
Curso online
Psiquiatría perinatal
Aplicaciones para la atención psiquiátrica en la gestación, parto y puerperio
Dirigido por
Ibone Olza
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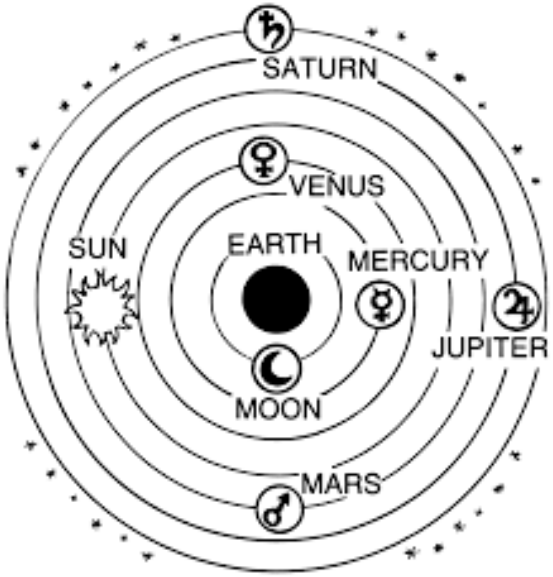

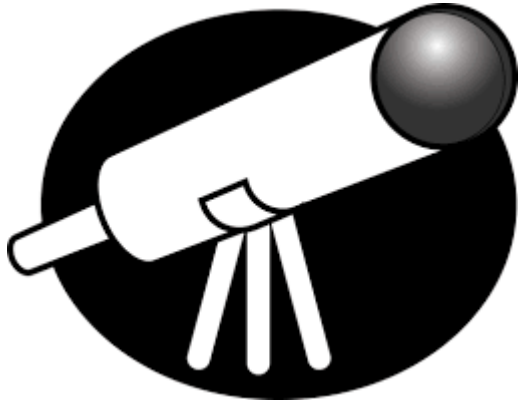

De la experiencia a la conciencia.

De la conciencia a la ciencia.

De la ciencia a la docencia.

Integración, comunicación, amor, placer

Teoría de la programación fetal y DOhA.

Impacto del embarazo en el desarrollo de la salud y la enfermedad.

Alfonso Gil Sánchez

www.alfonsogilsanchez.com

- El curso habitual de la formación en medicina, psiquiatría, psicoanálisis, psicología, trabajo social y enfermería es **aprender primero sobre los adultos**.

- Claramente, una característica de nuestras teorías del desarrollo refleja el sesgo inherente derivado de estar basadas principalmente en el trabajo con adultos que sufren un trastorno emocional. Este origen da como resultado **teorías que son muy buenas para explicar la patología** pero que **no son tan buenas para explicar la salud.**

The Roots of Psychopathology and Our Theories of Development

ROBERT L. TYSON, M.D.

Developmental theory itself is in a state of development with the availability of a flood of new information from many sources. Psychoanalytic developmental theory has expanded and is confronting issues of how to explain health as well as psychopathology. The early and complex reciprocal relationship between infant and mother provides many opportunities for development to go awry, but also enables the well-informed clinician to intervene constructively. In this brief overview, the relative influences of mother, father and infant are considered in the context of the emergence of the psychological relationship from the biological one. Also considered is the influence on therapeutic optimism of the particular developmental view held.

Journal of the American Academy of Child Psychiatry, 25, 1:12–22, 1986.

- **En el desarrollo de todos los niños ocurren discontinuidades biológicamente determinadas y la necesidad sigue siendo encontrar explicaciones para aquellos niños que tienen éxito ante la adversidad, así como para aquellos que fracasan.**

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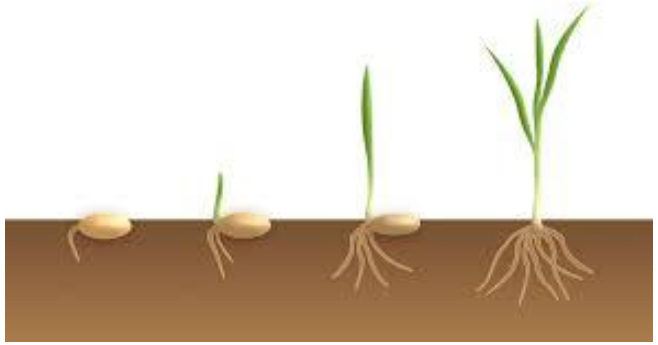
- **Pensar en el desarrollo ha cambiado de un marco lineal a uno no lineal**. En el marco lineal, que predispone a pensar de acuerdo con un mecanismo de Lego, cada paso en el desarrollo depende de la finalización del paso anterior, y los pasos faltantes o dañados resultan en consecuencias discernibles más adelante. En el marco no lineal, una multitud de factores interactúan y se ven afectados en cascada por la variedad madurativa y la modificabilidad de los componentes genéticos y la función organizadora del ego incluido.



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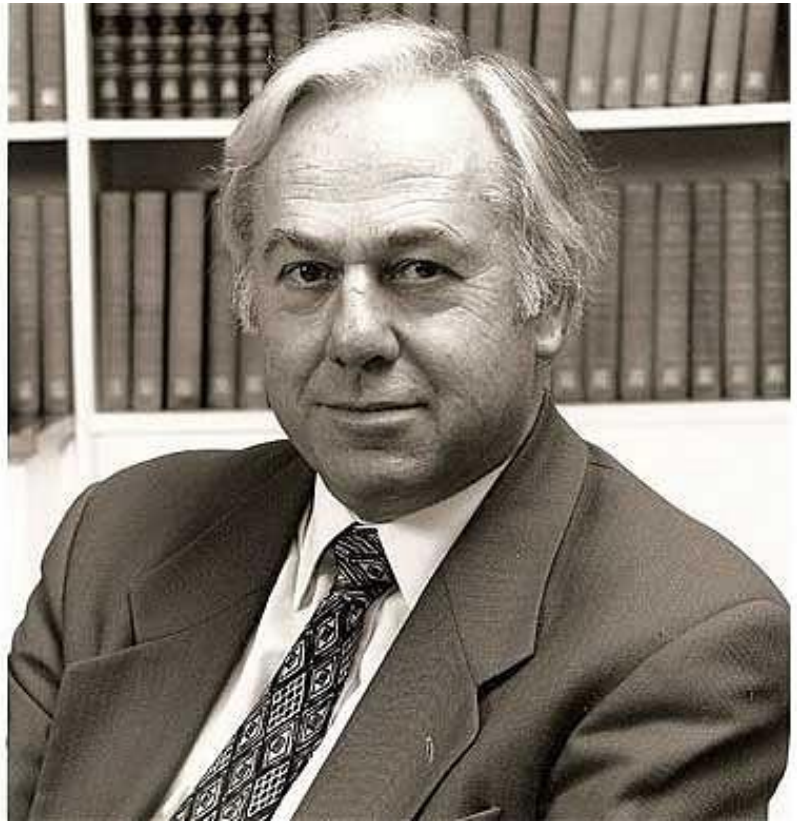
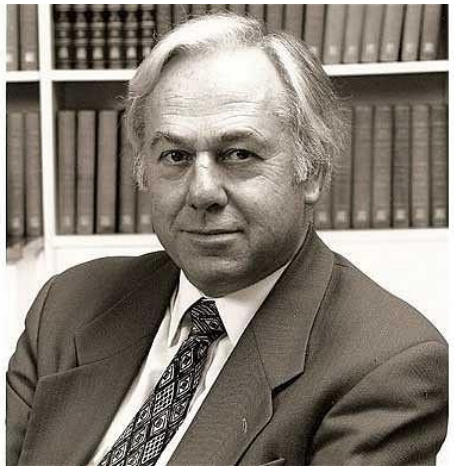
Teoría de la programación fetal



Professor David Barker

Médico epidemiólogo

(1938 – 2013)



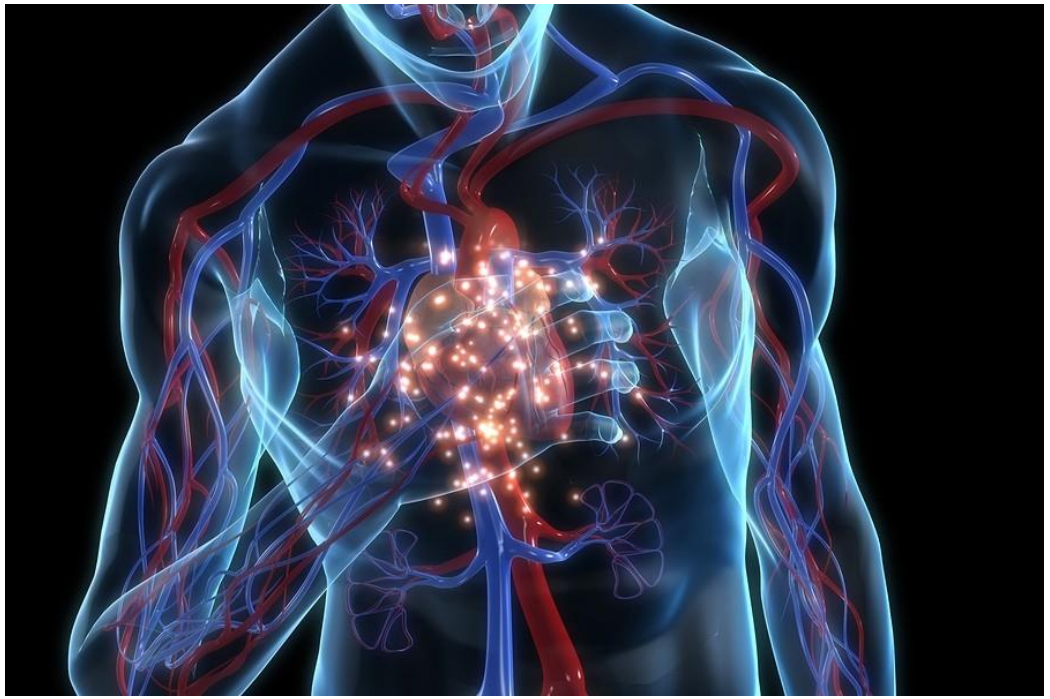
THE LANCET, MAY 10, 1986

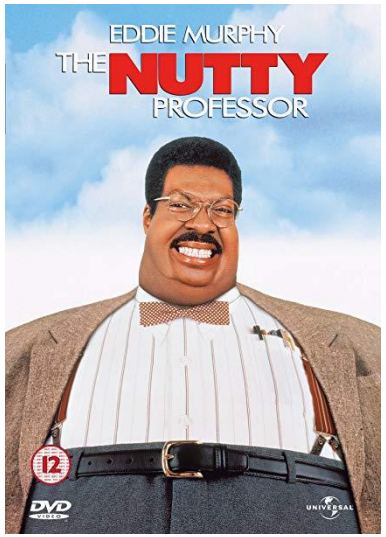
Epidemiology

INFANT MORTALITY, CHILDHOOD NUTRITION, AND ISCHAEMIC HEART DISEASE IN ENGLAND AND WALES

D. J. P. BARKER C. OSMOND

MRC Environmental Epidemiology Unit, University of Southampton, Southampton General Hospital, Southampton SO9 4XY





“fenotipo ahorrador”

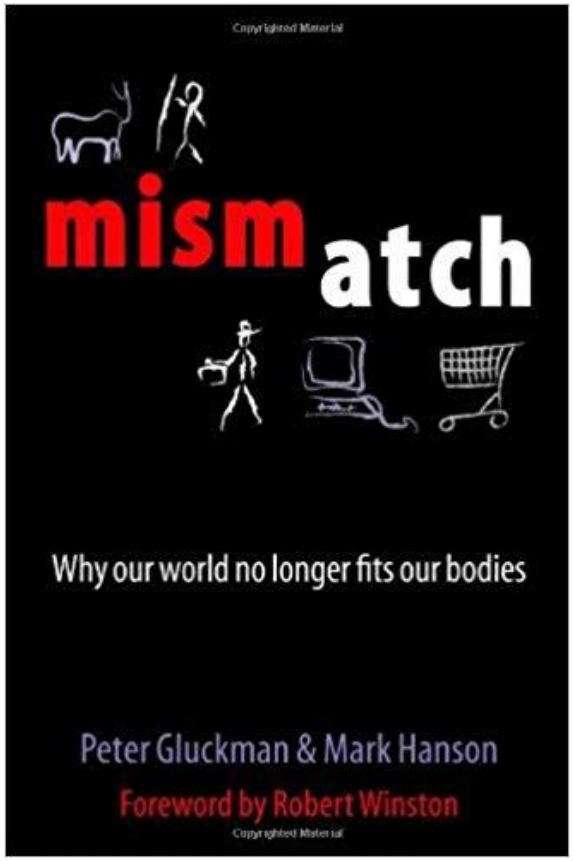
“Developmental plasticity”

Plasticidad del desarrollo

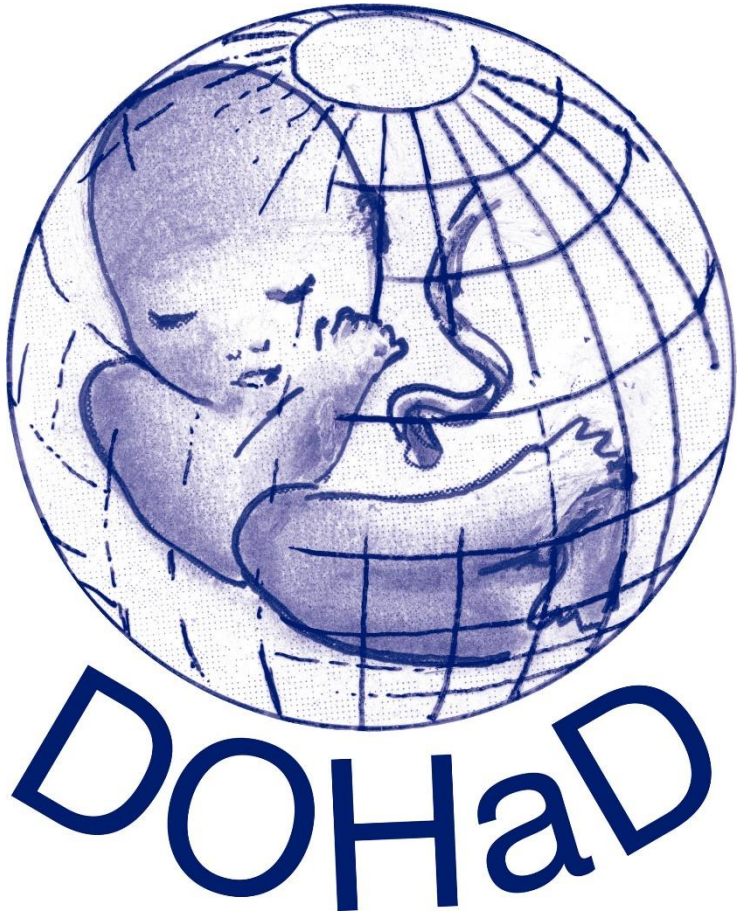
En un periodo crítico los sistemas son plásticos y sensibles al ambiente

Un genotipo genera diferentes fenotipos que puedan adaptarse mejor a su ambiente

Pasado este periodo los sistemas se vuelven rígidos fijando su capacidad funcional



International Society for Developmental Origins of Health and Disease



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PLoS One. 2017; 12(12): e0190248. Published online 2017 Dec 21. doi: 10.1371/journal.pone.0190248

PMCID: PMC5739495

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2. Improving cardiometabolic and mental health in women with gestational diabetes mellitus and their offspring: study protocol for *MySweetHeart Trial*, a randomised controlled trial

Antje Horsch, Leah Gilbert, Stefano Lanzi, Justine Gross, Bengt Kayser, Yvan Vial, Umberto Simeoni, Didier Hans, Alexandre Berney, Urte Scholz, Ruben Barakat, Jardena J Puder

BMJ Open. 2018; 8(2): e020462. Published online 2018 Feb 27. doi: 10.1136/bmjopen-2017-020462

PMCID: PMC5855393

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3. Maternal Prenatal **Depression** Predicts Infant Negative Affect via Maternal Inflammatory Cytokine Levels

Hanna C. Gustafsson, Elinor L. Sullivan, Elizabeth K. Nousen, Ceri A. Sullivan, Elaine Huang, Monica Rincon, Joel T. Nigg, Jennifer M. Loftis

Brain Behav Immun. 2018 Oct; 73: 470–481. Published online 2018 Jun 18. doi: 10.1016/j.bbi.2018.06.011

PMCID: PMC6129422

Article | PubReader | PDF–567K | Citation

4. An investigation of factors identified at birth in relation to **anxiety** and **depression** in old age: the Hordaland Health Study (HUSK)

Jens Christoffer Skogen, Robert Stewart, Arnstein Mykletun, Marit Knapstad, Simon Øverland

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BMC Psychiatry. 2013; 13: 136. Published online 2013 May 10. doi: 10.1186/1471-244X-13-136

PMCID: PMC3655850

Article | PubReader | PDF–207K | Citation

4. Prenatal maternal **depression** is associated with offspring inflammation at 25 years: a prospective longitudinal cohort study

D T Plant, S Pawlby, D Sharp, P A Zunszain, C M Pariante

Transl Psychiatry. 2016 Nov; 6(11): e936. Published online 2016 Nov 1. doi: 10.1038/tp.2015.155

PMCID: PMC5314108

Article | PubReader | PDF–723K | Citation

5. Effects of Antenatal Maternal **Depression** and **Anxiety** on Children's Early Cognitive Development: A Prospective Cohort Study

Gladys Ibanez, Jonathan Y. Bernard, Claire Rondet, Hugo Peyre, Anne Forhan, Monique Kaminski, Marie-Josèphe Saurel-Cubizolles, EDEN Mother-Child Cohort Study Group

PLoS One. 2015; 10(8): e0135849. Published online 2015 Aug 28. doi: 10.1371/journal.pone.0135849

PMCID: PMC4552796

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Avon Longitudinal Study of Parents and Children

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Thanks to a substantial award from the Medical Research Council and The Wellcome Trust, and with support from the University of Bristol, Children of the 90s is to be funded for another five years. This will enable us to collect new and valuable information about health and wellbeing, maintaining our contribution to international research. Read more

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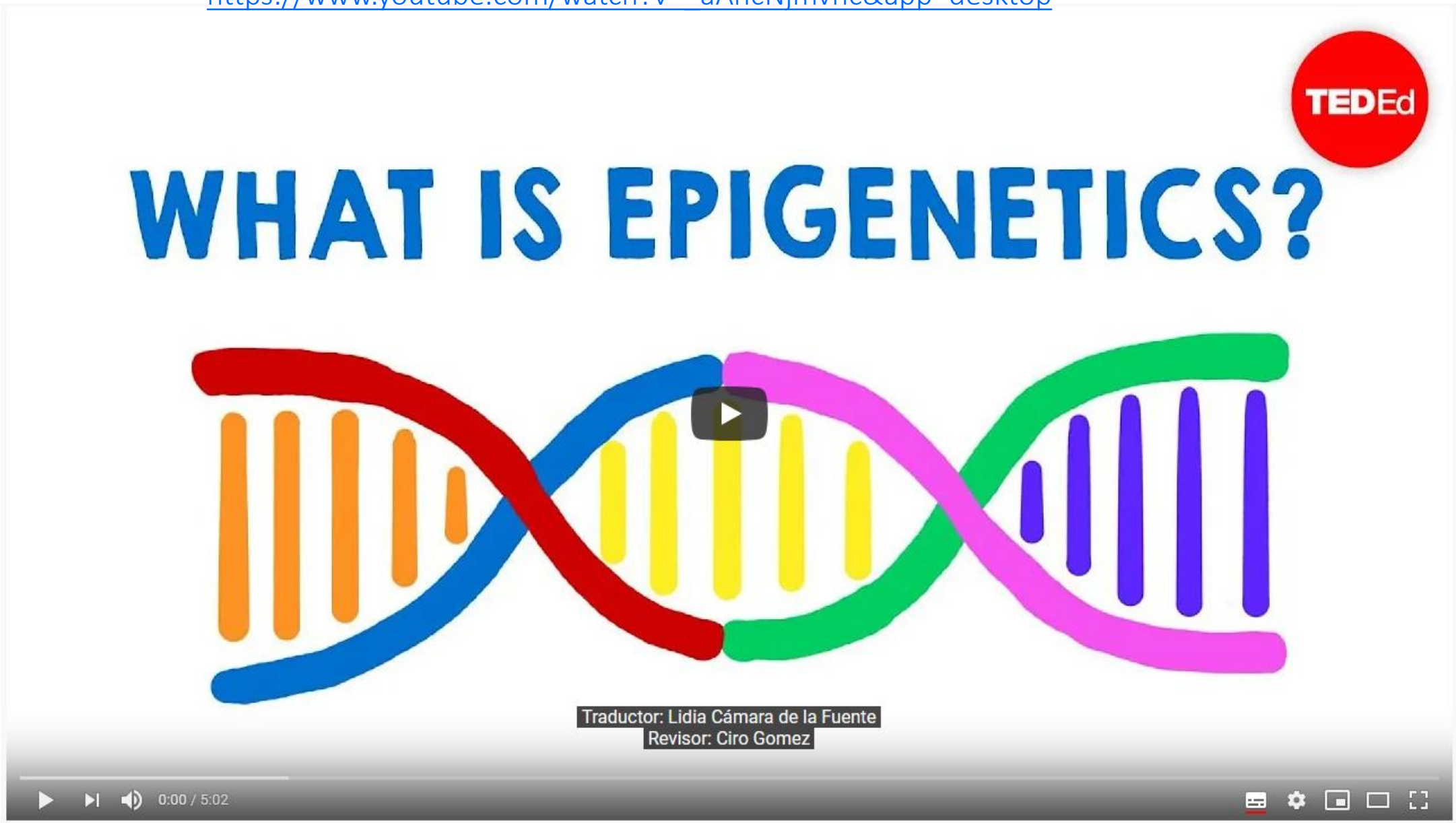

What is epigenetics? - Carlos Guerrero-Bosagna

PLOS ONE

RESEARCH ARTICLE

Maternal depressive symptoms during and after pregnancy are associated with attention-deficit/hyperactivity disorder symptoms in their 3- to 6-year-old children

Elina Wolford[1]*, Marius Lahti[1,2], Soile Tuovinen[1], Jari Lahti[1,3,4], Jari Lipsanen[1], Katri Savolainen[1], Kati Heinonen[1], Esa Hämäläinen[5], Eero Kajantie[6,7,8], Anu-Katriina Pesonen[1], Pia M. Villa[9], Hannele Laivuori[10,11,12,13], Rebecca M. Reynolds[2], Katri Räikkönen[1]

1 Department of Psychology and Logopedics, Faculty of Medicine, University of Helsinki, Helsinki, Finland, **2** University/British Heart Foundation Centre for Cardiovascular Science, Queen's Medical Research Institute, University of Edinburgh, Edinburgh, United Kingdom, **3** Helsinki Collegium for Advanced Studies, University of Helsinki, Helsinki, Finland, **4** Folkhälsan Research Centre, Helsinki, Finland, **5** Department of Clinical Chemistry, University of Helsinki, Helsinki, Finland, **6** National Institute for Health and Welfare, Helsinki, Finland, **7** Children's Hospital, Helsinki University Hospital and University of Helsinki, Helsinki, Finland, **8** PEDEGO Research Unit, MRC Oulu, Oulu University Hospital and University of Oulu, Oulu, Finland, **9** Obstetrics and Gynaecology, University of Helsinki and Helsinki University Hospital, Helsinki, Finland, **10** Faculty of Medicine and Life Sciences, University of Tampere, Tampere, Finland, **11** Department of Obstetrics and Gynecology, Tampere University Hospital, Tampere, Finland, **12** Medical and Clinical Genetics, University of Helsinki and Helsinki University Hospital, Helsinki, Finland, **13** Institute for Molecular Medicine Finland, Helsinki Institute of Life Science, University of Helsinki, Helsinki, Finland

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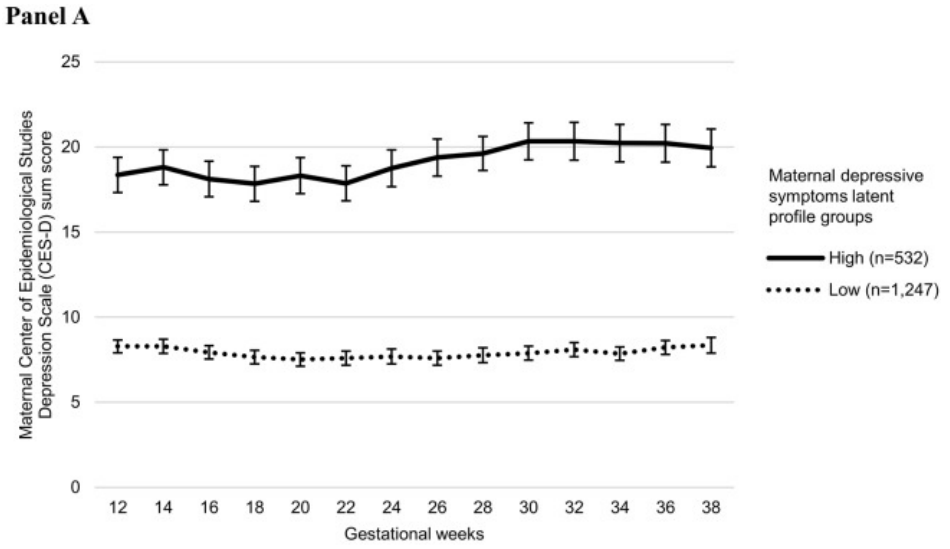
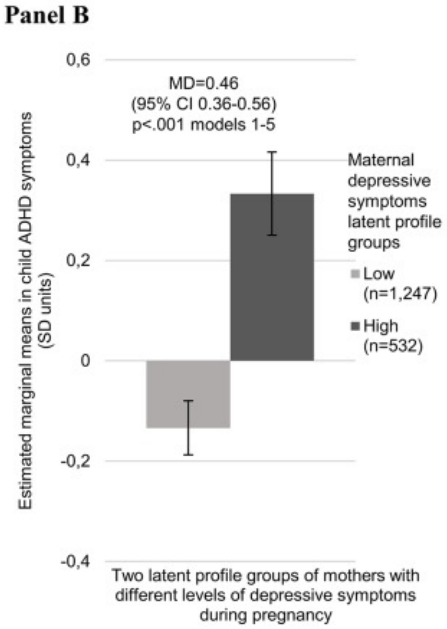
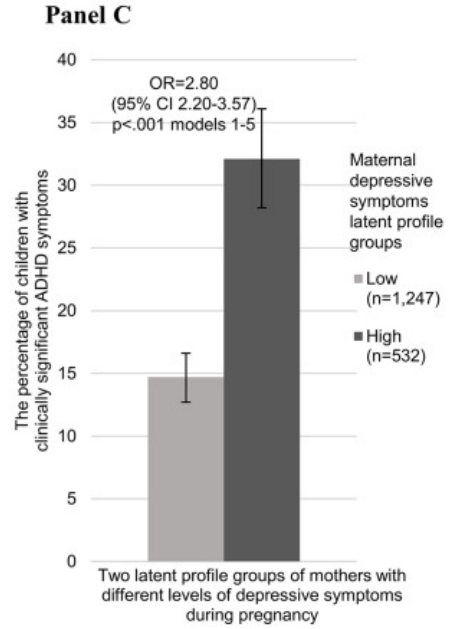
Data Availability Statement: The PREDO Study data contain sensitive and potentially identifying patient information, even after social security numbers and names have been removed from the data set. The use and sharing of such data are strictly controlled by several clauses of the Finnish law, designed to ensure the protection of privacy. The researchers interested in using the data must obtain approval from the PREDO Study Board. The Study Board is accountable to the national register authority (the Finnish National Institute for Health

Abstract

Maternal depressive symptoms during pregnancy have been associated with child behavioural symptoms of attention-deficit/hyperactivity disorder (ADHD) in early childhood. However, it remains unclear if depressive symptoms throughout pregnancy are more harmful to the child than depressive symptoms only during certain times, and if maternal depressive symptoms after pregnancy add to or mediate any prenatal effects. 1,779 mother-child dyads participated in the Prediction and Prevention of Pre-eclampsia and Intrauterine Growth Restriction (PREDO) study. Mothers filled in the Center of Epidemiological Studies Depression Scale biweekly from 12+0–13+6 to 38+0–39+6 weeks+days of gestation or delivery, and the Beck Depression Inventory-II and the Conners' Hyperactivity Index at the child's age of 3 to 6 years (mean 3.8 years, standard deviation [SD] 0.5). Maternal depressive symptoms were highly stable throughout pregnancy, and children of mothers with consistently high depressive symptoms showed higher average levels (mean difference = 0.46 SD units, 95% Confidence Interval [CI] 0.36, 0.56, $p < 0.001$ compared to the low group), and proportion (32.1% vs. 14.7%) and odds (odds ratio = 2.80, 95% CI 2.20, 3.57, $p < 0.001$) of clinically significant ADHD symptoms. These associations were not explained by the effects of maternal depressive symptoms after pregnancy, which both added to and partially mediated the prenatal effects. Maternal depressive symptoms throughout pregnancy are associated with increased ADHD symptomatology in young children. Maternal depressive







https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5739495/pdf/pone.0190248.pdf

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Prenatal Influences on Temperament Development: The Role of Environmental Epigenetics

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[1]Department of Psychology, Washington State University, Pullman, WA-99164-4820, USA

[2]Center for Reproductive Biology, School of Biological Sciences, Washington State University, Pullman, WA-99164-4236, USA

Abstract

This review summarizes current knowledge and outlines future directions relevant to questions concerning environmental epigenetics and the processes that contribute to temperament development. Links between prenatal adversity, epigenetic programming, and early manifestations of temperament are important in their own right, also informing our understanding of biological foundations for social-emotional development. In addition, infant temperament attributes represent key etiological factors in the onset of developmental psychopathology, and studies elucidating their prenatal foundations expand our understanding of Developmental Origins of Health and Disease (DOHaD). Prenatal adversity can take many forms, and this overview is focused on the environmental effects of stress, toxicants, substance use/psychotropic medication, and nutrition. Dysregulation associated with ADHD/disruptive disorders was noted in the context of maternal substance use and toxicant exposures during gestation, as well as stress. Although these links can be made based on the existing literature, currently few studies directly connect environmental influences, epigenetic programming and changes in brain development/behavior. The chain of events starting with environmental inputs and resulting in alterations to gene expression, physiology, and behavior of the organism is driven by epigenetics. Epigenetics provides the molecular mechanism of how environmental factors impact development and subsequent health and disease, including early brain and temperament development.

Keywords

Prenatal Adversity; Epigenetics; DNA Methylation; Temperament

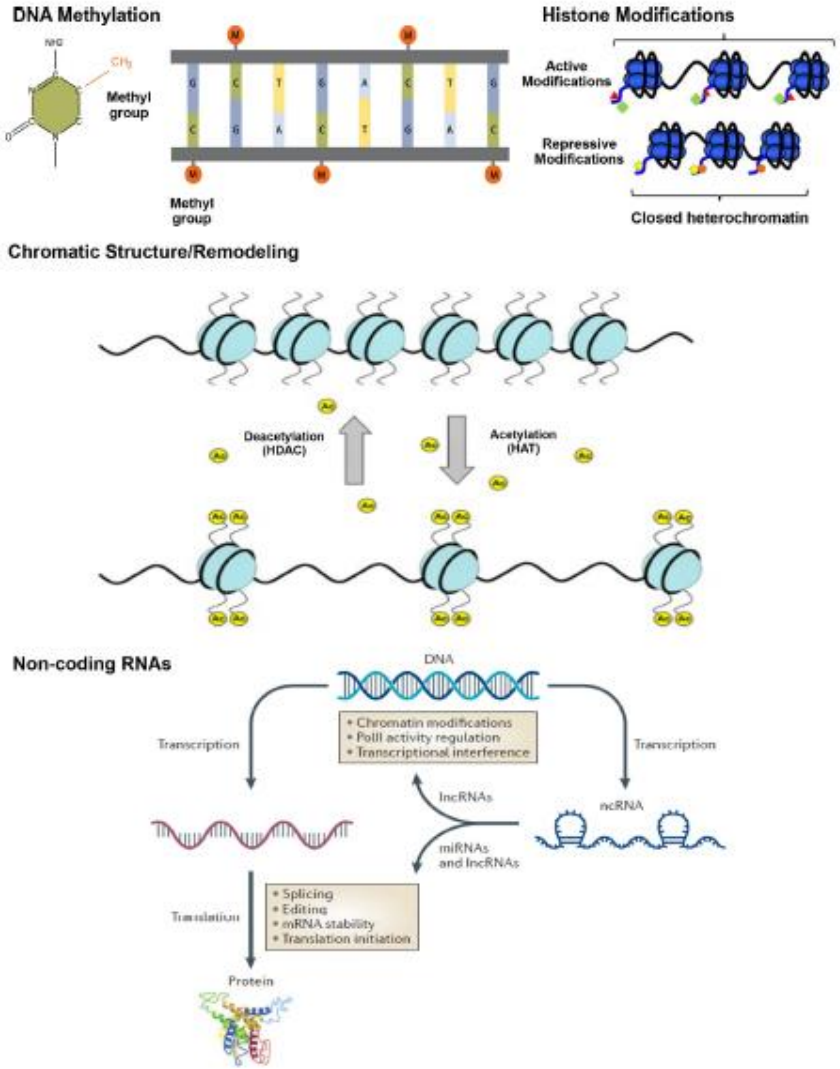


Figure 1.

Epigenetic Mechanisms: DNA Methylation, Histone Modification, non-coding RNA. Methylation - DNA Methylation is the addition of a methyl group (M) to the DNA base Cytosine (C) in a CpG sequence. CH3, the methyl group, is added to a carbon of the cytosine ring via a covalent bond, resulting in 5-hydroxymethyl cytosine. Chromatic Structure/Remodeling – Chromatin structure in heterochromatin states, silencing transcriptional activities, euchromatin HAT catalyzes histone tails leading to active transcription. Histone Modifications - Histone modifications occurs via different enzymes. Active modifications result in permissive effects promoting transcription. Repressive

SPECIAL ARTICLE

Intergenerational transmission of trauma effects: putative role of epigenetic mechanisms

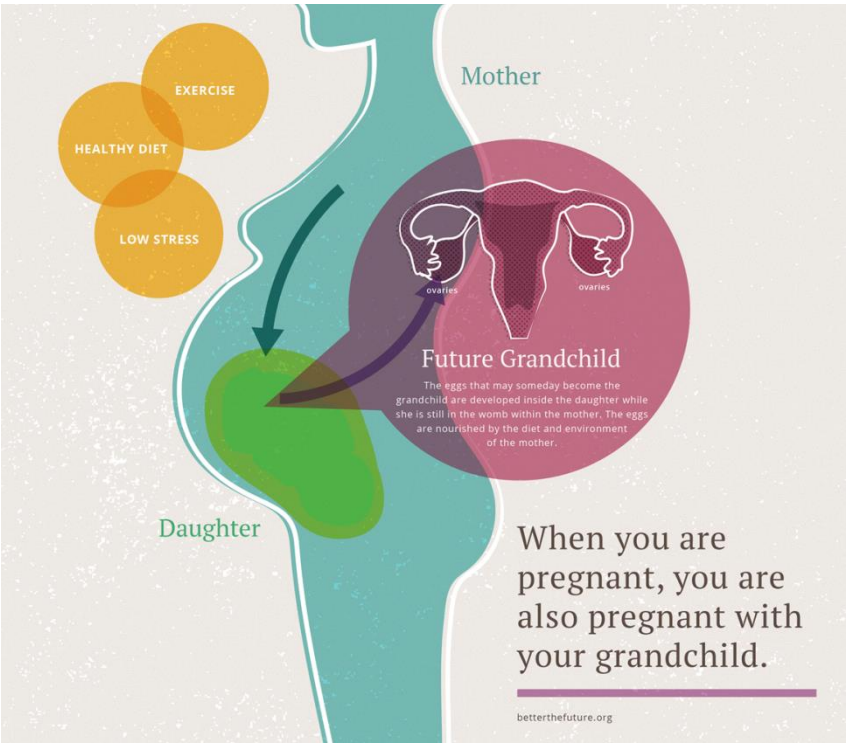
Rachel Yehuda, Amy Lehrner

James J. Peters Bronx Veterans Affairs Hospital, Bronx, NY, USA; Departments of Psychiatry and Neuroscience, Icahn School of Medicine at Mount Sinai, New York, NY, USA

This paper reviews the research evidence concerning the intergenerational transmission of trauma effects and the possible role of epigenetic mechanisms in this transmission. Two broad categories of epigenetically mediated effects are highlighted. The first involves developmentally programmed effects. These can result from the influence of the offspring's early environmental exposures, including postnatal maternal care as well as in utero *exposure reflecting maternal stress during pregnancy. The second includes epigenetic changes associated with a preconception trauma in parents that may affect the germline, and impact fetoplacental interactions. Several factors, such as sex-specific epigenetic effects following trauma exposure and parental developmental stage at the time of exposure, explain different effects of maternal and paternal trauma. The most compelling work to date has been done in animal models, where the opportunity for controlled designs enables clear interpretations of transmissible effects. Given the paucity of human studies and the methodological challenges in conducting such studies, it is not possible to attribute intergenerational effects in humans to a single set of biological or other determinants at this time. Elucidating the role of epigenetic mechanisms in intergenerational effects through prospective, multi-generational studies may ultimately yield a cogent understanding of how individual, cultural and societal experiences permeate our biology.*

Key words: Intergenerational transmission, epigenetic mechanisms, trauma, offspring of trauma survivors, childhood adversity, post-traumatic stress disorder, developmental programming, fetoplacental interaction

(World Psychiatry 2018;17:243–257)



Nutrients. 2019 Apr 20;11(4). pii: E894. doi: 10.3390/nu11040894.

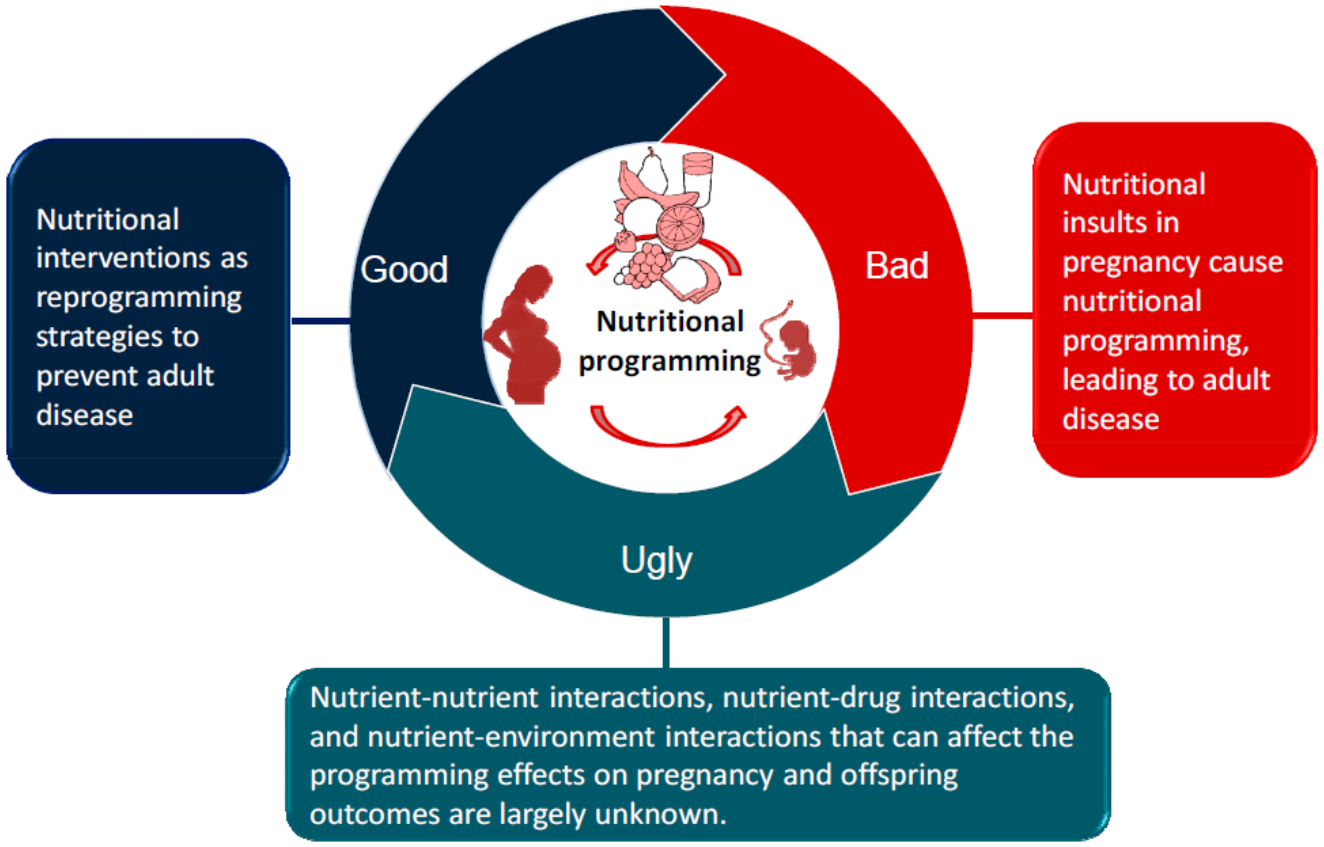
The Good, the Bad, and the Ugly of Pregnancy Nutrients and Developmental Programming of Adult Disease.

Hsu CN[1,2], Tain YL[3,4].

Author information

Abstract

Maternal nutrition plays a decisive role in developmental programming of many non-communicable diseases (NCDs). A variety of nutritional insults during gestation can cause programming and contribute to the development of adult-onset diseases. Nutritional interventions during pregnancy may serve as reprogramming strategies to reverse programming processes and prevent NCDs. In this review, firstly we summarize epidemiological evidence for nutritional programming of human disease. It will also discuss evidence from animal models, for the common mechanisms underlying nutritional programming, and potential nutritional interventions used as reprogramming strategies.



J Am Acad Child Adolesc Psychiatry. 2019 Dec 18. pii: S0890-8567(19)32232-4. doi: 10.1016/j.jaac.2019.11.021. [Epub ahead of print]

Maternal Vitamin D Levels and the Risk of Offspring Attention-Deficit/Hyperactivity Disorder.

Sucksdorff M[1], Brown AS[2], Chudal R[3], Surcel HM[4], Hinkka-Yli-Salomäki S[3], Cheslack-Postava K[5], Gyllenberg D[6], Sourander A[7].

Author information

Abstract

OBJECTIVE: Recent evidence has highlighted the importance of vitamin D to the development of the central nervous system. Some studies have shown an association between maternal vitamin D deficiency during pregnancy and offspring Attention-deficit/hyperactivity disorder (ADHD) symptoms based on parent- or teacher ratings. There are no previous studies on early pregnancy 25-hydroxyvitamin D (25(OH)D) levels and the risk of diagnosed offspring ADHD. Our aim was to examine maternal 25(OH)D levels in early pregnancy and offspring ADHD.

METHOD: In this nationwide population-based case-control study, 1067 ADHD cases born between 1998 and 1999 and diagnosed according to the International Classification of Diseases and 1067 matched controls, were identified from Finnish registers. Maternal 25(OH)D levels were measured using quantitative immunoassay from maternal sera, collected during the first trimester, and archived in the national biobank. Conditional logistic regression was used to examine the association between maternal 25(OH)D and offspring ADHD.

RESULTS: There was a significant association between decreasing log-transformed maternal 25(OH)D levels and offspring ADHD both in the unadjusted analyses (OR 1.65, 95% CI 1.33-2.05, P<.001) as well as in the analyses adjusting for maternal socio-economic status and age (OR 1.45, 95% CI 1.15-1.81, P=.002). Analyses by quintiles of maternal 25(OH)D levels in the lowest versus highest quintile revealed an adjusted odds ratio for offspring ADHD of 1.53 (95% CI 1.11-2.12, P=.010).

CONCLUSION: This study demonstrated an association between low maternal 25(OH)D during pregnancy and an elevated risk for offspring ADHD. If replicated in independent samples, this finding may have significant public health implications.

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UOIuBIH
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Operations Research Society in Bosnia and Herzegovina

Southeast Europe Journal of Soft Computing
Available online: http://scjournal.ius.edu.ba

IUS Soft Computing Research Group

The Gut-Brain Axis in Foetal-Maternal Relationship

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Keywords: Microbiome, microbiota, pregnancy, gut-brain axis

Abstract

Gut-brain axis (GBA) represents a bidirectional communication between the central nervous system (CNS) and gastrointestinal (GI) tract. Microbiota found in GI tract has beneficial relationship with their host and can affect the brain, behavior. Studies performed on animals suggest that any change in the composition of microbiota might cause alternations in behavior. In the same way, changes in behavior such as stress, showed to affect the microbiota. Moreover, the composition of the maternal microbiome in pregnancy is known to adversely influence neonatal and infant health and preterm birth. Mother's microbiome is inherited from the mother to children.

Journal of Developmental Origins of Health and Disease

Article Supplementary materials Metrics

Volume 9, Issue 1 (Themed Issue: DOHaD AFRICA) February 2018 , pp. 63-76

Cited

Get a

Exercise during pregnancy and its impact on mothers and offspring in humans and mice

N. Ferrari [a1] [a2], I. Bae-Gartz [a3], C. Bauer [a2], R. Janoschek [a3] ...

DOI: https://doi.org/10.1017/S2040174417000617 Published online by Cambridge University Press: 07 August 2017

Abstract

Exercise during pregnancy has beneficial effects on maternal and offspring's health in humans and mice. The underlying mechanisms remain unclear. This comparative study aimed to determine the long-term effects of an exercise program on metabolism, weight gain, body composition and changes in hormones [insulin, leptin, brain-derived neurotrophic factor (BDNF)]. Pregnant women (n=34) and mouse dams (n=44) were subjected to an exercise program compared with matched controls (period I). Follow-up in the offspring was performed over 6 months in humans, corresponding to postnatal day (P) 21 in mice (period II). Half of the mouse offspring was challenged with a high-fat diet (HFD) for 6 weeks between P70 and P112 (period III). In period I, exercise during pregnancy led to 6% lower fat content, 40% lower leptin levels and an increase of 50% BDNF levels in humans compared with controls, which was not observed in mice. After period II in humans and mice, offspring body weight did not differ from that of the controls. Further differences were observed in period III. Offspring of exercising mouse dams had significantly lower fat mass and leptin levels compared with controls. In addition, at P112, BDNF levels in offspring were significantly higher from exercising mothers while this effect was completely blunted by HFD feeding. In this study, we found comparable effects on maternal and offspring's weight gain in humans and mice but different effects in insulin, leptin and BDNF. The long-term potential protective effects of exercise on biomarkers should be examined in human studies.

https://www.cambridge.org/core/journals/journal-of-developmental-origins-of-health-and-disease/article/exercise-during-pregnancy-and-its-impact-on-mothers-and-offspring-in-humans-and-mice/F361A2052F41B08F02406FA9948DE285

frontiers in Genetics

ORIGINAL RESEARCH
published: 16 April 2019
doi: 10.3389/fgene.2019.00269

Does Prenatal Stress Shape Postnatal Resilience? – An Epigenome-Wide Study on Violence and Mental Health in Humans

*Fernanda Serpeloni[1,2], Karl M. Radtke[1,3], Tobias Hecker[4], Johanna Sill[1], Vanja Vukojevic[5], Simone G. de Assis[2], Maggie Schauer[1], Thomas Elbert[1] and Daniel Nätt[6]**

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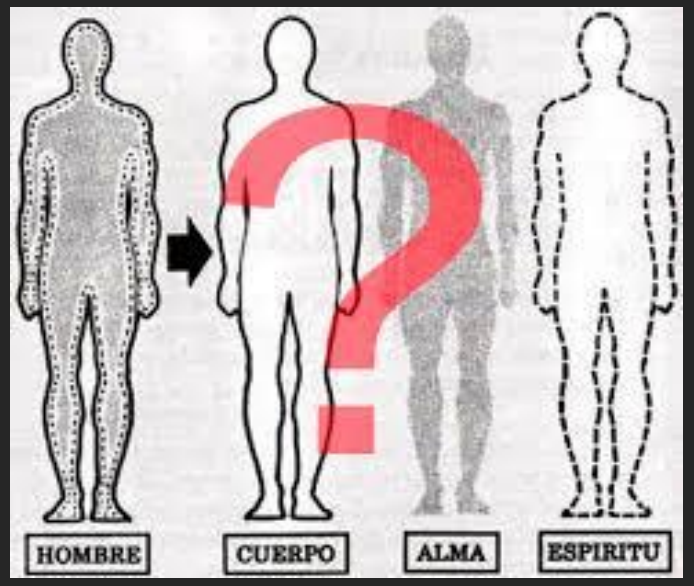
Stress during pregnancy widely associates with epigenetic changes and psychiatric problems during childhood. Animal studies, however, show that under specific postnatal conditions prenatal stress may have other, less detrimental consequences for the offspring. Here, we studied mental health and epigenome-wide DNA methylation in saliva following intimate partner violence (IPV) during pregnancy in São Gonçalo, a Brazilian city with high levels of violence. Not surprisingly, mothers exposed to pregnancy IPV expressed elevated depression, PTSD and anxiety symptoms. Children had similar psychiatric problems when they experienced maternal IPV after being born. More surprisingly, when maternal IPV occurred both during (prenatal) and after pregnancy these problems were absent. Following prenatal IPV, genomic sites in genes encoding the glucocorticoid receptor (*NR3C1*) and its repressor FKBP51 (*FKBP5*) were among the most differentially methylated and indicated an enhanced ability to terminate hormonal stress responses in prenatally stressed children. These children also showed more DNA methylation in heterochromatin-like regions, which previously has been associated with stress/disease resilience. A similar relationship was seen in prenatally stressed middle-eastern refugees of the same age as the São Gonçalo children but exposed to postnatal war-related violence. While our study is limited in location and sample size, it provides novel insights on how prenatal stress may epigenetically shape resilience in humans, possibly through interactions with the postnatal environment. This translates animal findings and emphasizes the importance to account for population differences when studying how early life gene–environment interactions affects mental health.

Keywords: prenatal stress, intimate partner violence, NR3C1, FKBP5, psychiatric resilience, DNA methylation, retrotransposon, heterochromatin

¿La vida psicofísica del feto influye en la madre?



Teoría de la programación materna

The New York Times

This Is Your Brain on Motherhood

How pregnancy and parenthood kick neurological development into high gear.

Development and Psychopathology **30** (2018), 905–919

doi:10.1017/S0954579418000524

Maternal programming: Application of a developmental psychopathology perspective

LAURA M. GLYNN,[a,b] MARIANN A. HOWLAND,[b] AND MOLLY FOX[c]
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Abstract

The fetal phase of life has long been recognized as a sensitive period of development. Here we posit that pregnancy represents a simultaneous sensitive period for the adult female with broad and persisting consequences for her health and development, including risk for psychopathology. In this review, we examine the transition to motherhood through the lens of developmental psychopathology. Specifically, we summarize the typical and atypical changes in brain and behavior that characterize the perinatal period. We highlight how the exceptional neuroplasticity exhibited by women during this life phase may account for increased vulnerability for psychopathology. Further, we discuss several modes of signaling that are available to the fetus to affect maternal phenotypes (hormones, motor activity, and gene transfer) and also illustrate how evolutionary perspectives can help explain how and why fetal functions may contribute to maternal psychopathology. The developmental psychopathology perspective has spurred advances in understanding risk and resilience for mental health in many domains. As such, it is surprising that this major epoch in the female life span has yet to benefit fully from similar applications.

¿Cómo “programa” el bebé a la madre?

A través de señales placentarias y del bebé:

- Hormonas
- Movimientos fetales (actividad motora)
- Microquimerismos (transferencia genética)

Maternal programming: Application of a developmental psychopathology perspective. Glynn et al. 2018.

Psicopatología

¿Desajuste en la satisfacción de necesidades individuales?

Armonía - Conflicto

Teoría de la programación fetal y DOhA

Impacto del embarazo en el desarrollo de la salud y la enfermedad.

Alfonso Gil Sánchez

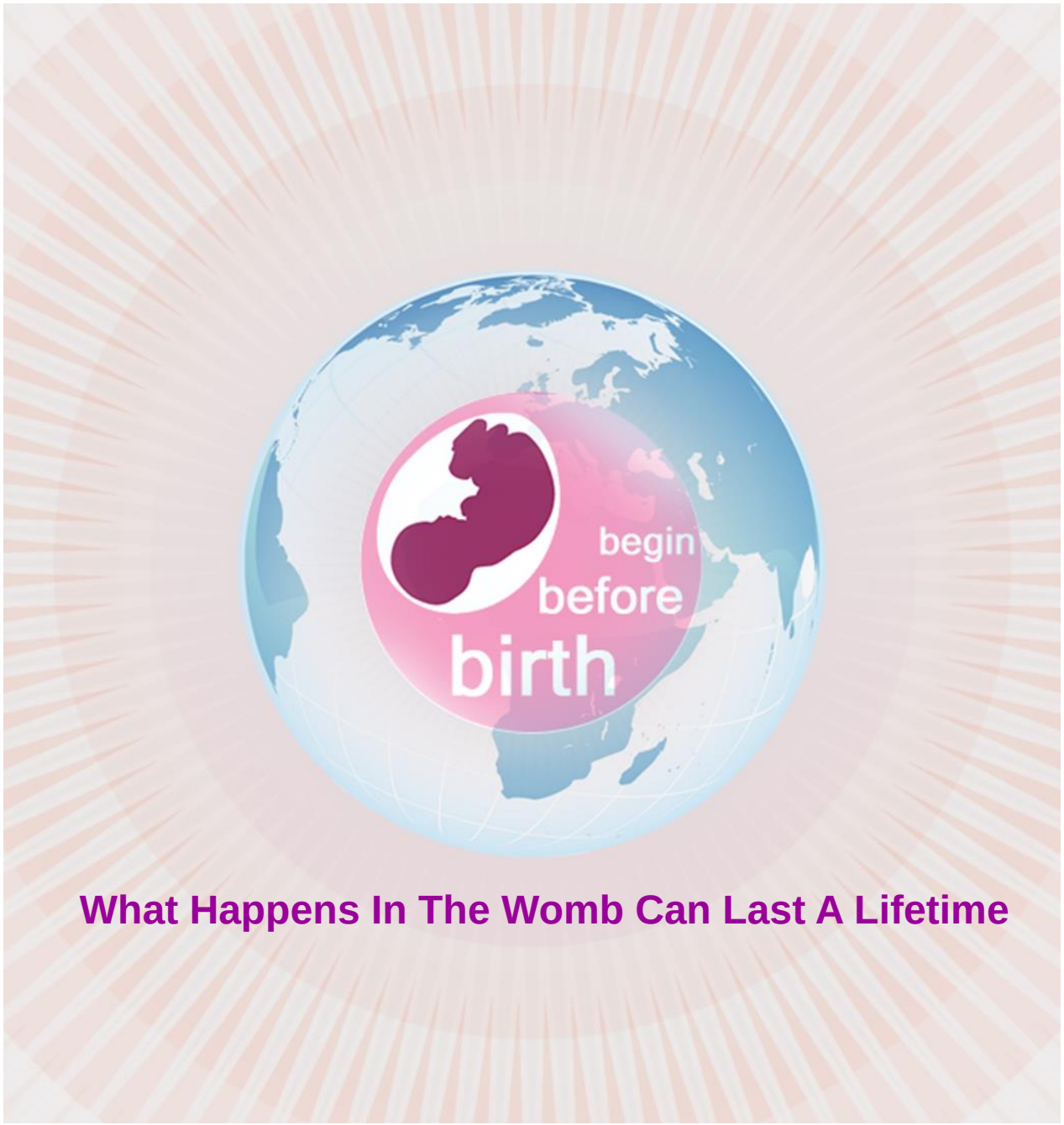
www.alfonsogilsanchez.com

Teodora Gliga & Fiona Alderdice (2015)
New frontiers in fetal and infant psychology
Journal of Reproductive and Infant Psychology, 33:5, 445-447

There is now unequivocal evidence that both psychological stressors, such as traumatic life events, or biological stressors, such as alcohol or tobacco exposure, can affect the physical and intellectual growth of the developing child. For example, infants whose mothers experienced the dramatic 1998 ice storm in Canada had smaller birth weight and lower mental ability scores as toddlers (Laplante et al., 2004). However, even more common events, such as a divorce or the death of someone close, during pregnancy were shown to be associated with an increase in the incidence of developmental disorders, including ADHD or autism (Ronald, Pennell, & Whitehouse, 2011). Animal models have helped identify some of the potential biological mechanisms mediating these effects. We know that maternal stress increases corticotropin-releasing hormone production and reduces the expression of the 11B-HSD2 enzyme (Welberg, Thrivikraman, & Plotsky, 2005). This enzyme, produced by the placenta, typically acts as a selective barrier against maternal hormones. As a result of this double blow, the fetus is exposed to high amounts of corticoid hormones. Both fetal amygdala and the hippocampus, rich in glucocorticoid receptors, will suffer from this hormonal wave. Much of this inter-

Teodora Gliga & Fiona Alderdice (2015)
New frontiers in fetal and infant psychology
Journal of Reproductive and Infant Psychology, 33:5, 445-447

further for clinical use. However, pushing back the frontier to prenatal development is where the greatest prospects now lie. Pregnancy is an important time for women and their families as it provides a rare opportunity for continuous engagement with the health care system in such a way that can maximise health and well-being. Current technology, developments in fetal and infant psychology research and opportunities in health care suggest that refocusing our efforts to the prenatal period holds the biggest potential for change.

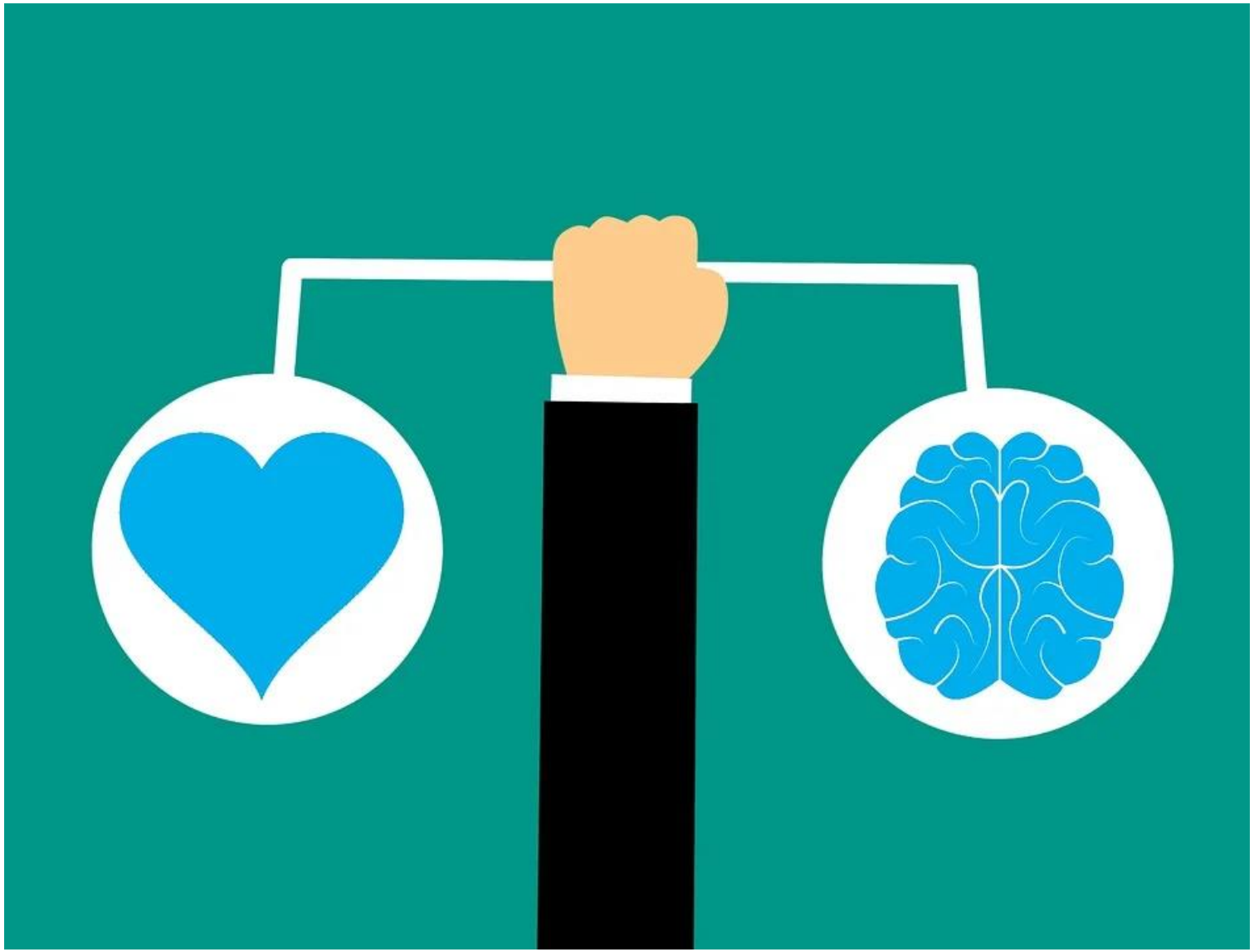


Charlie's Story

https://www.youtube.com/watch?v=LxXLHpt0iEo

Educación emocional desde el útero materno

https://www.rtve.es/alacarta/videos/redes/redes-educacion-emocional-desde-utero-materno/598988/



El triple componente cromático de las experiencias: memoria, emoción y sistema nervioso autónomo.

Delgado Rico, Hernan Dario. (2009). MedUNAB.

Considere aquello que usted sabe respecto al mundo, de los demás o de usted mismo, toda esta información fue adquirida a través de la experiencia y está almacenada en su memoria.

Somos seres con historia y construimos nuestra identidad a través de un proceso que mezcla las experiencias vividas en el ambiente con nuestras vivencias interiores; así, somos quienes somos porque aprendemos a recordarnos.

La memoria es un atributo característico de los seres vivos y se convierte en una capacidad para adquirir la información, retenerla y utilizarla cuando se hace necesario para responder a una situación futura.

El triple componente cromático de las experiencias: memoria, emoción y sistema nervioso autónomo.

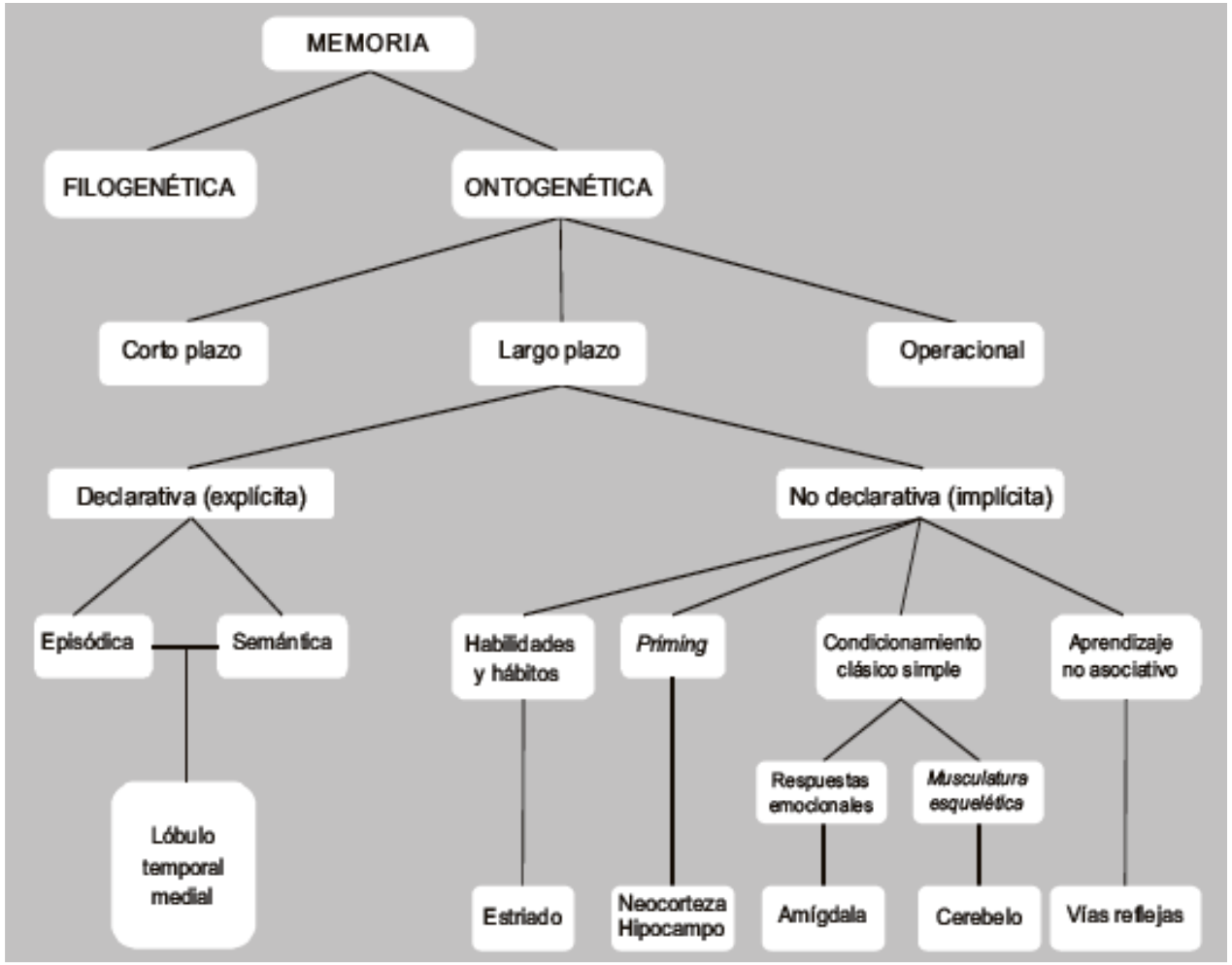
Delgado Rico, Hernan Dario. (2009). MedUNAB.

Las emociones consisten en patrones de respuesta fisiológicas y conductas típicas de una especie, son respuestas psicomotoras y neurovegetativas que ocurren como respuesta ante un determinado estímulo, interno o externo y le permiten responder de forma adaptativa porque la función primaria de las emociones es la adaptación de la conducta a situaciones que terminan siendo relevantes para el individuo.

Una respuesta emocional está constituida por tres tipos de componentes: comportamentales, autonómicos y hormonales.

El triple componente cromático de las experiencias: memoria, emoción y sistema nervioso autónomo.

Delgado Rico, Hernan Dario. (2009). MedUNAB.



https://www.youtube.com/watch?v=1K9BW7Pv5Qs&feature=youtu.be

Imagen: https://mind42.com/public/edd6c2af-fda0-446d-9e28-97b1b15339a2

Molecular Human Reproduction, Vol.25, No.8, pp. 423–432, 2019
Advance Access Publication on June 13, 2019 doi:10.1093/molehr/gaz034

molecular human reproduction

ORIGINAL RESEARCH

Continuous behavioural 'switching' in human spermatozoa and its regulation by Ca^{2+}-mobilising stimuli

Cosmas Achikanu[1,7], Joao Correia[1], Héctor A. Guidobaldi[2,3], Laura C. Giojalas[2,3], Christopher L.R. Barratt[4,5], Sarah Martins Da Silva[4,5], and Stephen Publicover[1,6,*]

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orcid.org/0000-0002-2911-5288

Submitted on March 5, 2019; resubmitted on April 28, 2019; editorial decision on May 31, 2019

ABSTRACT: Human sperm show a variety of different behaviours (types of motility) that have different functional roles. Previous reports suggest that sperm may reversibly switch between these behaviours. We have recorded and analysed the behaviour of individual human sperm (180 cells in total), each cell monitored continuously for 3–3.5 min either under control conditions or in the presence of Ca^{2+}-mobilising stimuli. Switching between different behaviours was assessed visually (1 s bins using four behaviour categories), and was verified by fractal dimension analysis of sperm head tracks. In the absence of stimuli, ~90% of cells showed at least one behavioural transition (mean rate under control conditions = 6.4 ± 0.8 transitions.min^{-1}). Type 1 behaviour (progressive, activated-like motility) was most common, but the majority of cells (>70%) displayed at least three behaviour types. Treatment of sperm with Ca^{2+}-mobilising agonists had negligible effects on the rate of switching but increased the time spent in type 2 and type 3 (hyperactivation-like) behaviours ($P < 2*10^{-8}$; chi-square). Treatment with 4-aminopyridine under alkaline conditions ($pH_o = 8.5$), a highly-potent Ca^{2+}-mobilising stimulus, was the most effective in increasing the proportion of type 3 behaviour, biasing switching away from type 1 ($P < 0.005$) and dramatically extending the duration of type 3 events ($P < 10^{-16}$). Other stimuli, including 300 nM progesterone and 1% human follicular fluid, had qualitatively similar effects but were less potent. We conclude that human sperm observed *in vitro* constitutively display a range of behaviours and regulation of motility by $[Ca^{2+}]_i$, at the level of the single cell, is achieved not by causing cells to adopt a 'new' behaviour but by changing the relative contributions of those behaviours.

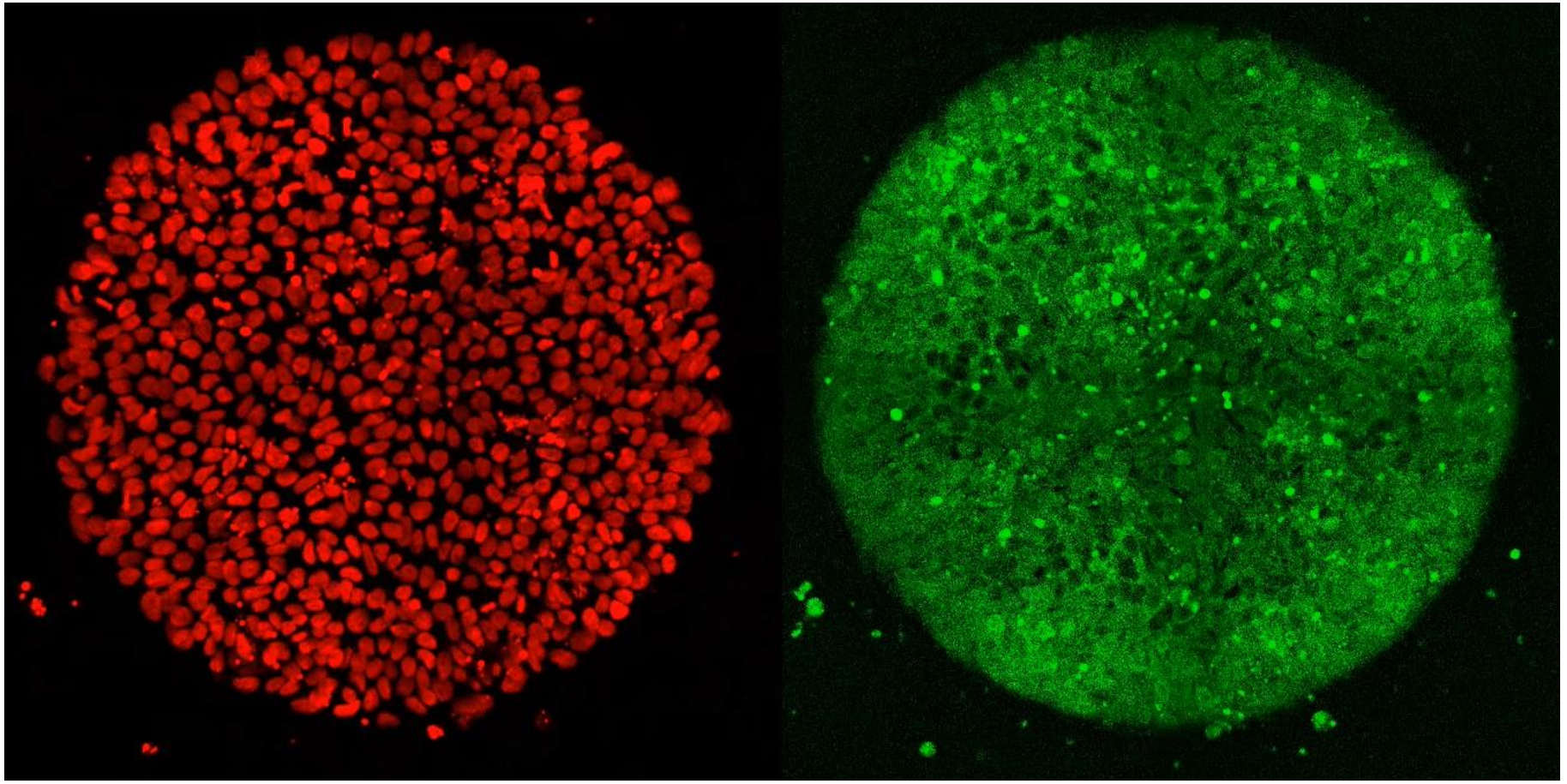
Key words: spermatozoa / behaviour / motility / calcium / pH

https://www.youtube.com/watch?v=_5OvgQW6FG4&feature=share

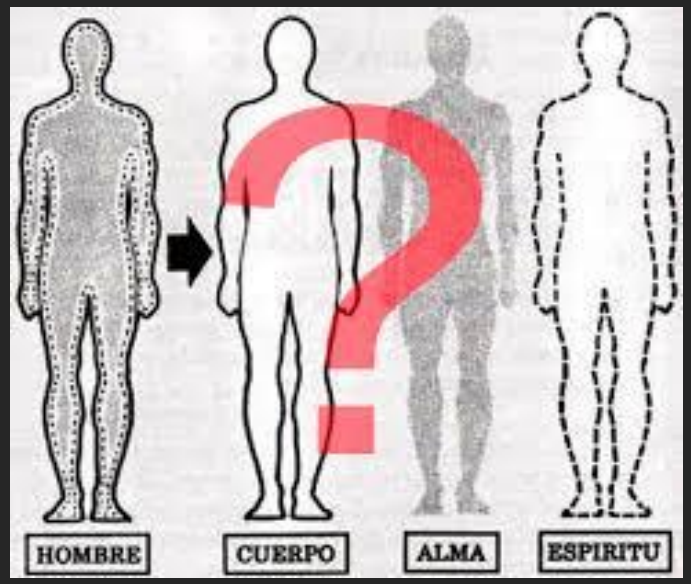
Memoria celular:

Las células en desarrollo retienen una memoria de las señales químicas que encuentran. Los embriones que no logran formar estos recuerdos siguen siendo un grupo de clones, sin desplegar su potencial biológico único.

https://www.futurity.org/cells-embryos-signaling-memory-1911912/



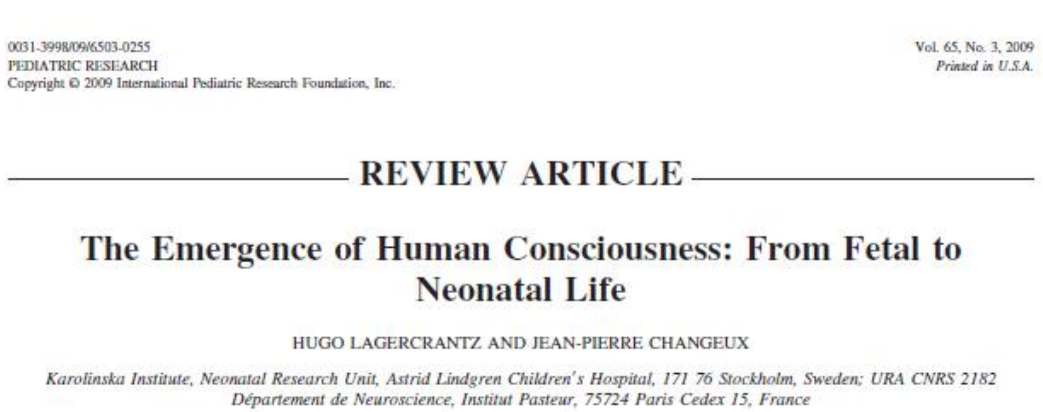
¿El feto tiene vida psíquica?



¿El feto tiene vida psíquica?

"El psiquismo se desarrolla en el útero gracias a percepciones que permiten que el feto sea capaz de experimentar y de distinguir, aunque de forma primitiva, lo que corresponde a su propio cuerpo de lo que le es ajeno; es decir, que posee consciencia de sí mismo y de su entorno, y un Yo en proceso de formación"

Tamara García Heller. "Principales Aportaciones acerca del Desarrollo Psíquico Intrauterino". 2007.
http://repositorio.uchile.cl/tesis/uchile/2007/garcia_t/sources/garcia_t.pdf



0031-3998/09/6503-0255
PEDIATRIC RESEARCH

Vol. 65, No. 3, 2009
Printed in U.S.A.

REVIEW ARTICLE

The Emergence of Human Consciousness: From Fetal to Neonatal Life

HUGO LAGERCRANTZ AND JEAN-PIERRE CHANGEUX

Karolinska Institute, Neonatal Research Unit, Astrid Lindgren Children's Hospital, 171 76 Stockholm, Sweden; URA CNRS 2182 Département de Neuroscience, Institut Pasteur, 75724 Paris Cedex 15, France

Hay varias indicios de que varias modalidades sensoriales se procesan en el cerebro, en desarrollo, antes del nacimiento:

- **Audición**: las respuestas al ruido de baja frecuencia se pueden registrar desde aproximadamente la 16ª semana en el cerebro del feto. Se detectó activación cortical al sonido en el feto desde la 33ª semana de gestación.

0031-3998/09/6503-0255
PEDIATRIC RESEARCH
Copyright © 2009 International Pediatric Research Foundation, Inc.

Vol. 65, No. 3, 2009
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- **Memoria**: si un feto humano de 22 a 23 semanas está expuesto a un estímulo repetitivo, como la vibración de un cepillo de dientes eléctrico, reacciona mediante movimientos; después de múltiples estímulos ya no reacciona, se habitúa. Los recién nacidos recuerdan sonidos, melodías y poemas rítmicos a los que han estado expuestos durante la vida fetal. Los recuerdos a largo plazo desaparecen durante la primera infancia (amnesia infantil) y la memoria declarativa completa se desarrolla solo después de 3 años.

- **Dolor**: las reacciones nociceptivas, como los reflejos de retirada, se pueden registrar a partir de la semana 19.

- **Visión, olfato**.

0031-3998/09/6503-0255
PEDIATRIC RESEARCH

Vol. 65, No. 3, 2009
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REVIEW ARTICLE

The Emergence of Human Consciousness: From Fetal to Neonatal Life

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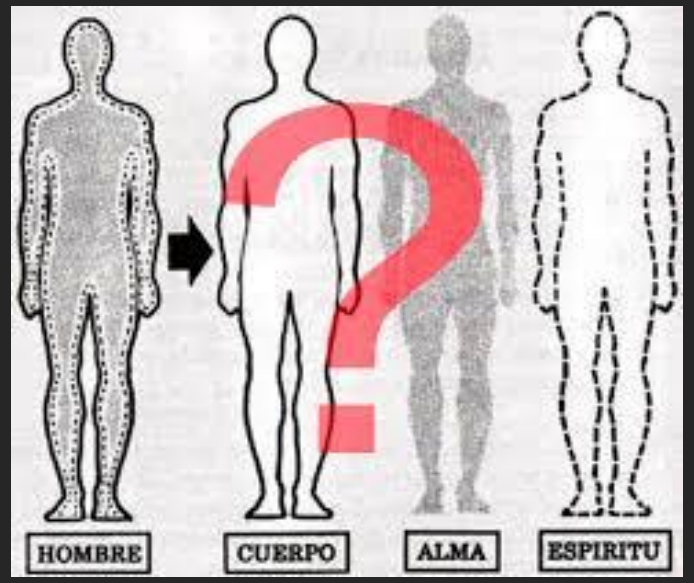
La **conciencia** resulta de una evolución progresiva, gradual, estructural y funcional de sus múltiples componentes intrincados.

Una definición simple de conciencia es la conciencia sensorial del cuerpo, el yo y el mundo. El feto puede ser consciente del cuerpo, por ejemplo al percibir dolor. Reacciona al tacto, olfato y sonido, y muestra expresiones faciales que responden a estímulos externos. Sin embargo, estas reacciones probablemente estén preprogramadas y tengan un origen subcortical no consciente. Además, el feto está casi continuamente dormido e inconsciente en parte debido a la **sedación endógena**.

¿Psicopatología del bebe durante el embarazo?



Akselsson et al. BMC Pregnancy and Childbirth (2017) 17:359
DOI 10.1186/s12884-017-1548-5

BMC Pregnancy and Childbirth

RESEARCH ARTICLE Open Access

Women's attitudes, experiences and compliance concerning the use of Mindfetalness- a method for systematic observation of fetal movements in late pregnancy

Anna Akselsson[1*], Susanne Georgsson[2], Helena Lindgren[3], Karin Pettersson[4] and Ingela Rådestad[5]

Abstract

Background: Maternal perception of decreased fetal movements and low awareness of fetal movements are associated with a negative birth outcome. Mindfetalness is a method developed for women to facilitate systematic observations of the intensity, character and frequency of fetal movements in late pregnancy. We sought to explore women's attitudes, experiences and compliance in using Mindfetalness.

Methods: We enrolled 104 pregnant women treated at three maternity clinics in Stockholm, Sweden, from February to July of 2016. We educated 104 women in gestational week 28–32 by providing information about fetal movements and how to practice Mindfetalness. Each was instructed to perform the assessment daily for 15 min. At each subsequent follow-up, the midwife collected information regarding their perceptions of Mindfetalness, and their compliance. Content analyses, descriptive and analytic statistics were used in the analysis of data.

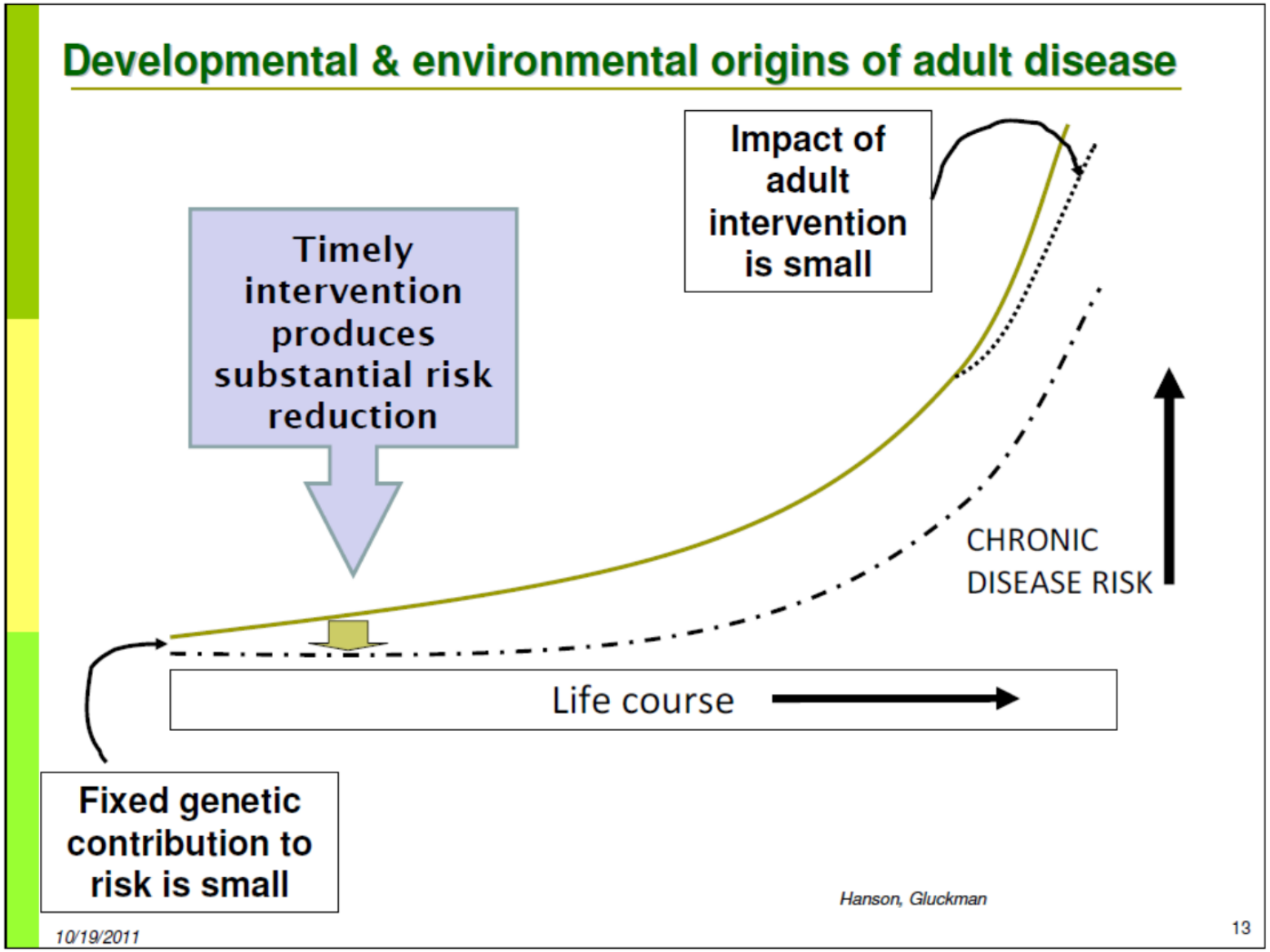
Results: Of the women, 93 (89%) were positive towards Mindfetalness and compliance was high 78 (75%). Subjective responses could be binned into one of five categories: Decreased worry, relaxing, creating a relationship, more knowledge about the unborn baby and awareness of the unborn baby. Eleven (11%) women had negative perceptions of Mindfetalness, citing time, and the lack of need for a method to observe fetal movements as the most common reasons.

Conclusion: Women in late pregnancy are generally positive about Mindfetalness and their compliance with daily use is high. The technique helped them to be more aware of, and create a relationship with, their unborn baby. Mindfetalness can be a useful tool in antenatal care. However, further study is necessary in order to determine whether the technique is able to reduce the incidence of negative birth outcome.

"Aún existen mentes antiguas dentro de nuestras mentes humanas modernas, y no entenderemos nuestros procesos mentales superiores a menos que encaremos seriamente las soluciones neurales más tempranas que aún influyen en el complejo aparato mental de los mamíferos altamente encefalizados". Jaak Panksepp

http://bonding.es/la-sabiduria-del-cerebro-profundo/

https://www.who.int/ceh/capacity/origins_adultdisease.pdf?ua=1



https://www.cambridge.org/core/services/aop-file-manager/file/567831455cefc91d0c2d4000/DOH-Journal-of-Developmental-Origins-of-Health-and-Disease-2140x480.jpg

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- Este trabajo forma parte de un libro en construcción por lo que te ruego seas especialmente cuidadosa/o con el mismo. Es el resultado de infinitas horas de estudio y trabajo. Si lo comparto es con el fin de facilitar la formación y el aprendizaje que en última instancia favorezca una mejor atención a las madres y los bebés.
- Gracias por tu interés y esfuerzo