Early life experience : neuroendocrine adaptations to maternal absence

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Thesis, Leiden University
October 4, 2007

ISBN/EAN: 978-90-9022197-7

Cover: RotsLeeuw Design, Leiden
Painting "Depression" by Zsuzsanna Szegedi

Print: Ponsen en Looijen, Wageningen, The Netherlands

Early life experience

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Proefschrift

ter verkrijging van
de graad van Doctor aan de Universiteit Leiden
op gezag van de Rector Magnificus Prof. Mr. P.F. van der Heijden
volgens het besluit van het College voor Promoties
te verdedigen op donderdag 4 oktober 2007
klokke 15:00 uur

door

Leo Enthoven

Geboren te Amsterdam in 1976

Promotiecommissie

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The studies described in this thesis have been performed at the department of Medical Pharmacology, Leiden/Amsterdam Center for Drug Research (LACDR), Leiden University Medical Center (LUMC), Leiden, The Netherlands. This research is part of a collaboration between the Universities of Groningen and Leiden, the Hubrecht Laboratory (Utrecht) and N.V. Organon (Oss) and financially supported by the Netherlands Organisation for Scientific Research (NWO – NDRF / STIGON #014-80-005). Part of the study described in chapter 2 was performed at the Max Planck Institute of Psychiatry in Munich, Germany, and of the study described in chapter 3 at the department of Endocrinology and Metabolic Diseases at the LUMC in Leiden, The Netherlands.

Publication of this thesis was financially supported by:
- Leiden/Amsterdam Center for Drug Research
- Statistics Netherlands
- J.E. Jurriaanse Stichting

The statistician who supposes that his main contribution to the planning of an experiment will involve statistical theory, finds repeatedly that he makes his most valuable contribution simply by persuading the investigator to explain why he wishes to do the experiment, by persuading him to justify the experimental treatments, and to explain why it is that the experiment, when completed, will assist him in his research.

Gertrude M. Cox.

Voor Petra,
mijn allerliefste

Table of contents

Preface

Preface

An adverse early life event is considered a risk factor for stress-related psychiatric disorders in genetically predisposed individuals, probably because of its lasting effect on susceptibility to stress. The objective of this thesis research was to examine in the mouse CD1 strain the immediate and permanent effects of an adverse early experience on the neuroendocrine stress system. For this purpose the hypothalamic-pituitary-adrenal (HPA) axis was examined of mouse pups that were refrained from maternal care, a laboratory model for neglect mimicking aspects of abuse. The data show that the infants' stress response system readily adapts to daily repeated 8 hours of maternal separation, but that it continues to respond to a novelty stressor. The rapid adaptation to repeated maternal absence seems rather due to the ability to predict return of the mother than to adjust metabolism to episodic food deprivation. If maternal separation was extended to a single episode of 24 hours the immediate outcome was more profound but transient, although subtle effects on stress reactions and cognitive performance did persist. The findings demonstrate the amazing plasticity of the newborn brain and provide a basis to study the mechanistic underpinning of vulnerability or resilience to psychopathology.