raises cortisol levels over normal baseline. Chronic exposure to stress early in childhood may be a risk for later affective and cognitive functioning.

As of 2006, all the published studies examining this link were assessed and evaluated in a meta-analysis.<sup>1</sup> The data included research from the USA, Germany, Hungary and France and draws from a range of childcare settings, including use of a model centre that is used for training purposes and was assessed as of the highest quality.

## Research Summary

- Their main finding was that "at daycare children display higher cortisol levels compared to the home setting."<sup>2</sup> In some studies, the higher levels were obvious in the morning and across the day; in others it was confined to the afternoon levels (cortisol was tested at multiple points).

- Even with the highest quality of care, an increase in cortisol was still present, though higher quality acted as a protective factor so that the lower quality centres had a higher rise than the higher quality ones. (Quality was assessed on two prongs, one assessing the environment and the other assessing the caregiver interaction and attunement).
- The effects were greater for the younger children, especially notable for the children under 36 months (yet still significant for children up to age 6).
- It should also be noted that the findings are very statistically significant, with a 95% confidence interval and without publication bias. As the authors note in their statistical analysis, "it would need another 19 unpublished studies with null effects for the association of cortisol and daycare to turn the current combined effect size into a statistically non-significant effect."<sup>3</sup>

## The Hypothesis

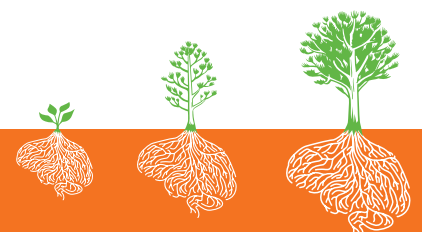
There is a two-fold hypothesis in the field as to why childcare could create elevated cortisol levels in children.

- One part is thought to be from the stress of separation from the mother/mother figure and the likelihood that it is the mother's regulating presence that buffers HPA activation in the child, especially for young children.

<sup>1</sup> Vermeer & van Ijzendoorn, 2006

<sup>2</sup> Vermeer & van Ijzendoorn, 2006, p.390

<sup>3</sup> Vermeer & van Ijzendoorn, 2006, p.395





At Brainwave Trust, we have always been concerned about situations children find themselves in that cause cortisol elevation which is our reason for so closely following and reporting this data. We are aware that there are a wide range of childcare options out there for parents and for some families they act as a lifeline while for others they desperately wish they had some other way forward. The research is put forward with a goal of honesty and a hope that it can help inform decisions that parents, whānau, centres and politicians make.

### Choosing a High Quality Centre

If you are a parent who currently uses or will be using non-parental care, please see our statement on help with choosing a care situation. That document also contains helpful information on what a centre should look like, so even if you've already chosen a centre you can use the points described to advocate within your centre and for your child.

### For more information on this topic see

#### Setting the record straight on Perry Preschool

<http://www.brainwave.org.nz/setting-the-record-straight-on-perry-preschool/>

#### Our literature search into childcare: How are the children doing?

<http://www.brainwave.org.nz/childcare-how-are-the-children-doing/>

- The second part is due to the increased challenge of peer interactions, again especially for younger children (especially under 3's) who require much more from a regulating attuned consistent mother figure than their older peers who can derive much more goodness from peer interactions. In other words, for a very young child, peer interactions themselves can be a stressful event to be managed, especially before they have reached an age where parallel play has transformed into intentional interactive play.

### Conclusions

Again, we cannot say how each individual child will be or could be affected. The researchers concluded that there is a "complex interaction between the quantity of daycare attendance (both the length of the day and hours a week), the quality of the daycare setting, and the characteristics of the child" him/herself.<sup>4</sup> It goes without saying that the quality of the child's home life is also a hugely potent factor.

Hence the age of child entering care is quite important, as potentially is the hours in care, as there can be no rise in afternoon cortisol at the centre if the child has already gone home. This is consistent with the longitudinal behavioural data from the NICHD studies and others that indicate that the highest risks are for the youngest children and the children who spend the most time in care.

We do not know what this means for children in the long term. It may be that there are long term HPA effects from this sort of chronic cortisol elevation. It may be that there are not. We do not know at this point. The data shows that on days children are at home, their cortisol levels follow a normal non-elevated pattern, suggesting that there hasn't been an overall shift in HPA functioning at this point.



### Reference

Vermeer, H. J., & van Ijzendoorn, M. H. (2006). Children's elevated cortisol levels at daycare: A review and meta-analysis. *Early Childhood Research Quarterly*, 21, 390-401.

<sup>4</sup> Vermeer & van Ijzendoorn, 2006, p.399

